

## The Sizewell C Project

6.13 Additional Ecology Baseline Survey Reports (November 2020): Part 1 of 2

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## November 2020

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#### SIZEWELL C PROJECT - 2020 SURVEY REPORTS

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# ADDITIONAL ECOLOGY BASELINE SURVEY REPORTS (NOVEMBER 2020)

## Documents included within Part 1 are as follows:

- Bat Tree Inspection Survey Report 2020
- Breeding Bird and Waterfowl Survey Report 2020
- Great Crested Newt Survey Report 2020
- National Vegetation Classification Surveys 2020
- Natterjack Toad Survey Report
- Phase 1 Habitat Survey Update 2020



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## MAIN DEVELOPMENT SITE 2020 BAT TREE INSPECTION SURVEY REPORT



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#### 1 SUMMARY

- 1.1.1 This document provides the results of the 2020 bat tree inspections conducted on the Sizewell C main development site in 2020. To provide context, a summary of previous surveys conducted to inform the Development Consent Order (DCO) application is provided, along with a summary of the bat species valuation and mitigation provided in the Volume 2, Chapter 14 of Environmental Statement (ES) submitted as part of the DCO.
- 1.2 Receptor Status - Submitted Baseline Summary Overview (for DCO)
- 1.2.1 Bat surveys were undertaken of land associated with the proposed Sizewell C main development site by Wood Group between 2007-2012 (Table 1) and by Arcadis between 2013 – 2019 (Table 2). These surveys were utilised to inform the Environmental Impact Assessment submitted in support of the DCO application and are summarised in this section of the report, to provide the context of the surveys conducted in the 2020 surveys.
- 1.2.2 Summaries of the data used to inform the DCO application is provided in Table 1 and Table 2.

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Table 1: Summary of Wood Group bat survey results between 2007 and 2013 to inform the DCO

Survey	Summary of Results
Desk-study.	Confirmed extensive use of the site and the surrounding area and landscape by bats, largely from data gathered by Suffolk Wildlife Trust (SWT).
Habitat (landscape) appraisal.	Confirmed a high-quality mosaic of habitats suitable for foraging, commuting and roosting bat species. The habitats were considered to be well established and mature, diverse in species composition and habitat type, and to offer many local roosting opportunities in farm buildings and mature woodlands/scattered trees.
	Also confirmed that there is generally excellent connectivity between the proposal site and the wider landscape, especially through the hedgerow network, and that the area is largely undeveloped.
	The main build area of the proposed main platform was confirmed to contain habitats that were likely to be of limited value for barbastelle.
Building surveys.	Buildings within the Upper Abbey Farm complex at grid reference location TM 45319 64566 were considered to be of particular note, supporting brown long-eared bats (maternity roost), at least one common pipistrelle roost, a soprano pipistrelle roost and a Natterer's bat mating roost. Barbastelle were recorded within the barn, with call patterns suggesting presence in very low numbers. Based on the data collected, this is considered to be summer non-breeding roost for barbastelle (there was no evidence of barbastelle using the barn for breeding).
	The fire-damaged farmhouse was considered unlikely to support bats other than small non-breeding roosts. Bats found hibernating included a single barbastelle, Daubenton's bat, Natterer's bat, and probable brown long-eared bat (no more than three bats in total recorded on any one occasion).
	At least 49 Natterer's bats were recorded using the western end of Leiston Abbey in August 2011 (but with far fewer bats present earlier in the month, indicating that other roost site(s) are in use).

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Survey	Summary of Results
Bat box surveys.	A high proportion of bat boxes showed evidence of use by bats. Two larger roosts of Natterer's bat and soprano pipistrelle were identified. Bat boxes present are not of a design preferred by barbastelle, and none were recorded using the boxes.
Tree surveys.	Over 500 trees were identified as having medium or higher potential for roosting bats. The areas with the highest numbers were: Fiscal Policy woodland (126); Ash Wood (74); the track along the northern edge of Kenton Hills (57); Goose Hill (51); and woodland at The Grove (37). Not all trees were considered suitable for all species and/or all roost types. Only limited emergence surveys were undertaken, during which the maximum number of barbastelle counted at any one time (including juveniles) was 31 individuals. Eleven trees were identified at Aldhurst Farm with limited potential to support roosting bats, along with four buildings considered to contain features of limited roost potential.
Transect surveys and automated detector surveys.	Activity recorded within open areas (on automated detectors) was low. The highest levels of activity were recorded at commuting/foraging areas close to Ash Wood, Upper Abbey Farm bridleway, Goose Hill, the perimeter track around Kenton Hills and Nursery Covert, Fiscal Policy woodland, and Leiston Old Abbey.  The large majority of automated detectors recorded barbastelle activity, indicating that barbastelle are widespread and use almost all the habitats within the site and surrounding area (including Aldhurst Farm), although not to the same extent.
Radio-tracking surveys.	Barbastelle, Natterer's bat, and brown long-eared bat (breeding females only of Natterer's bat and brown long-eared bat) were radio-tracked in 2010 and 2011 (pre- and post-breeding). Attempts to catch and tag Nathusius' pipistrelle and Daubenton's bat (to locate roosts) were unsuccessful. Nine serotine bats were trapped but not tracked, as they were not covered by the licence.  A total of 22 barbastelle roosts were identified through radio-tracking; all roosts used by females and inveniles were located within trees, while two males were recorded roosting in
	females and juveniles were located within trees, while two males were recorded roosting in buildings.

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Survey	Summary of Results
	The results of the radio-tracking showed a close reliance on the EDF Energy Estate during these periods of time.
Upper Abbey Farm building inspections.	Six bats were found to be using Upper Abbey Farmhouse as an autumn/winter roost – two Natterer's bat (January, 2013), one probable Daubenton's bat (October 2012), one confirmed Daubenton's bat (November 2012), one probable brown long-eared bat (January 2013) and one bat of undetermined species (December 2012). All individuals were found within the farmhouse cellar which was considered to offer several potential roost sites and suitable conditions for roosting bats.
	The farmhouse more generally was considered to have the potential to support roosting bats with small numbers of bat droppings found throughout the property and, in one location, feeding remains <sup>1</sup> .
	A single outbuilding to the east of the farmhouse was considered to have some potential, primarily as a hibernation or feeding perch, although no evidence of recent use was identified.

Table 2: Summary of Arcadis survey results between 2013 and 2019 to inform the DCO

Survey	Summary of Results.
Activity transect surveys.	Between six and seven bat species were recorded during activity transect surveys in 2014 and 2015. Common pipistrelle was the most frequently recorded species across all activity transects, followed by soprano pipistrelle. On the temporary accommodation campus transect route and green rail route transect route 3 (green rail route transect route 3), barbastelle was the third most frequently recorded species, but was absent from the Pillbox Field and Coronation Wood transects.

<sup>&</sup>lt;sup>1</sup> Note. extensive renovations have been undertaken at Upper Abbey Farmhouse since this survey work.



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Survey	Summary of Results.
	On both the temporary accommodation campus transect route and green rail route transect route 3, activity peaked in May 2014, with noticeably lower activity levels in July 2014 (on the temporary accommodation campus transect, considered in part to be due to adverse weather conditions) and October 2014. Surveys of Pillbox Field and Coronation Wood were undertaken in September and October 2015 only, with activity in September 2015 found to be significantly higher.
	A single pass was recorded shortly after sunset at Upper Abbey Farm, where soprano pipistrelle have previously been recorded roosting. Early passes were recorded in the vicinity of the temporary accommodation campus transect route and along the green rail route transect route 3 (more so from common than soprano pipistrelle).
	During 2019 surveys of the sand pits at least five species were recorded. Common pipistrelle was the most frequently recorded species. While activity levels were higher in September 2019 than October 2019 activity levels remained low compared to activity transect results gathered elsewhere on the EDF Energy Estate in previous years.
Automated detector surveys.	Barbastelle activity was recorded at all monitoring stations across and out with the site and in both years (2013 and 2014) (though not in every location during every monitoring event).  Mean activity for barbastelle and Nathusius' pipistrelle activity was greatest in June (the largely pre-lactation maternity period), while mean activity for Myotis spp. was lowest during this period. Mean activity for "big bats" was highest in July and lowest in September/October. However, the highly-skewed nature of the data required detailed analyses to detect patterns obscured by the raw means, with activity often differing between seasons/years in different locations.  The data recorded indicated the likely absence of serotine and Leisler's bat roosts from the ZOI. The data also indicated the potential presence of barbastelle roosts within Goose Hill and in the vicinity of Broom Covert, and of noctule roosts near woodland at The Grove, eastern Goose Hill, and Leiston Old Abbey woodland. <i>Myotis</i> spp. roosts were indicated by the activity patterns, consistent with the locations of known roosts in woodland at The Grove, Leiston Abbey and Kenton Hills bat boxes.



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Survey	Summary of Results.
Radio-tracking surveys.	Twenty-seven barbastelle were caught during the radio-tracking surveys, of which none were already ringed, and 18 were tagged for radio-tracking (three adult males, 12 breeding females and three non-breeding females). In addition, a single non-breeding female serotine was caught and tagged. Soprano pipistrelle, common pipistrelle, Daubenton's bat, Natterer's bat and noctule were also caught but not tagged. In total, 285 bats were trapped in 2014.
	Tracking confirmed that Minsmere (to the north of the site) supported breeding barbastelle, providing both roosting and foraging habitat, and that there was interchange of bats between Minsmere and the EDF Energy Estate. Tagged barbastelle were recorded moving between the two areas on several occasions throughout the 2014 radio-tracking survey. Of the seven female barbastelle trapped in Minsmere, four were confirmed to be active within the EDF Energy Estate, whilst of the seven females trapped within the EDF Energy Estate, at least six were confirmed to be active within Minsmere. All three of the male barbastelle trapped within the EDF Energy Estate were recorded within Minsmere (no adult males were caught within Minsmere). One tagged female was recorded roosting in both locations.
	A wider foraging area was thus identified in 2014 than in 2011, with greater levels of foraging over Minsmere and the Eastbridge area recorded.
	The areas within the identified home ranges of the tagged bats (as defined by 95% Minimum Convex Polygon analysis²) reached beyond Westleton to the north, beyond Middleton to the west, east to the coast and south to the south-east of Leiston.
	A further fifteen barbastelle roosts were identified, nine confirmed to be within trees. Roosts were located in both the EDF Energy Estate and Minsmere, with an additional three roosts located outside of these areas, at Saxmundham and Reckford Bridge/Eastbridge Marshes. None of the previously identified roosts were used again by tagged bats. The preference for oak ( <i>Quercus</i> spp.) trees, and for roosting behind raised/loose bark, was consistent with previous years.

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<sup>&</sup>lt;sup>2</sup> The Minimum Convex Polygon enables the creation of a boundary around all fixes using the smallest possible convex polygon. This is a commonly used method but may overestimate the size of home ranges. (App-245 and App-246), **Annex 14A8.6**).



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Survey	Summary of Results.
	However, the tree used most frequently, and by the highest number of tagged bats, was a dead Scot's Pine ( <i>Pinus sylvestris</i> ).
	The tagged serotine roosted for the duration of the radio-tracking surveys within the grounds of Theberton Farm (where access for the surveyors was not permitted), and was recorded foraging widely into the Royal Society for the Protection of Birds (RSPB) Minsmere Reserve, Minsmere Levels and around Goose Hill, woodland at The Grove, and Ash Wood, with further 'fixes' recording movement along the coastal edge.
Building inspectio surveys.	Three building complexes were identified as possessing multiple features ranging from low to high potential to support bats (Ash Wood Cottages, Lower Abbey Farm and Upper Abbey Farm).
	Two buildings were identified as possessing features of low potential to support bats (Plantation Cottage and the Laboratory off Lovers Lane).
	A single building with no potential to support bats was identified (Walk Barn).
	Six of the 12 buildings identified for assessment were not evaluated in 2015 due to a lack of access permission <sup>3</sup> .
	Surveys in 2019 reassessed Ash Wood Cottages (confirmed as a brown long-eared bat roost), Lower Abbey Farm (four structures with negligible suitability, three structures with none/low suitability, three structures with low suitability, two structures with moderate suitability, one structure with high suitability and one structure confirmed as a brown long-eared bat roost) and Upper Abbey Farm (one structure with no suitability, one structure with negligible suitability, one structure with no/low suitability, two structures with low suitability, three structures with high suitability and three structures confirmed as brown long-eared bat roosts).
	Further surveys in 2019 inspected 15 buildings associated with Sizewell B relocated facilities proposed works. Of these, 11 were assessed as having negligible or no bat roost suitability,

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<sup>&</sup>lt;sup>3</sup> The Round House, Potters Farm, Birchwood Farm, Old Abbey Farm, Leiston Old Abbey Farm, World War II Bunkers. See **Figures 14A8.6**, **Figure 14A8.7** and **Figure 14A8.8** for locations (App-247).



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Survey	Summary of Results.
	three were assessed as of low suitability and one building was confirmed as a bat roost following the DNA analysis of droppings which identified common pipistrelle.
Tree assessment surveys <sup>4</sup> .	Tree surveys were undertaken in areas not previously assessed. A single tree, located within a wooded strip between Black Walks and Ash Wood, was identified as a confirmed roost, due to the presence of a small number of likely bat droppings at the base of the identified bat roost feature.
	Nineteen trees within the surveyed area were identified as having high or very high bat roost potential. Twenty-two trees were identified as having medium potential, including a group of trees to the south-west of the Round House which were considered to have features suitable for bats, but which, due to access restrictions, could not be fully assessed.
	The reassessment of trees within Coronation Wood was undertaken in 2019 and where possible trees identified as having bat roost potential were climbed and where no evidence of use by bats found features were filled with expanding foam. Three trees of moderate suitability were identified, climbed and, following no evidence of use by bats filled with expanding foam. A further tree and three groups of trees were identified as requiring further survey before removal.
Corridor activity surveys.	West to east commuting was recorded at the crossroads of Fiscal Policy and Kenton Hills by common pipistrelle, soprano pipistrelle, "big bat" spp., and <i>Myotis</i> spp. with activity diminishing the further east into Kenton Hills surveyors were positioned, likely due to the dispersal of bats into the wider woodland.
	To the north, on the Upper Abbey Farm bridleway, commuting was recorded primarily by common and soprano pipistrelles with some <i>Myotis</i> spp. and some potentially commuting barbastelle. Commuting bats were primarily observed flying north to south along the bridleway. Overall, activity (including foraging) was notably lower at the northern end of the bridleway <sup>5</sup> .

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<sup>&</sup>lt;sup>4</sup> High level tree assessments were additionally undertaken of land to the east of Eastbridge Road during Phase 1 surveys. This area now falls outside the main development site boundary and therefore the results of this survey work are not included here.

<sup>&</sup>lt;sup>5</sup> Corresponding with the static detector results identified at this location (see 1.62).



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Commence	Community of Deputts
Survey	Summary of Results.
	Several commuting barbastelle passes were recorded between 40 minutes and 1 hour after sunset at MS20 (which is a more open location within Goodrum's Fen) and commuting at Stonewall Belt primarily occurred on the more sheltered eastern side. Elsewhere, clear evidence of commuting (rather than foraging) was limited.  Foraging activity from the bat assemblage known to be present on the site was recorded, to varying degrees, at all locations surveyed during corridor activity surveys.
Building emergence/re- entry surveys.	Wood Cottages (June 2019), while between four and eight individuals emerged in May 2019. No bats were confirmed to have re-entered during the July 2019 survey, but it was considered likely, due to the degree of activity around known entrance points, that a proportion of the activity observed reflected re-entering bats. Although no echolocation calls were heard the presence of brown long-eared bats within the building during internal inspections means it is considered that this activity is likely to represent brown long-eared bats.
	At Lower Abbey Farm bats were observed emerging/re-entering from Building 1 (one confirmed re-entry and one possible re-entry in June 2019 (species unknown due to lack of echolocation calls) and one possible emergence from a common pipistrelle in July 2019), Building 2 (two confirmed re-entries and two likely re-entries in June 2019 (species unknown due to lack of echolocation calls)), Building 6 (one confirmed and one possible emergence in June 2019 (species unknown due to lack of echolocation calls)), Building 8 (one common pipistrelle re-entry in June 2019 and one common pipistrelle emergence in July 2019) and Building 11 (between 12 and 14 emergences in April 2019, three confirmed re-entries and the possibility of a number of others based on activity levels in June 2019 and 17 emergences and four possible emergence in July 2019). None of these bats were heard echolocating and as such species could not be confirmed although brown long-eared bat dropping were found during internal inspection at Lower Abbey Farm). In addition, it was considered possible that small numbers of bats may have emerged from Buildings 7 and 10 although this could not be confirmed.
	At Upper Abbey Farm bats were observed emerging/re-entering from Building 1 (three common pipistrelle and one soprano pipistrelle emerged in May 2019, two common pipistrelle, one

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Survey	Summary of Results.
	common or soprano pipistrelle and two unidentified bat re-entered in June 2019 and one common pipistrelle, one soprano pipistrelle and one unidentified bat emerged in July 2019), Building 5 (two identified bats re-entered in July 2019), Building 10 (one brown long-eared bat and one unidentified bat re-entered in June 2019) and Building 11 (two common pipistrelle were confirmed emerging in June 2019 along with a possible emergence of a soprano pipistrelle, two common pipistrelle and one identified bat re-entered in July 2019).



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## 1.3 Receptor Status 2020 Summary Overview

- 1.3.1 This section provides a summary of the survey presented within this report.
- 1.3.2 Updated habitat assessments were undertaken across the whole of the main development site in 2020. The surveys identified the presence of trees with potential to support roosting bats within the proposed development site, and identified where conditions on site have changed.
- 1.3.3 Subsequently, ground-level roost assessments of trees were undertaken within Goose Hill, trees along the north of Kenton Hills and Fiscal Policy woodlands along with scattered trees and trees identified within hedgerows between June and September 2020. The aim of the roost assessment was to look for Potential Roosting Features (PRFs) in accordance with standard bat survey methodology (Ref. 9). This information was used to determine the available roost resource within the woodlands within and close to areas where tree removal is required and the need for mitigation.
- 1.3.4 A total of 322 trees were identified within the 2020 study area as having low, medium or high potential for roosting bats. One tree was identified as a confirmed roost. These trees contained an identified 626 PRFs.
- 1.3.5 The 2020 survey results were consistent with previous surveys, the areas with the highest numbers of trees with potential to support bat roosting being present within Fiscal Policy woodland, the track along the northern edge of Kenton Hills. Goose Hill was found to support lower numbers of trees with PRFs, with the trees with potential to support bats being located in clustered areas, particularly within the south-eastern area of Goose Hill. The other areas of Goose Hill were largely formed of young pine plantation and had minimal numbers of trees which supported PRFs. This is as was previously reported within the Sizewell C Project ES (App-242, App-243, App-244, App-245 and App-246) (Ref. 1) based on the earlier survey results.
- 1.3.6 One confirmed roost was found within a woodland copse to the east of Old Abbey Farm (at TM 45182 64186), identified through the presence of bat droppings considered likely to be from a pipistrelle species. It was not possible to determine the type of roost supported, further work will need to be conducted to identify the roost type. This tree is proposed to be removed to facilitate the development and a licence will need to be obtained in order to allow this to occur.
- 1.3.7 The results of the 2020 bat tree inspection surveys as reported in this report do not change the overall assessment of bat status and impact resulting from the development as reported in the DCO application in the Sizewell C Project ES (App-242, App-243, App-244, App-245 and App-246) (Ref 1), and the proposed mitigation submitted for the Sizewell C main development site, in



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the bat method statement (App-252) (Ref. 2) and bat mitigation strategy (App-252) (Ref. 3).

## 2 OVERVIEW

## 2.1 The Aims of the 2020 Survey Updates

- 2.1.1 The aims of the 2020 bat survey update were to:
  - Update the existing bat tree inspection baseline survey data and provide a baseline for future monitoring.
  - Establish the potential roost resource present within and adjacent to the proposed development site.
  - Inform the required European Species Licences to permit development to proceed.

## 2.2 Site Description

- 2.2.1 The main development site is located on the Suffolk coast, approximately halfway between Felixstowe and Lowestoft; to the north-east of the town of Leiston and within the administrative boundary of East Suffolk Council (ESC). Once constructed, the Sizewell C nuclear power station would be located directly to the north of the existing Sizewell Power Station complex.
- 2.2.2 The main development site encompasses a number of wooded areas, including Goose Hill, areas along the north of Kenton Hills and Fiscal Policy, which are a combination of broadleaved woodland and coniferous plantation.

## 2.3 Submitted Baseline

- 2.3.1 This section of the report provides a summary of the baseline status of the bats within the site as presented within the DCO application. The full results of the surveys to 2019 can be found in the Volume 2, Chapter 14 of the Sizewell C Project ES (Ref 1), the bat method statement (App-252) (Ref. 2) and bat mitigation strategy (App-252) (Ref. 3).
- 2.3.2 At least ten species of bat have been recorded within the EDF Energy estate boundary: barbastelle (*Barbastella barbastellus*); serotine (*Eptesicus serotinus*); Daubenton's bat (*Myotis daubentonii*); Natterer's bat (*Myotis nattereri*); Leisler's bat (*Nyctalus leisleri*); noctule (*Nyctalus noctula*); Nathusius' pipistrelle (*Pipistrellus nathusii*); common pipistrelle (*Pipistrellus pipistrellus*); soprano pipistrelle (*Pipistrellus pygmaeus*); and brown longeared bat (*Plecotus auritus*).



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- 2.3.3 The EDF Energy estate supports: maternity colonies of barbastelle, Natterer's bat, brown long-eared bat, and soprano pipistrelle; non-breeding roosts of the breeding species and also noctule and common pipistrelle; and hibernation roosts for the majority of these species. The site boundary and Zone of Influence (ZoI) consists of a mosaic of habitats suitable for commuting and foraging bats.
- 2.3.4 Tree roost potential assessments were conducted on trees likely to be impacted by the works to inform the potential for impacts upon bats roosting within trees. Within this assessment groups of trees are treated collectively as a 'roost resource', with the potential impacts informed by the known roosts and the number of roosting features present within each woodland informing the baseline assessment.
- 2.3.5 A number of roosts have been identified at:
  - Upper Abbey Farm, including a brown long-eared bat maternity roost, a Natterer's bat mating roost, hibernating barbastelle, Daubenton's bat, Natterer's bat and probable brown long-eared bat, as well as occasional common pipistrelle, soprano pipistrelle and barbastelle roosts.
  - Brown long-eared bat roosts have also been identified at Ash Wood Cottages
  - Brown long-eared bat roosts have also been identified at Lower Abbey Farm, with occasional roosting by common pipistrelle also identified.
  - A high proportion of bat boxes installed in Kenton Hills have shown signs of use by bats, including Natterer's bat, noctule and soprano pipistrelle roosts.
  - A Natterer's bat roost is present within Leiston Old Abbey, immediately adjacent to the site boundary.
  - Additional bat roost potential has been identified within Lower Abbey Farm, Plantation Cottage, and the Laboratory, off Lover's Lane.
  - Activity suggests serotine and Leisler's bat are unlikely to be roosting within the site.
  - Potential roosts have been noted for barbastelle in Goose Hill and Broom Covert.
  - For noctule in The Grove, the eastern end of Goose Hill and Leiston Old Abbey.



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- There is potential roosting for Myotis spp. At The Grove, Leiston Abbey and within bat boxes in Kenton Hills.
- 2.3.6 Several locations on and close to the site boundary have a large number of trees with roosting potential for bats, including Fiscal Policy woodland, Ash Wood, the northern edge of Kenton Hills, Goose Hill, and The Grove. In addition, Minsmere and Ash Wood are considered to be key roost areas for barbastelle due to the high number of potential tree roosts present, as well as the presence of a number of identified roosts.
- 2.3.7 Clear evidence of commuting activity within the m site boundary is limited, although west-east commuting at the crossroads of Fiscal Policy and Kenton Hills has been noted for common pipistrelle, soprano pipistrelle, "big bat" spp. and Myotis spp. and north-south commuting on the Upper Abbey Farm bridleway (bridleway 19) for common pipistrelle, soprano pipistrelle, Myotis spp., and potentially barbastelle. Barbastelle commuting has been noted.
- 2.3.8 Activity surveys found barbastelle to be widespread and the species has been recorded within almost all habitats present within the EDF Energy estate boundary, while common and soprano pipistrelle were the most frequently recorded species. Activity levels in open areas were low while higher levels of activity were recorded at Goose Hill, Upper Abbey Farm bridleway, Leiston Old Abbey woodland, Ash Wood, Nursery Covert, Fiscal Policy woodland and the northern edge of Kenton Hills.
- 2.3.9 Radio-tracking surveys have identified an interchange of bats between Minsmere and the EDF Energy estate as well as the use of the EDF Energy estate by bats throughout the bat active season.
- 2.3.10 All bat species in the UK are protected under Schedule 5 of the W&CA (Ref 4) and Schedule 2 of the Conservation of Habitats and Species Regulations (Ref 5). Five species (barbastelle, brown long-eared, lesser horseshoe, noctule and soprano pipistrelle bat) are listed as priority species on the Suffolk BAP (Ref 6); these and two species not normally present in Suffolk (greater horseshoe and Bechstein's bat) are priority species in England under Section 41 of the NERC Act (Ref 7).

#### **Ecological Receptor Status**

2.3.11 **Table 3** provides a summary of the value of the receptors present within the main development site boundary as assessed in the Sizewell C Project ES (Ref 1).



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Table 3: Summary of the importance of ecological receptors as assessed in the Main Development Site Environmental Statement

Species	Importance under CIEEM guidelines (Ref 8)	Importance under EIA- specific methodology
Barbastelle	National	High
Natterer's	County	Medium
Leisler's bat and Nathusius' pipistrelle	Local (District)	Low
Noctule and serotine	Local (Zol)	Low
Daubenton's bat, brown long-eared bat, common pipistrelle, and soprano pipistrelle	Local (Zol)	Low

## 2.4 2020 Surveys

- 2.4.1 This report is one of three bat survey reports, detailing surveys undertaken at the main development site during 2020. These reports are as follows:
  - Bat tree assessment surveys.
  - Bat backtracking surveys.
  - Bat static surveys.



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## 3 METHODS

- 3.1.1 Ground-level roost assessments of trees were undertaken within Goose Hill, trees along the northern edge of Kenton Hills and Fiscal Policy woodlands along with scattered trees and trees identified within hedgerows between June and September 2020. The aim of the roost assessment was to look for Potential Roosting Features (PRFs) in accordance with standard bat survey methodology (Ref. 9). This information was used to determine the available roost resource within the woodlands and wider site and the need for mitigation.
- 3.1.2 The study area illustrated in **Figure 1** was surveyed to identify trees with the potential to support roosting bats. The target areas were identified as those with trees present within the proposed clearance areas where it was deemed important to obtain further information on the roost resource provided by these areas.
- 3.1.3 Ground assessments comprised a comprehensive inspection of each tree from the ground, using binoculars and high-powered torches as required to observe any PRFs. PRFs included, but were not exclusive to:
  - Knot holes (cavities with collar resulting from natural branch loss ad fungal infection).
  - Woodpecker holes and cavities created by fungal infection.
  - Tear outs (cavities within an inverted tear shape wound created when a limb was torn from the main stem or other major limb).
  - Impact shatters (cavities extending longitudinally into limb originating from a break along its length typically caused by impact with part of another tree).
  - Butt rot (hollow section of main stem resulting from fungal infection).
  - Lifted bark (substantial areas of lifted bark typically resulting from fungal infection).
- 3.1.4 Where the ground assessment process determined that a tree supported PRFs, the tree was given a unique alphanumeric identification code and information about the tree was recorded using geographic information system (GIS) software on a mobile mapper. The following information for each tree was recorded:
  - Location.



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- Species.
- Maturity.
- Climbing safety.
- PRF type (e.g. knot hole, woodpecker hole, lifted bark).
- PRF height.
- PRF aspect.
- PRF description (e.g. appearance of feature and location of feature within tree).
- PRF grade (e.g. potential for bats in accordance with Hundt (Ref 10).
- 3.1.5 The purpose of these surveys was to identify the likelihood of bats roosting within the woodlands directly affected by the proposed development, provide further information on the roost resource provided by these woodlands and if possible, identify the location of the roosts. **Table 4** below outlines the dates that tree inspections were conducted and the qualifications of the surveyors.

**Table 4: Dates of Tree Inspections** 

Date	Surveyors/ Qualifications
22/06/2020	Nick Downs, BSc, PhD, MCIEEM
_ 26/06/2020	Henry Gunning BSc, MSc, ACIEEM Toby Abrehart MCIEEM FLS
30/06/2020	Henry Gunning, BSc, MSc, ACIEEM
- 03/07/2020	Rob Regan BSc, MSc
06/07/2020	Nick Downs, BSc, PhD, MCIEEM
_ 10/07/2020	Marielle James, BSc (Hons), MRes, MCIEEM, MCIWEM Henry Gunning, BSc, MSc, ACIEEM Rob Regan, BSc, MSc
	Toby Abrehart MCIEEM FLS
13/07/2020 - 17/07/2020	Nick Downs, BSc, PhD, MCIEEM Marielle James, BSc (Hons), MRes, MCIEEM, MCIWEM Henry Gunning, BSc, MSc, ACIEEM Rob Regan BSc, MSc

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Date	Surveyors/ Qualifications
12/08/2020	Henry Gunning, BSc, MSc, ACIEEM
   14/08/2020	Rob Regan BSc, MSc
	Alex Ellis BSc, MCIEEM,
_ 21/08/2020	Henry Gunning BSc, MSc, ACIEEM
01/09/2020	Nick Downs, BSc, PhD, MCIEEM
- 04/09/2020	Marielle James BSc (Hons), MRes, MCIEEM, MCIWEM

#### LIMITATIONS 4

4.1.1 The ground assessment surveys were undertaken between June and September 2020 meaning that a considerable proportion of the work was undertaken while trees had full foliage and dense ground flora was present within parts of the study area. However, as these are preliminary surveys to inform the requirement for further surveys this is not considered to have a significant effect on the results of these surveys.

#### 5 RESULTS

5.1.1 A total of 322 trees were identified within the 2020 study area as having low, medium or high potential for roosting bats. One tree was identified as a confirmed roost. These trees contained an identified 626 PRFs. The results of tree assessments are illustrated on Figure 2 and are summarised in Table 5. Figure 3 identifies the assessed trees which are within the vegetation clearance areas.

Table 5: Summary of woodland roost potential in 2020

Woodland	Tree Roost Potential					
	Low	Moderate	Total			
Kenton Hills (area along the northern track)	7	46	13	0	66	
Goose Hill	21	104	7	0	132	
Fiscal Policy	48	24	2	0	74	



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Woodland	Tree Roost Potential					
	Low	Total				
Hedgerows and scattered trees (Additional Features)	9	33	8	1	51	
Total	85	207	30	1	323	

- One confirmed roost was found within a woodland copse to the east of Old Abbey Farm (at TM 45182 64186), identified through the presence of bat droppings considered likely to be from a pipistrelle species. It was not possible to determine the type of roost supported, further work will need to be conducted to identify the roost type.
- 5.1.3 The trees identified as offering high roosting potential for bats were concentrated along the northern edge of Kenton Hills and within Fiscal Policy and Abbey Cottage woodlands. Goose Hill was found to support lower numbers of trees with PRFs, with the trees with potential to support bats being located in clustered areas, particularly within the south-eastern area of Goose Hill. The other areas of Goose Hill were largely formed of young pine plantation and had minimal numbers of trees which supported PRFs.

### 6 DISCUSSION

- 6.1.1 The 2020 survey results for potential bat tree roosts confirmed the continued presence of trees with potential to support roosting bats within the main development site.
- One confirmed roost was found within a woodland copse to the east of Old Abbey Farm. This tree is proposed to be removed to facilitate the development, a licence will need to be obtained in order to allow this to occur. However, it is considered likely that there are further roosts within the trees to be removed.
- 6.1.3 Tree roosts are highly transitional (a strategy thought to be used by bats to reduce the likelihood of parasitism and predation) and therefore the chance of detection of a tree roost is reduced in comparison to other structures as the likelihood of presence during any one survey is reduced. In addition, it is possible the proposed development at the main development site will result in the loss of multiple trees with bat roost potential in any one particular area



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and therefore there is potential for a greater impact on the local population. It is therefore important to assume a proportion of potential roosts may be used by roosting bats at one time or another.

- A total of 30 trees assessed as offering high roosting potential and 207 trees assessed as offering medium roosting potential have been identified within the study area. These have potential to be used by the following tree roosting species which are known to be present within the site: common pipistrelle, soprano pipistrelle, Nathusius pipistrelle, Natterer's bat, noctule, serotine, brown long-eared and barbastelle.
- 6.1.5 The high and medium roosting potential trees were recorded in distinct clusters within Goose Hill, along the northern edge of Kenton Hills and scattered throughout Fiscal policy and Abbey Cottage woodlands. Trees present within hedgerows offering potential to support roosting bats were concentrated in the area around Upper Abbey farm.
- 6.1.6 From the suite of surveys undertaken to date, no barbastelle roosts that have been identified will be directly lost to the development. All of the habitat most suitable for supporting roosting bats has been covered by initial surveys. However, as outlined above, not all trees to be removed have been fully surveyed for roosting potential. Therefore, the groups to be removed are treated as a 'roost resource', considering that bats usage of trees can be transient and varies throughout the year. A proportion of the trees identified as suitable to support roosting bats will be subject to further surveys (tree climbing) to further inform mitigation requirements.
- 6.1.7 The 2020 assessment is based on the overall roost resource, not on confirmed occupation of individual trees, in accordance with relevant guidance (Ref 9), which states "from what is known about the ecology of tree-roosting bats, it is arguable that all trees with bat roosting potential should be considered part of a resource that will be used at one time or another by tree-roosting bats in order to determine the extent of impacts. Survey work on individual trees may confirm presence but is unlikely to conclusively confirm absence."
- 6.1.8 The construction of the proposed development will result in direct loss of one identified roost, but will also result in the loss of habitats confirmed as suitable for roosting bats which are likely to support further roosts, as there would be losses of tree groups or areas considered to be a 'roost resource' which are likely to support roosting bats, including barbastelle. Measures to ensure that any new or previously unidentified roosts within this resource are identified and mitigated are proposed in the Bat Method Statement (Ref 2) and the Bat Mitigation Strategy (Ref 3). This includes the provision of bat roosting boxes, the number of which are to be provided will be based upon the number of potential roosting features lost due to the tree removal.



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- Based on the 2020 survey results presented above, the assessment of impacts on bats presented at Section 14.13 in the Sizewell C Project ES (Ref. 7) remains unchanged.
- 6.1.10 The results of the 2020 updated bat tree inspection surveys do not change the assessment of impacts to bats in the Sizewell C Project ES (Ref. 1) and do not change the broad proposed mitigation detailed in the Bat Mitigation Strategy (Ref 3) and Bat Method Statement (App-252) (Ref. 2). However, it is acknowledged that with subsequent additional survey effort roost will be discovered that require removal and as such the preparation of a Draft European Protected Species licence is being undertaken in liaison with Natural England. The further detail obtained during the 2020 surveys will be used to inform the details of mitigation, such as timings of works and types and locations of bat boxes to be provided as mitigation.

## 7 FURTHER SURVEY WORK

- 7.1.1 The following surveys will be undertaken prior to and during the development of the scheme:
  - Climbed tree inspection and/or dusk emergence/ dawn re-entry surveys, where trees are to be removed.
  - Throughout the construction of the development monitoring of the bat usage of the site would be conducted, to determine any changes in the usage of the site by the recorded assemblage of bats.

## 8 CONCLUSION

- 8.1.1 The updated surveys undertaken during 2020 found one confirmed bat roost, 30 trees with high bat roosting potential and 207 trees with medium bat roosting potential across the survey areas within the EDF Energy estate.
- 8.1.2 The confirmed bat roost was discovered within a woodland copse to the east of Old Abbey Farm and this tree is proposed to be removed to facilitate the development. Therefore, a licence will need to be obtained to allow the works to occur.
- 8.1.3 The trees categorised as having high and medium bat roosting potential were mostly recorded in Goose Hill, the northern edge of Kenton Hills, Fiscal policy and Abbey Cottage woodlands.

The 2020 survey results are broadly aligned with previous surveys undertaken and therefore the assessment in the Sizewell C Project ES (<u>App-224</u>) remains unchanged.



#### NOT PROTECTIVELY MARKED

## REFERENCES

- 1. EDF 2020. Sizewell C Project Main Development Site: Volume 2, Chapter 14: Appendix 14A8 Bats (App-242, App-243, App-244, App-245 and App-246)
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- L. Hundt. Bat Surveys: Good Practice Guidelines, 2nd edition. 2012. Bat Conservation Trust
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## APPENDIX A: Tree Inspection Raw Data

N.B.: Grid References are provided in the confidential Annex TE1a: Bat Tree Inspection Data (Confidential)

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
Kenton Hills				
K1	Pedunculate Oak	Tear Outs identified at a height of 16 m towards the North, on the Limb of the tree.	Moderate	High
		Tear Outs identified at a height of 14.5 m towards the North-East, on the Limb of the tree.	Moderate	
		Tear Outs identified at a height of 16 m towards the North, on the Limb of the tree.	Moderate	
		Tear Outs identified at a height of 5 m towards the West, on the Stem of the tree.	High	
		Knot Hole identified at a height of 5 m towards the West, on the Stem of the tree.	Low	
K2	Pedunculate Oak	Pruning Cut identified at a height of 9 m towards the North, on the Limb of the tree.	Moderate	Moderate
КЗ	Pedunculate Oak	Transverse Snap identified at a height of 2.5 m towards the South, on the Limb of the tree.	Moderate	Moderate
		Transverse Snap identified at a height of 3 m towards the South-East, on the Limb of the tree.	Moderate	



### **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
		Transverse Snap identified at a height of 12 m towards the North, on the Limb of the tree. On an east facing limb. Possible cavity between living and dead tissue.	Moderate	
		Knot Hole identified at a height of 12 m towards the West, on the Limb of the tree.	Moderate	
		Transverse Snap identified at a height of 10 m towards the West, on the Limb of the tree. Potential for cavity but cannot see from ground.	Low	
K4	Pedunculate Oak	Frost Crack identified at a height of 10 m towards the South, on the Limb of the tree.	Moderate	Moderate
		Impact Shatter identified at a height of 8 m towards the West, on the Limb of the tree. On south facing limb	Low	
K5	Ash	Knot Hole identified at a height of 2 m towards the South, on the Limb of the tree. Cavity extends up to 1 m. Goes down only	High	High
		Tear Outs identified at a height of 4 m towards the South-West, on the Limb of the tree. On south east facing limb	Moderate	
		Wounds identified at a height of 2.5-4 m towards the North, on the Stem of the tree. Has large cavity/hallows in main stem. Access via tear out and decay	High	
		cavities. Cavities between dead heart		



### **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
		wood and living tissue which are excessively inside tree stem.  Lifting Bark identified at a height of 2.5 m towards the North-West, on the Stem of the tree. Two significant plates, in excessive of 20x20cm.	Moderate	
		Butt Rot identified at a height of 0.5 m towards the South, on the Stem of the tree. Butt rot with cavity openings around the whole base of tree. Large cavity opening in south and extends entire height of tree.	Moderate	
K6	Pedunculate Oak	Desiccation Fissure identified at a height of 0.5-5 m towards the, on the Stem of the tree. DF on all aspects of tree stem, several which have potential for roosting bats	Moderate	Moderate
K7	Pedunculate Oak	Transverse Snap identified at a height of 9 m towards the North, on the Limb of the tree. On a limb facing south east.	Moderate	Moderate
K8	Pedunculate Oak	Lifting Bark identified at a height of 0.5 m towards the North-West, on the Stem of the tree. Two areas of flaky bark, one of which approx. A4 size, second approx. A3.	Low	Moderate
		Pruning Cut identified at a height of 1.5 m towards the South-East, on the Stem of the tree. Cavity at base, leading to internal space around collar	Low	



### **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
		Pruning Cut identified at a height of 3 m towards the South, on the Stem of the tree. Gap between dead and living tissue	Moderate	
		Knot Hole identified at a height of 8 m towards the South-West, on the Stem of the tree. Dead limb still present	Moderate	
K9	Pedunculate Oak	Lifting Bark identified at a height of 1.5 m towards the North-West, on the Stem of the tree. Discrete areas of flaky bark all around tree at various heights	Moderate	High
		Desiccation Fissure identified at a height of 7 m towards the South-East, on the Limb of the tree. May be shallow	Moderate	
		Knot Hole identified at a height of 14 m towards the South, on the Stem of the tree.	High	
K10	Pedunculate Oak	Lifting Bark identified at a height of 2 m towards the South-East, on the Stem of the tree. Cannot inspect all area behind loose bark	High	High
		Wounds identified at a height of 3 m towards the South, on the Stem of the tree. Longitudinal hole in centre	High	
		Pruning Cut identified at a height of 3.5 m towards the South-East, on the Stem of the tree.	Moderate	
		Transverse Snap identified at a height of 5 m towards the South-East, on the Stem of the tree.	Moderate	



### **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
		Tear Outs identified at a height of 5 m towards the South, on the Limb of the tree.	Moderate	
K11	Pedunculate Oak	Pruning Cut identified at a height of 1.5 m towards the South, on the Limb of the tree. Dead south facing limb with terminal pruning cuts. Also containing desiccation fissures and cavities at base between living and dead tissue	High	High
		Pruning Cut identified at a height of 1.5 m towards the South-East, on the Limb of the tree. Containing shallow desiccation fissure facing ground	Low	
		Desiccation Fissure identified at a height of 2 m towards the North-East, on the Limb of the tree. Shallow, only approx. 10 cm deep	Low	
		Tear Outs identified at a height of 8 m towards the East, on the Limb of the tree.	Moderate	
K12	Pedunculate Oak	Transverse Snap identified at a height of 5 m towards the North-East, on the Limb of the tree. Gap associated with split in dead limb over 0.5 m long. Possible cavity at base between living and dead tissue.	Moderate	High
		Lifting Bark identified at a height of 8 m towards the East, on the Limb of the tree. Cavities under bark extend all round limb, also similar nearby limb and areas of flaky bark elsewhere on tree.	High	

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Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
		Transverse Snap identified at a height of 10 m towards the South-West, on the Limb of the tree. Split in dead limb approx. 1 m long	Moderate	
K13	Pedunculate Oak	Lifting Bark identified at a height of 7 m towards the South, on the Limb of the tree. From approx. 1 m to 7 m high all-around limb.	High	High
		Desiccation Fissure identified at a height of 3 m towards the North, on the Limb of the tree.	Low	
K14	Pedunculate Oak	Lifting Bark identified at a height of 0.5-5 m towards the South, on the Stem of the tree. On all aspects of tree.	High	High
		Knot Hole identified at a height of 4 m towards the South-West, on the Stem of the tree.	Moderate	
		Knot Hole identified at a height of 10 m towards the South-West, on the Stem of the tree.	Moderate	
		Wounds identified at a height of 11 m towards the South-West, on the Stem of the tree. Dead limb with possible cavity at base. Unable to see from ground.	Moderate	
K15	Pedunculate Oak	Lifting Bark identified at a height of 6-10 m towards the, on the Stem of the tree. Lifting bark on all aspects of main stem.	Moderate	Moderate



### **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
		Pruning Cut identified at a height of 2 m towards the South-West, on the Limb of the tree. Flaking bark all around dead limb.	Moderate	
		Knot Hole identified at a height of 2.5 m towards the South-East, on the Stem of the tree. Has small cavity around edge.	Low	
K16	Pedunculate Oak	Knot Hole identified at a height of 4.5 m towards the South-West, on the Stem of the tree.	High	High
		Tear Outs identified at a height of 12 m towards the North, on the Limb of the tree.	Moderate	
		Transverse Snap identified at a height of 13 m towards the North-West, on the Limb of the tree. Dead limb containing shallow cavities, Foliage around base of feature, not possible to see entirety of feature.	Moderate	
		Knot Hole identified at a height of 6 m towards the North, on the Limb of the tree.	Moderate	
		Transverse Snap identified at a height of 4 m towards the South-West, on the Limb of the tree. Splits and cavities which may extend further.	Moderate	

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### **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
K17	Pedunculate Oak	Pruning Cut identified at a height of 4-4.5 m towards the South-West, on the Limb of the tree. 2x pruning cuts on 2limbs which are very close together. Loose bark on each of the features, possible cavities around base of limbs.	High	High
		Hazard Beam identified at a height of 3.5 m towards the North, on the Limb of the tree.	Moderate	
		Transverse Snap identified at a height of 7 m towards the North-West, on the Limb of the tree. On north east facing limb.	Moderate	
		Transverse Snap identified at a height of 10 m towards the South, on the Limb of the tree.	Moderate	
		Hazard Beam identified at a height of 15 m towards the South, on the Stem of the tree.	Moderate	
K18	Dead tree, possibly poplar	Woodpecker hole identified at a height of 4 m towards the East, on the Stem of the tree. Ply extends downwards	Moderate	Moderate
		Lifting Bark identified at a height of 1-8 m towards the East, on the Stem of the tree. On all aspects but good area on east	Moderate	



### **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
		Wounds identified at a height of 8 m towards the, on the Stem of the tree. Hollow main stem, access at top, may lead to further cavities.	Moderate	
K19	Pine	Butt Rot identified at a height of 2 m towards the North-West, on the Stem of the tree. Hollow dead stem. Feature exposed	Moderate	Moderate
K20	Pedunculate Oak	Impact Shatter identified at a height of 3 m towards the South, on the Stem of the tree. X3 impact shatters all facing south close together	High	High
		Lifting Bark identified at a height of 3 m towards the South, on the Stem of the tree.	High	
		Pruning Cut identified at a height of 2.5 m towards the North, on the Limb of the tree. Facing field	Moderate	
K21	Pedunculate Oak	Impact Shatter identified at a height of 2 m towards the South-West, on the Limb of the tree. Impact shatter with significant rot forming cavities between loose bark.	Moderate	Moderate
		Impact Shatter identified at a height of 12 m towards the North-West, on the Limb of the tree.	Moderate	



# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
K22	Pedunculate Oak	Pruning Cut identified at a height of 2 m - 2.5 m towards the South, on the Limb of the tree. X5 rotten pruning cuts in all directions facing	Moderate	Moderate
		Lifting Bark identified at a height of 4 m towards the South-East, on the Limb of the tree.	Low	suitability
		Transverse Snap identified at a height of 9 m towards the East, on the Limb of the tree.	Moderate	
		Impact Shatter identified at a height of 11 m towards the South-East, on the Limb of the tree.	Moderate	
K23	Pedunculate Oak	Lifting Bark identified at a height of 7.5 m towards the South, on the Limb of the tree.	Low	Moderate
		Cankers identified at a height of 3 m towards the East, on the Limb of the tree.	Moderate	
		Tear Outs identified at a height of 7.5 m towards the East, on the Limb of the tree.	Moderate	
		Impact Shatter identified at a height of 7 m towards the South-East, on the Limb of the tree.	Moderate	



# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
K24	Pedunculate Oak	Pruning Cut identified at a height of 2 m towards the North-West, on the Limb of the tree. 2 next to each other	Moderate	High
		Impact Shatter identified at a height of 2 m towards the West, on the Limb of the tree. Between pruning cuts	Moderate	
		Tear Outs identified at a height of 4 m towards the North-East, on the Stem of the tree. Hole in top of tear out. Cobwebs present	Moderate	
		Impact Shatter identified at a height of 6 m towards the West, on the Limb of the tree.	Moderate	
		Lifting Bark identified at a height of 1 m towards the South, on the Limb of the tree. On slim limb and around lower pruning cuts	Low	
K25	Pedunculate Oak	Lifting Bark identified at a height of 3 m towards the South, on the Limb of the tree. Rotting dead limbs pointing south directions with loose bark.	Moderate	Moderate
K26	Poplar	Hazard Beam identified at a height of 3 m towards the South-West, on the Stem of the tree. White poplar has fallen, and large hazard beam is presenting main stem.	Moderate	Moderate



# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
		Impact Shatter identified at a height of 1.5 m towards the South-East, on the Limb of the tree. Impact shatter on underside of fallen stem.	Low	
K27	Poplar	Knot Hole identified at a height of 0.25 m towards the West, on the Stem of the tree. Large knot hole at base of stem. Cavity runs up the centre of the stem	Moderate	Moderate
		Subsistence Split identified at a height of 0.5 m towards the East, on the Limb of the tree. A large horizontal limb comes out of the south side of stem. Low down. There is a subsistence split on the eastern side.	Moderate	
K28	Pedunculate Oak	Pruning Cut identified at a height of 2 m towards the South, on the Stem of the tree. Pruning cut where he stems fork	Moderate	Moderate
		Tear Outs identified at a height of 8 m towards the West, on the Stem of the tree. Large tear out on stem which leans south. A smaller one is present on the same stem lower down	Moderate	
K29	Pedunculate Oak	Pruning Cut identified at a height of 2 m - 2.5 m towards the South-West, on the Stem of the tree. X3 pruning cuts on south side of tree. Very rotten creating lots of cavities	High	High

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# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
		Impact Shatter identified at a height of 11 m towards the North-West, on the Limb of the tree. Impact shatter on high limb point north west. Longitudinal crack	Moderate	
		Lifting Bark identified at a height of 2 m - 2.5 m towards the South-West, on the Stem of the tree. Lifting bark around pruning cuts mentioned above	Moderate	
K30	Pedunculate Oak	Pruning Cut identified at a height of 3 m towards the North-East, on the Stem of the tree. X2 pruning cuts on stem. Only one suitable.	Moderate	Moderate
		Tear Outs identified at a height of 3 m towards the South-West, on the Stem of the tree. Small tear out on east side pf tree. Quite well hidden.	Moderate	
K31 Poplar	Poplar	Woodpecker hole identified at a height of 4 m – 7 m towards the South-West, on the Stem of the tree. X6 woodpecker holes all around stem. Mainly facing south west	High	High
		Knot Hole identified at a height of 1 m towards the West, on the Stem of the tree. Large knot hole. Cavity rises into stem	Moderate	



# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
		Impact Shatter identified at a height of 8 m towards the South, on the Stem of the tree. Large impact shatter at top of broken stem. Quite exposed	Moderate	
K32	Lime	Tear Outs identified at a height of 2.5 m – 4 m towards the South-West, on the Stem of the tree. X3 tear outs on one of the stems	Moderate	Moderate
K33	Pedunculate Oak	Impact Shatter identified at a height of 10 m towards the South, on the Limb of the tree. X2 impact shatters on south facing limbs.	Low	Low
K34	Pedunculate Oak	Pruning Cut identified at a height of 1.5 m – 7 m towards the South-West, on the Stem of the tree. X5 pruning cuts around stem.	High	High
		Knot Hole identified at a height of 7 m towards the East, on the Limb of the tree. Tear out, possible knot hole	Moderate	
		Knot Hole identified at a height of 2.5 m towards the South, on the Stem of the tree.	Moderate	
		Wounds identified at a height of 6 m – 15 m towards the South, on the Limb of the tree. Several Rotting limbs with cracks and loose bark	High	

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# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
K35	Pedunculate Oak	Pruning Cut identified at a height of 0.5 m -3 m towards the South-West, on the Stem of the tree. X3 pruning cuts	Moderate	Moderate
		Ivy identified at a height of 1 m – 8 m towards the South-East, on the Stem of the tree. Dense ivy very thick on stem. Treecreeper nest present within hole in tree behind ivy, approx. 3 metres high south east aspect.	Moderate	
		Wounds identified at a height of 10 m towards the East, on the Stem of the tree. Lifting bark also	Moderate	
K36	Pedunculate Oak	Pruning Cut identified at a height of 0.5 m -3 m towards the South-West, on the Stem of the tree. X5 pruning cuts	Moderate	Moderate
		Lifting Bark identified at a height of 10 m towards the East, on the Limb of the tree. On decayed limb	Moderate	
K37	Pedunculate Oak	Pruning Cut identified at a height of 1 m - 2.5 m towards the North-East, on the Stem of the tree. X3 pruning cuts on trunk facing different directions	Moderate	High
		Impact Shatter identified at a height of 7 m towards the North, on the Stem of the tree.	High	



# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
		Impact Shatter identified at a height of 7 m towards the South-East, on the Limb of the tree.	High	
		Lifting Bark identified at a height of 7 m towards the South-East, on the Limb of the tree. Lifting bark at bases of the 2 impact shatters	High	
K38	Pedunculate Oak	Pruning Cut identified at a height of 2.5 m – 4 m towards the North, on the Stem of the tree. X2 pruning cuts on trunk lower one faces north higher one faces south	Moderate	Moderate
		Lifting Bark identified at a height of 7 m towards the South, on the Limb of the tree.	Moderate	
		Hazard Beam identified at a height of 8 m towards the South, on the Limb of the tree. Also, loose bark on the limb in same location	Moderate	
K39	Pedunculate Oak	Knot Hole identified at a height of 3.25 m towards the West, on the Stem of the tree.	Moderate	Moderate
		Lifting Bark identified at a height of 0 m - 3.5 m towards the North, on the Stem of the tree. Lifting bark all over stem	Moderate	



# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
K40	Pedunculate Oak	Lifting Bark identified at a height of 1 m towards the South, on the Stem of the tree. Lifting bark all round broke stem	Moderate	Moderate
		Knot Hole identified at a height of 2.5 m towards the South-West, on the Stem of the tree. X2 knot holes on stem	Moderate	suitability
		Impact Shatter identified at a height of 3 m towards the South, on the Stem of the tree. Top of stem is shattered	Moderate	
K41	K41 Pedunculate Oak	Lifting Bark identified at a height of 7 m towards the South, on the Limb of the tree. Lifting bark on rotting stems pointing east	Moderate	High
		Pruning Cut identified at a height of 3 m towards the South-West, on the Stem of the tree. X2 large pruning cuts on south side of tree. Loose bark around rotting wood.	High	
		Impact Shatter identified at a height of 6 m towards the South-West, on the Limb of the tree. Large impact shatter pointing south west. Tear out on end	Moderate	
		Knot Hole identified at a height of 14 m towards the South-West, on the Limb of the tree. Small knot hole on a limb bend.	Moderate	



# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
K42	Pedunculate Oak	Impact Shatter identified at a height of 1.5 m - 5.5 m towards the South-West, on the Limb of the tree. X2 large impact shatter pointing south with loose bark surrounding rotting wood. There is a smaller impact shatter on the opposite side of the tree	Moderate	Moderate
		Pruning Cut identified at a height of 2.5 m towards the East, on the Stem of the tree. Gap at top of pruning cut on east side. A second pruning cut on north side has no bark but potential cavities going down	Moderate	
		Tear Outs identified at a height of 12 m towards the East, on the Limb of the tree. Tear out on limb pointing south with small cavity at the top	Moderate	
K43 Pedunculate Oak	Tear Outs identified at a height of 7-8 m towards the, on the Stem of the tree. 3x tear outs one above the other on same limb on east and west facing. Possible cavities between dead and living tissue on both tear outs, may extend into one larger cavity within limb. Possible pruning cut with cavity between living and dead tissue at base of limb with stem.	High	High	
		Knot Hole identified at a height of 2 m towards the North, on the Stem of the	Moderate	

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# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
		tree. Not possible to see how far cavities extends in.		
K44	Pedunculate Oak	Impact Shatter identified at a height of 1.5 m – 11 m towards the South, on the Limb of the tree. X5 impact shatters, mostly on south side.	Moderate	High
	Pruning Cut identified at a height of 2 m towards the West, on the Stem of the tree. Gaps between loose bark and remaining wood. X2 on north west side of tree	Moderate		
		Knot Hole identified at a height of 4 m towards the West, on the Stem of the tree. Knot hole o west side of tree.	Moderate	
		Lifting Bark identified at a height of 0.5 m – 13 m towards the North-West, on the Stem of the tree. A lot of loose bark all the way up the stem and on some of the limbs	Moderate	
		Tear Outs identified at a height of 7 m towards the North, on the Stem of the tree. Large tear out above stem fork. Gaps at top and possibly the bottom.	Moderate	
	Knot Hole identified at a height of 7 m towards the North, on the Stem of the	Moderate		



# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
		tree. Knot hole on the opposite stem to tear out.		
K45	Pedunculate Oak	Transverse Snap identified at a height of 2 m towards the East, on the Limb of the tree. Cavity quite shallow around dead limb but not possible to inspect fully.	Low	High
		Tear Outs identified at a height of 3.5-5.5 m towards the North-East, on the Limb of the tree. 2x tear outs on same limb, both appear to have cavities which extend further into limb.	Moderate	
		Knot Hole identified at a height of 6 m towards the East, on the Stem of the tree.	High	
		Impact Shatter identified at a height of 14 m towards the West, on the Limb of the tree. Feature in north facing limb.	Moderate	
		Transverse Snap identified at a height of 3.5 m towards the South, on the Limb of the tree. Cavities between living and dead tissue including behind bark.	Moderate	
		Wounds identified at a height of 6 m towards the North-East, on the Stem of the tree. Weld between living tissue between and transverse snap which may lead to a cavity.	Moderate	



# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
		Welds identified at a height of 9 m towards the South-East, on the Limb of the tree. Possible cavity between 2 living limbs.	Moderate	
K46	Pedunculate Oak	Knot Hole identified at a height of 4 m towards the North, on the Stem of the tree. Knot hole with clear hole going in	Moderate	High
		Knot Hole identified at a height of 4 m towards the North, on the Limb of the tree. Knot hole on northern thin limb	Moderate	
		Impact Shatter identified at a height of 9 m towards the North-West, on the Limb of the tree. Impact shatter on limb pointing north west. Crack at bottom	Moderate	
		Impact Shatter identified at a height of 7 m towards the South, on the Limb of the tree. X2 Impact shatter on 2 south pointing limbs.	Moderate	
		Pruning Cut identified at a height of 4 m towards the North-East, on the Stem of the tree. Old pruning cut. Bark has retracted down wood. Potential gaps	Moderate	
		Lifting Bark identified at a height of 10 m towards the East, on the Limb of the tree. Loose bark on limb pointing east.	Moderate	



# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
K47	Unknown but probably Oak	Desiccation Fissure identified at a height of 1.5 m - 2.5 m towards the North, on the Stem of the tree. Severe rot on entire tree. Fairly exposed but crevices within	Moderate	Moderate
		Impact Shatter identified at a height of 3 m towards the South, on the Limb of the tree. X4 impact shatters on southern side of tree limbs.	Moderate	
K48	Pedunculate Oak	Wounds identified at a height of 7 m towards the West, on the Limb of the tree. Cavity within limb	Moderate	Moderate
		Knot Hole identified at a height of 6 m towards the North-West, on the Limb of the tree. Cavity at end of limb.	Moderate	
		Tear Outs identified at a height of 2.5 m towards the East, on the Limb of the tree. Cavity extends but not possible to endoscope from ground.	Moderate	
K49	Pedunculate Oak	Lifting Bark identified at a height of 1.5 m – 9 m towards the South-West, on the Stem of the tree. Widespread patches of loose bark on the stem and limbs. Significant hole facing south east on limb pointing upwards.	Moderate	Moderate
K50	Pedunculate Oak	Pruning Cut identified at a height of 3 m towards the South, on the Stem of the	Moderate	Moderate



# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
		tree. X3 Pruning cuts side by side, two facing south one facing north		
		Impact Shatter identified at a height of 3 m towards the South-West, on the Limb of the tree. Lifting bark around shatter	Moderate	
		Lifting Bark identified at a height of 5 m towards the North, on the Limb of the tree. Lifting bark around dead limb northern aspect	Moderate	
K51	Pedunculate Oak	Pruning Cut identified at a height of 4 m towards the South-West, on the Stem of the tree. X3 pruning cuts on stem. Significant rot on all. Bark has retracted on 2 gaps between bark and wood.	High	High
		Lifting Bark identified at a height of 3.5 m towards the South-East, on the Limb of the tree. Large impact shatter/tear out facing south east with significant lifting bark. Lifting bark also present on several rotten dead limbs.	High	
		Impact Shatter identified at a height of 3.5 m towards the South-East, on the Limb of the tree. Large impact shatter (same as above)	High	
		Hazard Beam identified at a height of 7 m towards the South-West, on the Limb	Moderate	



# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
		of the tree. Hazard beam on thin rotting limb.		
K52	Pedunculate Oak	Impact Shatter identified at a height of 6 m towards the South, on the Limb of the tree. X2 impact shatters. One facing south and one facing east.	Moderate	High
K53	Pedunculate Oak	Pruning Cut identified at a height of 2 m towards the South-West, on the Limb of the tree. Pruning cut facing south east. Lose bark around it.	Moderate	High
		Tear Outs identified at a height of 3 m towards the West, on the Stem of the tree. Tear out facing west on inside of stem fork. Large longitudinal crack running through it.	Moderate	
		Impact Shatter identified at a height of 3 m - 12 m towards the South-East, on the Limb of the tree. Approximately 7 impact shatters around tree mainly on the southern side.	Moderate	
		Lifting Bark identified at a height of 3 m – 12 m towards the South-East, on the Limb of the tree. Lifting bark is mainly present on rotting wood where there are impact shatters.	Moderate	
K54	Pedunculate Oak	Impact Shatter identified at a height of 5 m towards the South, on the Limb of the	Moderate	High

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# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
		tree. X2 impact shatters on rotting wood pointing south. 1 impact shatter pointing north.		
		Lifting Bark identified at a height of 5 m towards the South, on the Limb of the tree. Loose bark around impact shatters mentioned above	Moderate	
K55	Pedunculate Oak	Pruning Cut identified at a height of 1.5 m – 2 m towards the South, on the Stem of the tree. X2 pruning cuts which has significant rot and loose bark remaining	Moderate	High
		Tear Outs identified at a height of 8 m towards the North, on the Stem of the tree. Tear out facing north with gap at top.	Moderate	
		Lifting Bark identified at a height of 4 m – 9 m towards the West, on the Stem of the tree. Significant lifting bark all up the stem on the west side.	Moderate	
		Impact Shatter identified at a height of 2 m – 12 m towards the South, on the Limb of the tree. Impact shatters all around stem with lifting bark and cracks present.	High	
K56	Pedunculate Oak	Knot Hole identified at a height of 2 m towards the South-West, on the Stem of the tree.	Moderate	High



# NOT PROTECTIVELY MARKED

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
		Impact Shatter identified at a height of 1.5 m towards the South, on the Limb of the tree.	Moderate	
		Lifting Bark identified at a height of 5 m towards the North, on the Limb of the tree.	Moderate	
		Impact Shatter identified at a height of 6 m towards the East, on the Limb of the tree.	Moderate	
		Tear Outs identified at a height of 10 m towards the North-East, on the Limb of the tree.	Moderate	
K57	Pedunculate Oak	Knot Hole identified at a height of 3 m towards the East, on the Stem of the tree.	Moderate	High
		Knot Hole identified at a height of 4 m towards the North-East, on the Stem of the tree.	Moderate	
		Tear Outs identified at a height of 16 m towards the North, on the Stem of the tree.	Moderate	
	Impact Shatter identified at a height of 5 m towards the South, on the Limb of the tree. Loose bark over impact shatter	Moderate		



# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
		Lifting Bark identified at a height of 6.5 m towards the East, on the Limb of the tree.	Moderate	
K58	Pedunculate Oak	Knot Hole identified at a height of 10 m towards the West, on the Stem of the tree.	Moderate	Moderate
		Knot Hole identified at a height of 4 m towards the North-East, on the Stem of the tree.	Moderate	
		Impact Shatter identified at a height of 12 m towards the North, on the Limb of the tree.	Moderate	
K59	Pedunculate Oak	Pruning Cut identified at a height of 3 m towards the South, on the Stem of the tree.	Moderate	Moderate
		Tear Outs identified at a height of 3 m towards the South, on the Stem of the tree.	Moderate	
K60	Pedunculate Oak	Lifting Bark identified at a height of 2 m – 15 m towards the South, on the Stem of the tree. Lifting bark throughout tree. Also, on shattered, rotting limbs.	Moderate	Moderate
		Pruning Cut identified at a height of 2 m towards the West, on the Stem of the tree. Pruning cut with crack. Also, one on opposite side of tree at 3 m	Moderate	



# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
		Tear Outs identified at a height of 2.5 m towards the East, on the Stem of the tree.	Moderate	
K61	Pedunculate Oak	Pruning Cut identified at a height of 2 m – 4 m towards the South, on the Stem of the tree. X4 pruning cuts	Moderate	High
		Knot Hole identified at a height of 2 m towards the North-West, on the Stem of the tree.	Moderate	High
		Transverse Snap identified at a height of 5.5 m towards the South, on the Limb of the tree.	Moderate	
		Hazard Beam identified at a height of 5 m towards the South, on the Limb of the tree.	Moderate	
		Impact Shatter identified at a height of 3.5 m – 4 m towards the North-East, on the Stem of the tree. X2 impact shatter, one north east one south west	Moderate	
K62	Pedunculate Oak	Pruning Cut identified at a height of 2.5 m towards the South-East, on the Stem of the tree. X2 pruning cuts. Gaps between bark	Moderate	High
		Lifting Bark identified at a height of 2.5 m – 10 m towards the East, on the Stem of	High	



# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
		the tree. Loose bark is present on the east side of two main stems.		
		Impact Shatter identified at a height of 8 m towards the East, on the Limb of the tree. Fairly exposed. Pointing upwards	Moderate	
		Hazard Beam identified at a height of 5 m towards the South, on the Limb of the tree. Hazard beam on limb pointing west.	Moderate	
		Knot Hole identified at a height of 10 m towards the West, on the Limb of the tree. Small knot hole visible from west side of tree	Moderate	
		Impact Shatter identified at a height of 3 m – 17 m towards the South, on the Limb of the tree. Several impact shatters (>10) all around tree at various heights.	Moderate	
K63	Blackthorn	Lifting Bark identified at a height of 0.5 m - 7 m towards the South, on the Stem of the tree. Lifting bark all up dead stem	Low	Low
K64	Elm	Lifting Bark identified at a height of 0.5 m - 11 m towards the North, on the Stem of the tree. Lifting bark all up dead stem	Low	Low
K65	Elm	Lifting Bark identified at a height of 0.5 m towards the North, on the Stem of the tree. Lifting bark around large crack in stem	Moderate	Moderate

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# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
K66	Unknown	Lifting Bark identified at a height of 0 -9 m towards the South, on the Stem of the tree. Lifting bark around large crack in stem lifting bark all the way up stem	Low	Low
Goose Hill				
G1	Pine	Compression Fork identified at a height of 13 m towards the South-East, on the Stem of the tree.	Moderate	Moderate
G2	Pine	Compression Fork identified at a height of 12 m towards the North, on the Stem of the tree.	Moderate	Moderate
G3	Pine	Impact Shatter identified at a height of 12 m towards the North-West, on the Limb of the tree.	Moderate	Moderate
		Hazard Beam identified at a height of 12 m towards the North, on the Limb of the tree.	Moderate	
		Welds identified at a height of 15 m towards the East, on the Limb of the tree.	Moderate	
		Transverse Snap identified at a height of 11 m towards the South-West, on the Limb of the tree.	Moderate	
		Impact Shatter identified at a height of 16 m towards the East, on the Stem of the tree.	Moderate	

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# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
		Transverse Snap identified at a height of 17 m towards the South, on the Limb of the tree.	Moderate	
G4	Willow	Wounds identified at a height of 1.5 m towards the North-West, on the Stem of the tree.	Moderate	Moderate
		Transverse Snap identified at a height of 6 m towards the South-East, on the Stem of the tree.	Moderate	
G5	Willow	Transverse Snap identified at a height of 3 m towards the South-East, on the Stem of the tree.	Low	Low
G6	Willow	Lifting Bark identified at a height of 2 m towards the South-East, on the Limb of the tree.	Low	Low
G7	Willow	Impact Shatter identified at a height of 5 m towards the North-East, on the Limb of the tree.	Low	Low
G8	Pine	Compression Fork identified at a height of 7 m towards the North, on the Stem of the tree.	Moderate	Moderate
G9	Oak	Impact Shatter identified at a height of 10 m towards the North, on the Limb of the tree.	Moderate	Moderate



# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
G10	Pine	Compression Fork identified at a height of 8 m towards the South-East, on the Stem of the tree.	Moderate	Moderate
G11	Pine	Compression Fork identified at a height of 6 m towards the East, on the Stem of the tree.	Moderate	Moderate
		Compression Fork identified at a height of 15 m towards the East, on the Stem of the tree.	Moderate	
G12	Pine	Tear Outs identified at a height of 6 m towards the East, on the Stem of the tree.	Moderate	Moderate
G13	Pine	Compression Fork identified at a height of 7 m towards the North, on the Stem of the tree.	Moderate	Moderate
G14	Pine	Compression Fork identified at a height of 13 m towards the West, on the Stem of the tree.	Low	Low
G15	Pine	Compression Fork identified at a height of 7 m towards the West, on the Stem of the tree.	Moderate	Moderate
G16	Pine	Compression Fork identified at a height of 18 m towards the South, on the Stem of the tree.	Moderate	Moderate



# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
G17	Pine	Impact Shatter identified at a height of 16 m towards the West, on the Limb of the tree.	Moderate	Moderate
G18	Pine	Compression Fork identified at a height of 14 m towards the South-West, on the Stem of the tree.	Moderate	Moderate
G19	Pine	Compression Fork identified at a height of 15 m towards the North-West, on the Stem of the tree.	Moderate	Moderate
G20	Pine	Compression Fork identified at a height of 13 m towards the East, on the Stem of the tree.	Moderate	Moderate
G21	Pine	Compression Fork identified at a height of 4 m towards the North-East, on the Stem of the tree.	Moderate	Moderate
G22	Pine	Impact Shatter identified at a height of 10 m towards the East, on the Limb of the tree.	Moderate	Moderate
		Impact Shatter identified at a height of 9 m towards the South-East, on the Limb of the tree.	Moderate	
		Transverse Snap identified at a height of 17 m towards the North-East, on the Limb of the tree.	Low	



# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
		Transverse Snap identified at a height of 18 m towards the South-East, on the Limb of the tree.	Low	
		Impact Shatter identified at a height of 11 m towards the South-East, on the Limb of the tree.	Low	
		Tear Outs identified at a height of 10 m towards the West, on the Stem of the tree.	Low	
G23	Pine	Impact Shatter identified at a height of 13 m towards the North, on the Limb of the tree.	Low	Low
G24	Pine	Compression Fork identified at a height of 10 m towards the West, on the Stem of the tree.	Moderate	Moderate
G25	Pine	Compression Fork identified at a height of 12 m towards the South, on the Stem of the tree.	Moderate	Moderate
G26	Pine	Compression Fork identified at a height of 12 m towards the North-West, on the Stem of the tree.	Moderate	Moderate
G27	Pine	Compression Fork identified at a height of 16 m towards the South, on the Stem of the tree.	Moderate	Moderate



# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
G28	Pine	Compression Fork identified at a height of 16 m towards the South, on the Stem of the tree.	Moderate	Moderate
G29	Oak	Impact Shatter identified at a height of 5 m towards the South-East, on the Limb of the tree.	Moderate	High
		Impact Shatter identified at a height of 1.5 m towards the South-West, on the Limb of the tree.	Moderate	
		Subsistence Split identified at a height of 1 m towards the South-West, on the Limb of the tree.	Moderate	
		Subsistence Split identified at a height of 6 m towards the North-West, on the Limb of the tree.		
		Transverse Snap identified at a height of 5 m towards the South-West, on the Limb of the tree.	Moderate	
		Impact Shatter identified at a height of 7 m towards the South-East, on the Limb of the tree.	Moderate	
		Tear Outs identified at a height of 10 m towards the South, on the Limb of the tree.	Moderate	



# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
		Tear Outs identified at a height of 8 m towards the South, on the Stem of the tree.	Moderate	
G30	Pine	Welds identified at a height of 8 m towards the West, on the Stem of the tree.	Moderate	Moderate
G31	Silver birch	Knot Hole identified at a height of 2.5 m towards the West, on the Stem of the tree.	Moderate	Moderate
		Tear Outs identified at a height of 8 m towards the East, on the Stem of the tree.	Moderate	
G32	Unknown	Impact Shatter identified at a height of 6 m towards the South, on the Stem of the tree.	Moderate	Moderate
G33	Unknown	Impact Shatter identified at a height of 4 m towards the South, on the Stem of the tree.	Moderate	Moderate
G34	Pine	Compression Fork identified at a height of 10 m towards the North, on the Stem of the tree.	Moderate	Moderate
G35	Pine	Welds identified at a height of 7 m towards the South, on the Stem of the tree.	Moderate	Moderate



# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
G36	Alder	Lifting Bark identified at a height of 2 m towards the South-East, on the Limb of the tree.	Moderate	Moderate
G37	Alder	Impact Shatter identified at a height of 2 m towards the South-East, on the Limb of the tree.	Moderate	Moderate
G38	Alder	Impact Shatter identified at a height of 2 m towards the North-West, on the Limb of the tree.	Moderate	Moderate
G39	Poplar	Knot Hole identified at a height of 10 m towards the South-East, on the Stem of the tree.	Moderate	Moderate
G40	Alder	Lifting Bark identified at a height of 2.5 m towards the North, on the Limb of the tree.	Moderate	Moderate
		Knot Hole identified at a height of 2.4 m towards the North, on the Limb of the tree.	Moderate	
		Impact Shatter identified at a height of 2.2 m towards the North, on the Stem of the tree.	Moderate	
G41	Alder	Transverse Snap identified at a height of 1 m towards the South, on the Stem of the tree.	Moderate	Moderate



# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
G42	Alder	Knot Hole identified at a height of 10 m towards the North-East, on the Stem of the tree.	Moderate	Moderate
G43	Alder	Tear Outs identified at a height of 6 m towards the North, on the Stem of the tree.	Moderate	Moderate
G44	Alder	Knot Hole identified at a height of 4 m towards the East, on the Stem of the tree.	Moderate	Moderate
G45	Alder	Knot Hole identified at a height of 6 m towards the South-West, on the Stem of the tree.	Moderate	Moderate
		Lifting Bark identified at a height of 5 m towards the South, on the Stem of the tree.	Moderate	
G46	Alder	Transverse Snap identified at a height of 6 m towards the North-West, on the Stem of the tree.	Moderate	Moderate
G47	Alder	Impact Shatter identified at a height of 2 m towards the North, on the Limb of the tree.	Moderate	Moderate
G48	Pine	Lighting Strike identified at a height of 4 m towards the North-East, on the Stem of the tree.	Moderate	Moderate



# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
G49	Pine	Desiccation Fissure identified at a height of 5 m towards the North-East, on the Limb of the tree.	Moderate	Moderate
		Tear Outs identified at a height of 5 m towards the North, on the Stem of the tree.	Low	
G50	Pine	Lifting Bark identified at a height of 4 m towards the West, on the Stem of the tree.	Moderate	Moderate
		Hazard Beam identified at a height of 19 m towards the North, on the Limb of the tree.	Moderate	
G51	Pine	Compression Fork identified at a height of 18 m towards the West, on the Stem of the tree.	Moderate	Moderate
G52	Pine	Lighting Strike identified at a height of 18 m towards the North-West, on the Stem of the tree.	High	High
G53	Pine	Desiccation Fissure identified at a height of 4 m towards the South-West, on the Stem of the tree.	High	High
G54	Pine	Impact Shatter identified at a height of 5 m towards the South, on the Limb of the tree.	Moderate	High



# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
		Impact Shatter identified at a height of 6 m towards the South, on the Limb of the tree.	Moderate	
		Hazard Beam identified at a height of 8.5 m towards the South, on the Limb of the tree.	High	
		Transverse Snap identified at a height of 9 m towards the South-West, on the Limb of the tree.	Moderate	
		Impact Shatter identified at a height of 7 m towards the South-East, on the Limb of the tree.	Moderate	
		Transverse Snap identified at a height of 10 m towards the South-East, on the Limb of the tree.	Moderate	
G55	Pine	Impact Shatter identified at a height of 1.5 m towards the South, on the Limb of the tree.	Low	Low
G56	Pine	Woodpecker hole identified at a height of 5 m towards the North-West, on the Stem of the tree.	Moderate	Moderate
G57	Pine	Welds identified at a height of 5 m towards the South-West, on the Stem of the tree.	Moderate	Moderate



# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
G58	Pine	Impact Shatter identified at a height of 12 m towards the North-East, on the Limb of the tree.	Moderate	Moderate
		Transverse Snap identified at a height of 12 m towards the North-East, on the Limb of the tree.	Moderate	
		Impact Shatter identified at a height of 13 m towards the South-East, on the Limb of the tree.	Moderate	
		Lifting Bark identified at a height of 16 m towards the East, on the Limb of the tree.	Moderate	
G59	Pine	Impact Shatter identified at a height of 8 m towards the North, on the Limb of the tree.	Low	High
		Impact Shatter identified at a height of 11 m towards the North-West, on the Limb of the tree.	High	
		Subsistence Split identified at a height of 15 m towards the West, on the Limb of the tree.	High	
		Impact Shatter identified at a height of 17 m towards the South-West, on the Stem of the tree.	High	



# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
G60	Pine	Lifting Bark identified at a height of 8 m towards the North, on the Stem of the tree.	Moderate	High
		Woodpecker hole identified at a height of 12 m towards the West, on the Stem of the tree.	Moderate	
		Woodpecker hole identified at a height of 12 m towards the East, on the Stem of the tree.	Moderate	
		Lifting Bark identified at a height of 5 m towards the South-West, on the Limb of the tree.	Moderate	
		Lifting Bark identified at a height of 11 m towards the South-West, on the Limb of the tree.	Moderate	
		Impact Shatter identified at a height of 15 m towards the South-West, on the Limb of the tree.	Moderate	
G61	Sycamore	Tear Outs identified at a height of 2.5 m towards the South, on the Limb of the tree.	Low	Low
G62	Pine	Hazard Beam identified at a height of 1.5 m towards the West, on the Limb of the tree.	Moderate	Moderate



# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
G63	Pine	Woodpecker hole identified at a height of 6 m towards the East, on the Stem of the tree.	High	High
G64	Elm	Lifting Bark identified at a height of 2.5 m towards the North-East, on the Stem of the tree.	Moderate	Moderate
G65	Unknown	Lifting Bark identified at a height of 2.5 m towards the North-East, on the Stem of the tree.	Low	Low
G66	Pine	Compression Fork identified at a height of 11 m towards the South-East, on the Stem of the tree.	Moderate	Moderate
G67	Pine	Hazard Beam identified at a height of 15 m towards the North, on the Limb of the tree.	Moderate	Moderate
		Transverse Snap identified at a height of 16 m towards the North, on the Limb of the tree.	Low	
G68	Pine	Woodpecker hole identified at a height of 5.5 m towards the West, on the Stem of the tree.	Moderate	Moderate
G69	Beech	Butt Rot identified at a height of 0-12 m towards the North, on the Stem of the tree.	High	High



# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
G70	Pine	Hazard Beam identified at a height of 17 m towards the North-East, on the Limb of the tree.	Moderate	Moderate
G71	Pine	Lifting Bark identified at a height of 0-10 m towards the North-East, on the Stem of the tree.	Moderate	Moderate
G72	Pine	Hazard Beam identified at a height of 7 m towards the East, on the Limb of the tree.	High	High
		Transverse Snap identified at a height of 13 m towards the South-East, on the Limb of the tree.	Moderate	
		Impact Shatter identified at a height of 22 m towards the South-East, on the Limb of the tree.	Moderate	
G73	Pine	Impact Shatter identified at a height of 6 m towards the South-East, on the Limb of the tree.	Moderate	High
		Impact Shatter identified at a height of 10 m towards the South-East, on the Limb of the tree.	Moderate	
		Impact Shatter identified at a height of 14 m towards the South-East, on the Limb of the tree.	Moderate	



# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
G74	Pine	Impact Shatter identified at a height of 10 m towards the North, on the Stem of the tree.	High	High
		Subsistence Split identified at a height of 2 m towards the South-West, on the Limb of the tree.	Moderate	
		Impact Shatter identified at a height of 14 m towards the South-West, on the Limb of the tree.	Moderate	
		Impact Shatter identified at a height of 15 m towards the South-West, on the Limb of the tree.	Moderate	
		Impact Shatter identified at a height of 16 m towards the South, on the Limb of the tree.	Moderate	
		Impact Shatter identified at a height of 17 m towards the South-West, on the Limb of the tree.	Moderate	
G75	Pine	Impact Shatter identified at a height of 2.5 m towards the South, on the Limb of the tree.	Moderate	High
		Impact Shatter identified at a height of 2.5 m towards the South-East, on the Limb of the tree.	Moderate	



# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
		Transverse Snap identified at a height of 11 m towards the East, on the Limb of the tree.	Moderate	
G76	Pine	Impact Shatter identified at a height of 3 m towards the South, on the Limb of the tree.	Moderate	High
		Lifting Bark identified at a height of 5 m towards the South-West, on the Limb of the tree.	Moderate	
G77	Pine	Impact Shatter identified at a height of 12 m towards the South, on the Limb of the tree.	Moderate	Moderate
G78	Pine	Impact Shatter identified at a height of 10 m towards the South-West, on the Limb of the tree.	Moderate	Moderate
G79	Pine	Desiccation Fissure identified at a height of 5 m towards the South, on the Stem of the tree.	High	High
G80	Pine	Lifting Bark identified at a height of 13 m towards the South-West, on the Stem of the tree.	Moderate	Moderate
		Woodpecker hole identified at a height of 13 m towards the West, on the Stem of the tree.	Moderate	



# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
G81	Pine	Tear Outs identified at a height of 14 m towards the South, on the Stem of the tree.	Moderate	Moderate
G82	Pine	Tear Outs identified at a height of 10 m towards the East, on the Stem of the tree.	Low	Low
G83	Pine	Transverse Snap identified at a height of 6 m towards the South, on the Stem of the tree.	Moderate	Moderate
G84	Pine	Woodpecker hole identified at a height of 11-14 m towards the North-West, on the Stem of the tree.	Moderate	Moderate
		Impact Shatter identified at a height of 10 m towards the South-West, on the Stem of the tree.	Low	
G85	Pine	Impact Shatter identified at a height of 4- 10 m towards the North-West, on the Limb of the tree.	Low	Low
G86	Pine	Impact Shatter identified at a height of 15-17 m towards the South-West, on the Limb of the tree.	Moderate	Moderate
G87	Pine	Woodpecker hole identified at a height of 9.5 m - 10mm towards the North-West, on the Stem of the tree.	Moderate	Moderate



# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
		Tear Outs identified at a height of 3m – 7 m towards the South-West, on the Stem of the tree.	Moderate	
G88	Pedunculate Oak	Impact Shatter identified at a height of 9 m – 15 m towards the North-West, on the Limb of the tree.	Moderate	Moderate
		Hazard Beam identified at a height of 3 m towards the East, on the Limb of the tree.	Moderate	
		Transverse Snap identified at a height of 8 m towards the East, on the Limb of the tree.	Moderate	
G89	Pine	Impact Shatter identified at a height of 12 m towards the North-West, on the Limb of the tree.	Moderate	Moderate
G90	Pine	Compression Fork identified at a height of 14 m towards the West, on the Stem of the tree.	Low	Low
G91	Pine	Compression Fork identified at a height of 10 m towards the West, on the Stem of the tree.	Low	Low
G92	Pine	Woodpecker hole identified at a height of 4 m – 5 m towards the West, on the Stem of the tree.	Moderate	Moderate



# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
G93	Pine	Lifting Bark identified at a height of 11 m towards the South, on the Stem of the tree.	Moderate	Moderate
G94	Pine	Woodpecker hole identified at a height of 11.5 m towards the South, on the Stem of the tree.	Moderate	Moderate
		Tear Outs identified at a height of 10 m towards the East, on the Stem of the tree.	Moderate	
G95	Pine	Tear Outs identified at a height of 11 m towards the North-West, on the Stem of the tree.	Moderate	Moderate
G96	Pine	Impact Shatter identified at a height of 6 m – 18 m towards the South-West, on the Limb of the tree.	Moderate	Moderate
G97	Pine	Woodpecker hole identified at a height of 17.5 m towards the East, on the Stem of the tree.	Moderate	Moderate
G98	Pine	Butt Rot identified at a height of 0 m towards the North, on the Stem of the tree.	Low	Moderate
		Lifting Bark identified at a height of 1.5 m towards the North, on the Stem of the tree.	Moderate	



# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
G99	Pine	Impact Shatter identified at a height of 14 m towards the East, on the Stem of the tree.	Low	Low
G100	Pine	Compression Fork identified at a height of 6.5 m towards the East, on the Stem of the tree.	Moderate	Moderate
		Wounds identified at a height of 14 m towards the North, on the Limb of the tree.	Moderate	
G101	Pine	Impact Shatter identified at a height of 16 m towards the North-East, on the Limb of the tree.	Moderate	Moderate
G102	Alder	Tear Outs identified at a height of 4 m towards the South-West, on the Stem of the tree.	Moderate	Moderate
G103	Grey willow	Hazard Beam identified at a height of 2 m towards the South-West, on the Stem of the tree.	Moderate	Moderate
G104	Dead	Wounds identified at a height of 1.5 m towards the North-East, on the Stem of the tree.	Moderate	Moderate
G105	Pine	Wound identified at a height of 6 m towards the South, on the Limb of the tree.	Moderate	Moderate



# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
G106	Elm	Lifting Bark identified at a height of 0.5-3.5 m towards the, on the Stem of the tree.	Low	Moderate
		Wound identified at a height of 1-3.5 m towards the, on the Stem of the tree.	Moderate	
G107	Pine	Wound identified at a height of 2 m towards the, on the Stem of the tree.	Moderate	Moderate
G108	Dead Tree	Hollow with potential cavity leading up. Starts at base on North side.	Moderate	Moderate
G109	Pine	12 m up broken limb	Low	Low
		6 m up broken limb exposing potential cavity	Low	
G110	Pine	Stem broken at top	Low	Low
G111	Pine		Moderate	Moderate
G112	Pine		Moderate	Moderate
G113	Pine		Low	Low
G114	Pine		Moderate	Moderate
G116	Pine		Low	Low
G117	Pine	Compression Fork identified at a height of 7 m towards the north-West, on the Stem of the tree.	Moderate	Moderate



# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
G118	Pine	Wound identified at a height of 6 m towards the North-west, on the Stem of the tree.	Low	Low
G119	Pine	Compression Fork identified at a height of 7 m towards the East, on the Stem of the tree.	Moderate	Moderate
G120	Pine	Compression Fork identified at a height of 7 m towards the North-East, on the Stem of the tree.	Moderate	Moderate
G121	Pine	Compression Fork identified at a height of 8 m towards the East, on the Stem of the tree.	Moderate	Moderate
G122	Pine	Compression Fork identified at a height of 6 m towards the East, on the Stem of the tree.	Moderate	Moderate
G123	Pine	Compression Fork identified at a height of 3 m towards the North east, on the Stem of the tree.	Moderate	Moderate
G124	Pine	Compression Fork identified at a height of 2 m towards the North, on the Stem of the tree.	Moderate	Moderate
		Compression Fork identified at a height of 4 m towards the North east, on the Stem of the tree.	Moderate	



# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
G125	Pine	Compression Fork identified at a height of 5 m towards the North-west, on the Stem of the tree.	Moderate	Moderate
G126	Pine	Compression Fork identified at a height of 10 m towards the North-west, on the Stem of the tree.	Moderate	Moderate
G127	Pine	Compression Fork identified at a height of 9 m towards the South, on the Stem of the tree.	Moderate	Moderate
G128	Pine	Compression Fork identified at a height of 12 m towards the East, on the Stem of the tree.	Moderate	Moderate
G129	Pine	Compression Fork identified at a height of 12 m towards the East, on the Stem of the tree.	Moderate	Moderate
G130	Pine	Compression Fork identified at a height of 10 m towards the South east, on the Stem of the tree.	Moderate	Moderate
G131	Pine	Compression Fork identified at a height of 7 m towards the South, on the Stem of the tree.	Moderate	Moderate
G132	Pine	compression fork identified at a height of 13 m towards the south east, on the stem of the tree.	Moderate	Moderate



# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
G133	Pine	Compression fork identified at a height of 10 m towards the South, on the Stem of the tree.	Moderate	Moderate
Fiscal Policy				
F4	Pine	Transverse Snap identified at a height of 14 m towards the East, on the Limb of the tree.	Moderate	Moderate
		Transverse Snap identified at a height of 14 m towards the East, on the Limb of the tree.	Moderate	
F5	Pine	Subsistence Split identified at a height of 15 m towards the East, on the Stem of the tree.	High	High
F6	Holm Oak	Lifting Bark identified at a height of 1 m towards the South-East, on the Stem of the tree.	Low	Low
F7	Oak	Lifting Bark identified at a height of 2 m towards the East, on the Stem of the tree.	Low	Low
F9	Pine	Transverse Snap identified at a height of 6 m towards the South, on the Stem of the tree.	Low	Low
F10	Scots pine	Desiccation Fissure identified at a height of 3.5 m towards the South, on the Stem of the tree.	Low	Low

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# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
F11	Black pine	Lifting Bark identified at a height of 1.2 m towards the South, on the Stem of the tree.	Moderate	High
		Desiccation Fissure identified at a height of 5 m towards the South, on the Limb of the tree.	High	
		Transverse Snap identified at a height of 10 m towards the North-West, on the Limb of the tree.	Moderate	High  Moderate  Moderate
		Transverse Snap identified at a height of 18 m towards the North, on the Stem of the tree.	Moderate	
F12	Black pine	Transverse Snap identified at a height of 3 m towards the West, on the Limb of the tree.	Moderate	Moderate
		Transverse Snap identified at a height of 15 m towards the South-West, on the Limb of the tree.	Moderate	
F13	Black pine	Transverse Snap identified at a height of 6 m towards the West, on the Limb of the tree.	Moderate	Moderate
F14	Black pine	Desiccation Fissure identified at a height of 4 m towards the South-West, on the Limb of the tree.	Moderate	Moderate



# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
		Tear Outs identified at a height of 9 m towards the North-West, on the Limb of the tree.	Moderate	
F15	Pedunculate Oak	Knot Hole identified at a height of 7 m towards the South, on the Stem of the tree.	Moderate	Moderate
		Knot Hole identified at a height of 12 m towards the South, on the Stem of the tree.	Moderate	
F16	Black pine	Tear Outs identified at a height of 10 m towards the South-West, on the Limb of the tree.	Moderate	Moderate
		Impact Shatter identified at a height of 16 m towards the East, on the Limb of the tree.	Moderate	
		Tear Outs identified at a height of 16 m towards the South-East, on the Limb of the tree.	Moderate	
F17	Black pine	Desiccation Fissure identified at a height of 7 m towards the North, on the Limb of the tree.	Moderate	Moderate
		Impact Shatter identified at a height of 15 m towards the West, on the Limb of the tree.	Moderate	



# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
		Impact Shatter identified at a height of 15 m towards the West, on the Limb of the tree.	Moderate	
F18	Black pine	Impact Shatter identified at a height of 10 m towards the West, on the Limb of the tree.	Moderate	Moderate
		Impact Shatter identified at a height of 13 m towards the North, on the Limb of the tree.	Moderate	
		Impact Shatter identified at a height of 18 m towards the North-West, on the Limb of the tree.	Moderate	
		Transverse Snap identified at a height of 18 m towards the North-West, on the Stem of the tree.	Moderate	
	Impact Shatter identified at a height of 15 m towards the North, on the Limb of the tree.	Moderate		
	Impact Shatter identified at a height of 21 m towards the South, on the Limb of the tree.	Moderate		
	Impact Shatter identified at a height of 20 m towards the South, on the Stem of the tree.	Moderate		



# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
F19	Pedunculate Oak	Transverse Snap identified at a height of 5 m towards the East, on the Stem of the tree.	Moderate	Moderate
F20	Pedunculate Oak	Impact Shatter identified at a height of 3 m towards the East, on the Limb of the tree.	Moderate	Moderate
F21	Pedunculate Oak	Impact Shatter identified at a height of 3 m towards the East, on the Limb of the tree.	Moderate	Moderate
F22	Pedunculate Oak	Impact Shatter identified at a height of 4 m towards the East, on the Limb of the tree.	Low	Low
F23	Pedunculate Oak	Tear Outs identified at a height of 7 m towards the North-East, on the Limb of the tree.	Moderate	Moderate
F24	Dead tree stump	Desiccation Fissure identified at a height of 4.5 m towards the South-West, on the Stem of the tree.	Moderate	Moderate
F25	Black pine	Lifting Bark identified at a height of 1-6 m towards the South-East, on the Stem of the tree.	Moderate	Moderate
F26	Hornbeam	Compression Fork identified at a height of 8 m towards the North, on the Stem of the tree.	Moderate	Moderate



# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
F27	Pedunculate Oak	Knot Hole identified at a height of 14-15 m towards the South-East, on the Stem of the tree.	Low	Low
F28	Pedunculate Oak	Ivy identified at a height of 1.5 m towards the West, on the Stem of the tree.	Low	Low
F29	Pedunculate Oak	Ivy identified at a height of 1.5 m towards the North, on the Stem of the tree.	Low	Low
F30	Pedunculate Oak	Ivy identified at a height of 1.5 m towards the North, on the Stem of the tree.	Low	Low
F31	Pedunculate Oak	Ivy identified at a height of 0m – 18 m towards the South, on the Stem of the tree.	Low	Low
F32	Pedunculate Oak	Ivy identified at a height of 2 m towards the, on the Stem of the tree.	Low	Low
F33	Pedunculate Oak	Ivy identified at a height of 2 m towards the, on the Stem of the tree.	Low	Low
F34	Pedunculate Oak	Ivy identified at a height of 1.5 m towards the, on the Stem of the tree.	Low	Low
F35	Pedunculate Oak	Ivy identified at a height of 0m – 18 m towards the South, on the Stem of the tree.	Low	Low
F36	Elm	Tear Outs identified at a height of 10 m towards the South-West, on the Stem of the tree.	Moderate	Moderate



# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
F37	Unknown	Woodpecker hole identified at a height of 3.5 – 4 m towards the North-West, on the Stem of the tree.	Low	Low
F38	Sycamore	Ivy identified at a height of 1.5 m towards the, on the Stem of the tree.	Low	Low
F39	Sycamore	Ivy identified at a height of 1.5 m towards the, on the Stem of the tree.	Low	Low
F40	Sycamore	Ivy identified at a height of 1.5 m towards the North, on the Stem of the tree.	Low	Low
F41	Horse Chestnut	Impact Shatter identified at a height of 3 m - 7mm towards the South-East, on the Limb of the tree.	Moderate	Moderate
		Hazard Beam identified at a height of 8 m towards the East, on the Limb of the tree.	Moderate	
		Tear Outs identified at a height of 2 m towards the East, on the Stem of the tree.	Moderate	
	Knot Hole identified at a height of 2 m towards the South-East, on the Limb of the tree.	Moderate		
	Tear Outs identified at a height of 21 m towards the North, on the Stem of the tree.	Moderate		



# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
		Lifting Bark identified at a height of 4 m towards the West, on the Limb of the tree.	Low	
		Transverse Snap identified at a height of 4 m towards the South-East, on the Limb of the tree.	Low	
		Knot Hole identified at a height of 3 m towards the South, on the Stem of the tree.	Low	
F42	Sycamore	Woodpecker hole identified at a height of 7 m towards the South-East, on the Stem of the tree.	High	High
		Wounds identified at a height of 8 m towards the East, on the Stem of the tree.	High	
F43	Sycamore	Ivy identified at a height of 0m – 18 m towards the South-East, on the Stem of the tree.	Low	Low
F44	Horse Chestnut	Tear Outs identified at a height of 4 m towards the South-West, on the Limb of the tree.	Moderate	Moderate
		Ivy identified at a height of 0.5- m towards the South-East, on the Stem of the tree.	Low	



# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
F45	Sycamore	Ivy identified at a height of 0m – 18 m towards the South-East, on the Stem of the tree.	Low	Low
F46	Sycamore	Ivy identified at a height of 0 m – 25 m towards the South-East, on the Stem of the tree.	Low	Low
F47	Sycamore	Ivy identified at a height of 0 m – 25 m towards the South-East, on the Stem of the tree.	Low	Low
		Woodpecker hole identified at a height of 8 m towards the North-East, on the Stem of the tree.	Moderate	
F48	Sycamore	Ivy identified at a height of 0 - 25 m towards the South-East, on the Stem of the tree.	Low	Low
F49	Sycamore	Ivy identified at a height of 0 m – 20 m towards the South-East, on the Stem of the tree.	Low	Low
F50	Pedunculate Oak	Pruning Cut identified at a height of 3 m towards the North, on the Stem of the tree.	Moderate	High
		Lifting Bark identified at a height of 7 m towards the North, on the Limb of the tree.	High	



# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
		Wounds identified at a height of 15 m towards the North, on the Limb of the tree.	Moderate	
		Desiccation Fissure identified at a height of 8 m towards the South, on the Limb of the tree.	Moderate	
		Lifting Bark identified at a height of 11-15 m towards the North, on the Limb of the tree.	Moderate	
		Wounds identified at a height of 13 m towards the South-East, on the Limb of the tree.	Moderate	
F51	Sycamore	Wounds identified at a height of 9 m towards the South-East, on the Stem of the tree.	Low	Low
F52	Pedunculate Oak	Impact Shatter identified at a height of 16 m towards the North-East, on the Stem of the tree.	Moderate	Moderate
F53	Lime	Transverse Snap identified at a height of 5 m towards the North-East, on the Limb of the tree.	Moderate	Moderate
		Transverse Snap identified at a height of 7-8 m towards the North, on the Limb of the tree.	Moderate	



# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
F54	Pedunculate Oak	Ivy identified at a height of 0 m-20 m towards the North-East, on the Stem of the tree.	Low	Low
F55	Pedunculate Oak	Pruning Cut identified at a height of 2 m towards the North-West, on the Stem of the tree.	Low	Moderate
		Tear Outs identified at a height of 11 m towards the North-East, on the Limb of the tree.	Moderate	
		Knot Hole identified at a height of 15 m towards the North, on the Limb of the tree.	Moderate	
F56	Pedunculate Oak	Impact Shatter identified at a height of 10 m towards the North-East, on the Limb of the tree.	Low	Low
		Transverse Snap identified at a height of 9.5 m towards the North-East, on the Limb of the tree.	Low	
F57	Horse Chestnut	Tear Outs identified at a height of 3.5 m towards the North-West, on the Stem of the tree.	Low	Moderate
		Knot Hole identified at a height of 1.5 m towards the West, on the Limb of the tree.	Moderate	



# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
		Knot Hole identified at a height of 4 m towards the South-East, on the Limb of the tree.	Moderate	
		Tear Outs identified at a height of 4 m towards the South-East, on the Limb of the tree.	Moderate	
		Impact Shatter identified at a height of 2 m towards the South-East, on the Limb of the tree.	Moderate	
		Ivy identified at a height of 0 m-20 m towards the South, on the Stem of the tree.	Low	
		Tear Outs identified at a height of 15 m towards the North-East, on the Stem of the tree.	Moderate	
F58	Sweet chestnut	Knot Hole identified at a height of 10 m towards the South-East, on the Stem of the tree.	Low	Low
F59	Elm	Lifting Bark identified at a height of 0 m – 12 m towards the South, on the Stem of the tree.	Low	Low
F60	Sweet chestnut	Knot Hole identified at a height of 10 m towards the South, on the Stem of the tree.	Low	Low



# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
F61	Pedunculate Oak	Pruning Cut identified at a height of 5.5 m & 10.5 m towards the North-East, on the Stem of the tree.	Moderate	Moderate
		Lifting Bark identified at a height of 8 m & 10 m towards the South-East, on the Limb of the tree.	Moderate	
F62	Sycamore	Desiccation Fissure identified at a height of 5 m towards the East, on the Stem of the tree.	Low	Low
F63	Sycamore	Impact Shatter identified at a height of 4.5 m towards the East, on the Limb of the tree.	Low	Low
F64	Unknown	Lifting Bark identified at a height of 2 m towards the South, on the Stem of the tree.	Low	Low
F65	Sycamore	Subsistence Split identified at a height of 4 m towards the North-East, on the Stem of the tree.	Moderate	Moderate
F66	Sycamore	Ivy identified at a height of 0 m – 20 m towards the South, on the Stem of the tree.	Low	Low
F67	Sycamore	Tear Outs identified at a height of 4.5 m towards the North-East, on the Stem of the tree.	Low	Low



# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
F68	Sycamore	Ivy identified at a height of 0 m – 20 m towards the South, on the Stem of the tree.	Low	Low
F69	Sycamore	Ivy identified at a height of 0 m – 20 m towards the South, on the Stem of the tree.	Low	Low
F70	Sycamore	Ivy identified at a height of 0 m – 20 m towards the South, on the Stem of the tree.	Low	Low
F71	Sycamore	Ivy identified at a height of 0 m – 20 m towards the South, on the Stem of the tree.	Low	Low
F72	Pedunculate Oak	Ivy identified at a height of 0 m – 20 m towards the South, on the Stem of the tree.	Low	Low
F73	Pedunculate Oak	Ivy identified at a height of 0 m – 20 m towards the South, on the Stem of the tree.	Low	Low
F74	Unknown	Desiccation Fissure identified at a height of 5 m – 10 m towards the South, on the Stem of the tree.	Low	Low
F75	Pedunculate Oak	Ivy identified at a height of 0 m – 20 m towards the South, on the Stem of the tree.	Low	Low



# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
F76	Sycamore	Ivy identified at a height of 0m - 20mm towards the South, on the Stem of the tree.	Low	Low
F77	Sycamore	Ivy identified at a height of 0 m – 20 m towards the South, on the Stem of the tree.	Low	Low
F78	Sycamore	Ivy identified at a height of 0 m – 20 m towards the South, on the Stem of the tree.	Low	Low
Hedgerows and Scattere	ed Trees (Additional Featu	res)		•
Additional Features (AF)1	Pine	Woodpecker hole identified at a height of 6 m- 7 m towards the East, on the Stem of the tree.	Moderate	High
		Impact Shatter identified at a height of 3 m – 10 m towards the South, on the Limb of the tree.	High	
		Tear Outs identified at a height of 13 m towards the South-West, on the Stem of the tree.	High	
		Tear Outs identified at a height of 13 m towards the South-East, on the Stem of the tree.	High	
AF2	Sweet Chestnut	Woodpecker hole identified at a height of 10 m towards the South-West, on the Limb of the tree.	High	High

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Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
		Impact Shatter identified at a height of 4 m – 16 m towards the North-East, on the Limb of the tree.	Moderate	
		Lifting Bark identified at a height of 9 m towards the North-East, on the Stem of the tree.	Moderate	
AF3	Pedunculate Oak	Impact Shatter identified at a height of 5 m towards the South-West, on the Limb of the tree.	Moderate	Moderate
AF4	Pedunculate Oak	Tear Outs identified at a height of 2 m towards the West, on the Stem of the tree.	Moderate	Moderate
		Knot Hole identified at a height of 2 m towards the South, on the Stem of the tree.	Moderate	
		Impact Shatter identified at a height of 2 m towards the North, on the Limb of the tree.	Moderate	
AF5	Pedunculate Oak	Impact Shatter identified at a height of 6 m towards the North-West, on the Stem of the tree.	Moderate	Moderate
		Woodpecker hole identified at a height of 8 m towards the North-West, on the Limb of the tree.	Moderate	



# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
		Knot Hole identified at a height of 8 m towards the South-West, on the Limb of the tree.	Moderate	
AF6	Pedunculate Oak	Impact Shatter identified at a height of 14 m towards the South-West, on the Stem of the tree.	Moderate	Moderate
		Knot Hole identified at a height of 15 m towards the West, on the Limb of the tree.	Moderate	
AF7	Lime	Knot Hole identified at a height of 4 m towards the South-West, on the Limb of the tree.	Moderate	Moderate
AF8	Pedunculate Oak	Hazard Beam identified at a height of 5 m towards the North-West, on the Limb of the tree.	Moderate	Moderate
AF9	Pedunculate Oak	Lifting Bark identified at a height of 8 m towards the South-East, on the Limb of the tree.	Low	Low
		Lifting Bark identified at a height of 6 m towards the North-East, on the Limb of the tree.	Low	
AF10	Pedunculate Oak	Lifting Bark identified at a height of 5 m towards the West, on the Limb of the tree.	Moderate	Moderate



# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
		Tear Outs identified at a height of 8 m towards the West, on the Stem of the tree.	Moderate	
AF11	Horse Chestnut	Tear Outs identified at a height of 2 m towards the West, on the Limb of the tree.	Moderate	Moderate
		Knot Hole identified at a height of 3.5 m towards the North-East, on the Limb of the tree.	Moderate	
AF12	Pedunculate Oak	Impact Shatter identified at a height of 4 m – 10 m towards the South, on the Stem of the tree.	Moderate	Moderate
AF13	Horse Chestnut	Desiccation Fissure identified at a height of 0 m - 2.5 m towards the South-East, on the Stem of the tree.	Moderate	Moderate
		Lifting Bark identified at a height of 6.5 m towards the South, on the Limb of the tree.	Moderate	
AF14	Sweet chestnut	Wounds identified at a height of 0 m – 4 m towards the South-East, on the Stem of the tree.	Moderate	Moderate
AF15	Unknown	Wounds identified at a height of 0 m – 4 m towards the South-East, on the Limb of the tree.	Moderate	Moderate



# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
AF16	Sweet chestnut	Lifting Bark identified at a height of 2 m – 8 m towards the North-West, on the Stem of the tree.	Moderate	Moderate
		Woodpecker hole identified at a height of 3.5 m towards the North, on the Stem of the tree.	Moderate	
AF17	Pedunculate Oak	Tear Outs identified at a height of 2.5 m towards the North-East, on the Limb of the tree.	Moderate	High
		Hazard Beam identified at a height of 2 m towards the North, on the Limb of the tree.	Low	
		Tear Outs identified at a height of 11 m towards the North-East, on the Stem of the tree.	Moderate	
		Hazard Beam identified at a height of 2 m towards the East, on the Limb of the tree.	Moderate	
		Transverse Snap identified at a height of 5 m towards the South, on the Limb of the tree.	High	
		Impact Shatter identified at a height of 8 m - 10.5 m towards the South, on the Limb of the tree.	High	



# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
		Tear Outs identified at a height of 8 m towards the South-East, on the Stem of the tree.	Moderate	
		Tear Outs identified at a height of 3.5 m towards the East, on the Stem of the tree.	Low	
AF18	Pedunculate Oak	Tear Outs identified at a height of 8 m towards the North-East, on the Stem of the tree.	Moderate	Moderate
		Impact Shatter identified at a height of 10 m towards the South-East, on the Stem of the tree.	Moderate	
		Wounds identified at a height of 4 m towards the South-East, on the Limb of the tree.	Moderate	
AF19	Pedunculate Oak	Impact Shatter identified at a height of 12 m towards the South, on the Limb of the tree.	Moderate	Moderate
		Impact Shatter identified at a height of 4 m towards the North, on the Limb of the tree.	Low	
		Tear Outs identified at a height of 4.5 m towards the East, on the Limb of the tree.	Moderate	



# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
AF20	Pedunculate Oak	Hazard Beam identified at a height of 8 m towards the South, on the Limb of the tree.	Moderate	Moderate
		Tear Outs identified at a height of 8.5 m towards the South-East, on the Stem of the tree.	Moderate	
		Impact Shatter identified at a height of 4 m towards the South, on the Limb of the tree.	Low	
AF21	Pedunculate Oak	Tear Outs identified at a height of 8.5 m towards the North-East, on the Stem of the tree.	Moderate	Moderate
		Impact Shatter identified at a height of 12 m towards the South-West, on the Limb of the tree.	Moderate	
		Hazard Beam identified at a height of 5 m towards the South-East, on the Limb of the tree.	Moderate	
AF22	Pedunculate Oak	Lifting Bark identified at a height of 3 m towards the West, on the Stem of the tree.	Moderate	Moderate
AF23	Pine	Woodpecker hole identified at a height of 6 m towards the West, on the Stem of the tree.	Moderate	Moderate



# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
		Impact Shatter identified at a height of 5 m – 13 m towards the South-West, on the Limb of the tree.	Moderate	
		Transverse Snap identified at a height of 6.5 m towards the North-East, on the Limb of the tree.	Moderate	
AF24	Sweet chestnut	Desiccation Fissure identified at a height of 1 m towards the South, on the Limb of the tree. Droppings indicative of pipistrelle species present.	Confirmed Roost	Confirmed Roost
		Butt Rot identified at a height of 1 m towards the East, on the Stem of the tree.	Moderate	
		Lifting Bark identified at a height of 2 m towards the South, on the Limb of the tree.	High	
		Hazard Beam identified at a height of 3.5 m towards the West, on the Limb of the tree.	Moderate	
		Knot Hole identified at a height of 3.5 m towards the West, on the Stem of the tree.	Moderate	
AF25	Pine	Woodpecker hole identified at a height of 1 m – 7 m towards the North-East, on the Stem of the tree.	High	High



# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
AF26	Sweet Chestnut	Lifting Bark identified at a height of 7 m towards the North, on the Stem of the tree.	Low	Low
AF27	Pedunculate Oak	Tear Outs identified at a height of 7 m towards the South, on the Stem of the tree.	High	High
		Knot Hole identified at a height of 20 m towards the South-West, on the Stem of the tree.	Moderate	
		Wounds identified at a height of 3 m towards the North, on the Limb of the tree.	Moderate	
AF28	Pine	Ivy identified at a height of m towards the, on the of the tree.	Moderate	Moderate
AF29	Pedunculate Oak	Lifting Bark identified at a height of 10 m towards the South-West, on the Stem of the tree.	Low	Moderate
		Pruning Cut identified at a height of 10 m towards the South-East, on the Stem of the tree.	Moderate	
AF30	Pedunculate Oak	Knot Hole identified at a height of 9 m towards the South-West, on the Stem of the tree.	Moderate	Moderate



# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
		Lifting Bark identified at a height of 19 m towards the West, on the Limb of the tree.	Low	
AF31	Pedunculate Oak	Ivy identified at a height of 1 – 10 m towards the South, on the Stem of the tree.	Low	Low
AF32	Pedunculate Oak	Lifting Bark identified at a height of 5.5 m towards the South, on the Limb of the tree.	Moderate	Moderate
AF33	Ash	Knot Hole identified at a height of 1 m towards the West, on the Stem of the tree.	Low	Moderate
		Tear Outs identified at a height of 2.5 m towards the West, on the Stem of the tree.	Moderate	
		Ivy identified on the Stem of the tree.	Low	
AF34	Elm	Ivy identified on the Stem of the tree.	Low	Moderate
		Welds identified at a height of 2 m towards the West, on the Stem of the tree.	Moderate	
AF35	Pedunculate Oak	Ivy identified on the Stem of the tree.	Moderate	Moderate
		Impact Shatter identified at a height of 7 m towards the North-West, on the Limb of the tree.	Moderate	



# **NOT PROTECTIVELY MARKED**

Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
		Knot Hole identified at a height of 10 m towards the West, on the Limb of the tree.	Moderate	
AF36	Pedunculate Oak	Tear Outs identified at a height of 8.5 m towards the South-West, on the Stem of the tree.	Low	Low
		Impact Shatter identified at a height of 7 m towards the West, on the Limb of the tree.	Low	
AF37	Pedunculate Oak	Tear Outs identified at a height of 8 m towards the South-West, on the Limb of the tree.	Moderate	Moderate
		Knot Hole identified at a height of 18 m towards the North-West, on the Limb of the tree.	Moderate	
AF38	Pedunculate Oak	Lifting Bark identified at a height of 14 m towards the South, on the Limb of the tree.	High	High
		Impact Shatter identified at a height of 10 m towards the North, on the Limb of the tree.	Moderate	
AF39	Pedunculate Oak	Knot Hole identified at a height of 6 m towards the North, on the Limb of the tree.	Low	Low
AF40	Pedunculate Oak	Ivy identified on the Stem of the tree.	Low	Low

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Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
AF41	Pine	Hazard Beam identified at a height of 5 m towards the East, on the Stem of the tree.	High	High
		Woodpecker hole identified at a height of 5 m towards the East, on the Stem of the tree.	Moderate	
		Subsistence Split identified at a height of 8 m towards the South-West, on the Limb of the tree.	High	
		Transverse Snap identified at a height of 6.5 m towards the South-West, on the Stem of the tree.	High	
AF42	Beech	Tear Outs identified at a height of 5 m towards the South, on the Limb of the tree.	Moderate	Moderate
AF43	Beech	Tear Outs identified at a height of 5 m towards the North-West, on the Limb of the tree.	Moderate	Moderate
		Knot Hole identified at a height of 3 m towards the North-West, on the Stem of the tree.	Moderate	
AF44	Beech	Knot Hole identified at a height of 3 m towards the South, on the Stem of the tree.	High	High



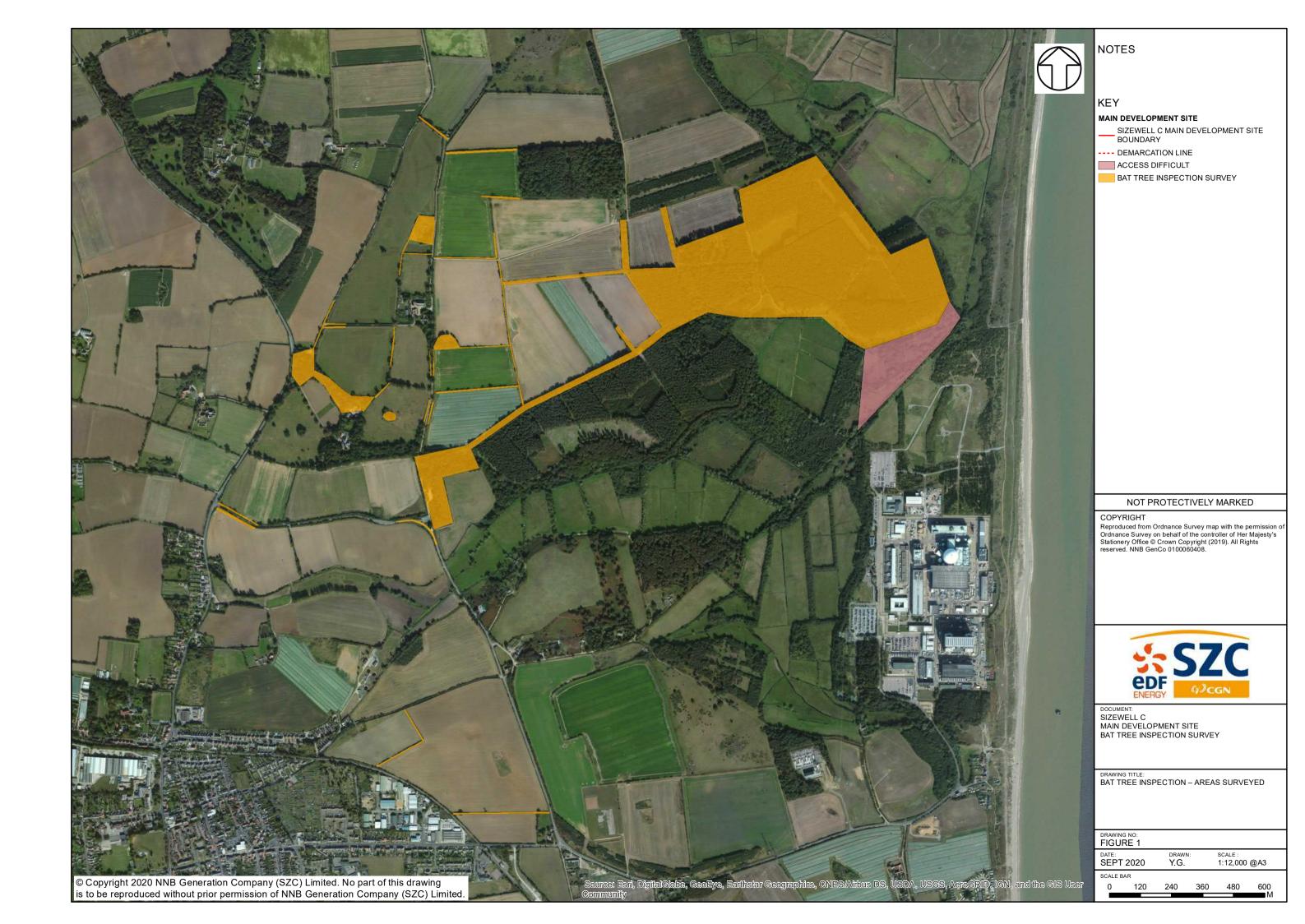
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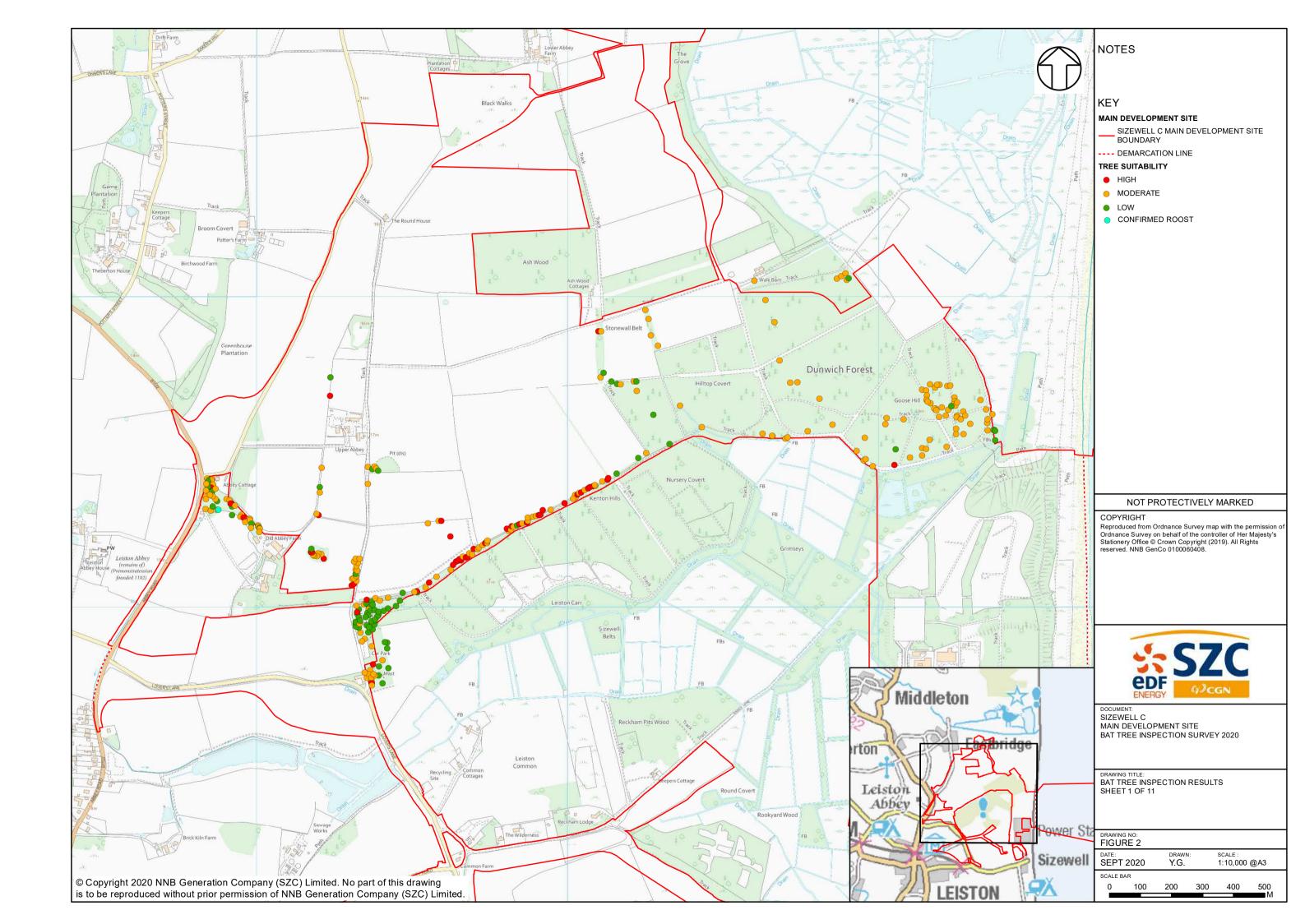
Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
		Desiccation Fissure identified towards the south, on the Stem of the tree.	High	
AF45	Beech	Knot Hole identified at a height of 8 m towards the South-East, on the Limb of the tree.	Moderate	Moderate
AF46	Pine	Tear Outs identified at a height of 7.5 m towards the North-East, on the Limb of the tree.	Moderate	Moderate
		Tear Outs identified at a height of 7 m towards the West, on the Limb of the tree.	Moderate	
AF47	Beech	Tear Outs identified at a height of 7 m towards the North, on the Stem of the tree.	High	High
AF48	Pedunculate Oak	Tear Outs identified at a height of 6 m towards the West, on the Limb of the tree.	Moderate	Moderate
		Impact Shatter identified at a height of 6 m towards the West, on the Limb of the tree.	Moderate	
		Knot Hole identified at a height of 15 m towards the South, on the Stem of the tree.	Moderate	

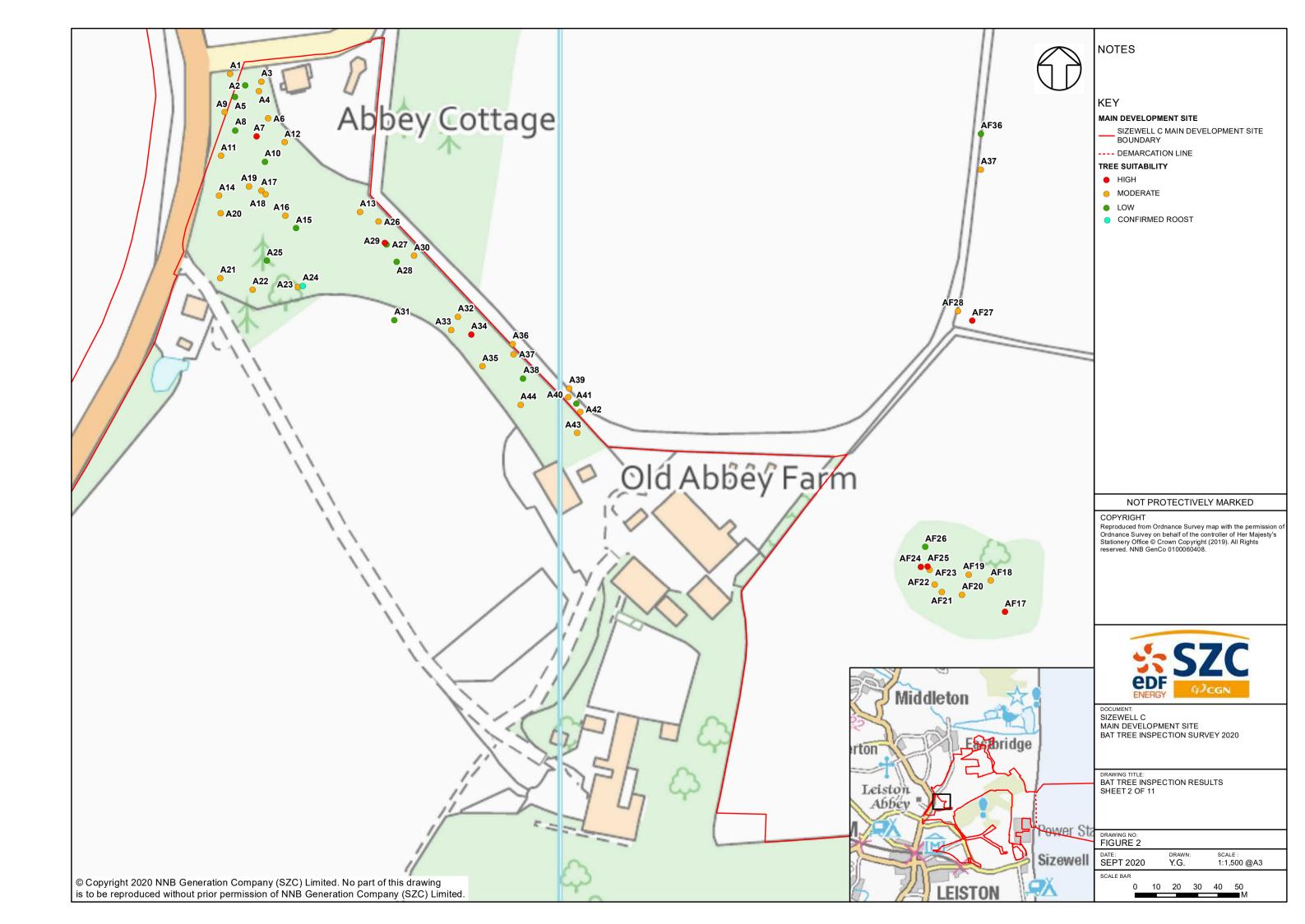


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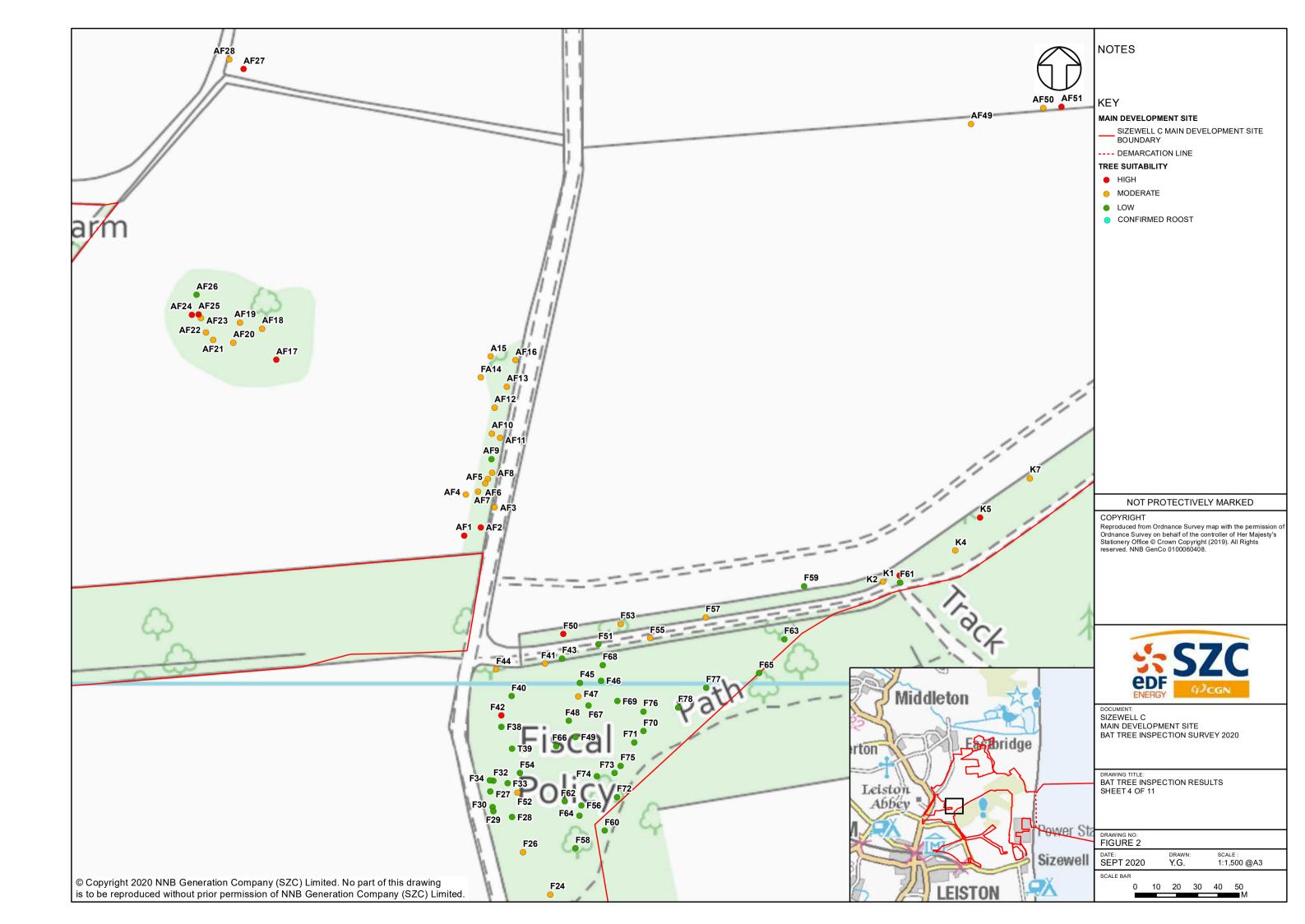
Tree Number	Tree Species and general tree description	Description of Feature	Potential of Feature	Overall tree suitability
AF49	Ash	Tear Outs identified at a height of 6 m towards the South, on the Stem of the tree.	Moderate	Moderate
		Lifting Bark identified on the Stem of the tree.	Low	
AF50	Pedunculate Oak	Tear Outs identified at a height of 6 m towards the East, on the Stem of the tree.	Moderate	Moderate
AF51	AF51 Ash	Butt Rot identified on the Stem of the tree.	High	High
		Knot Hole identified at a height of 5 m towards the South-West, on the Stem of the tree.	High	

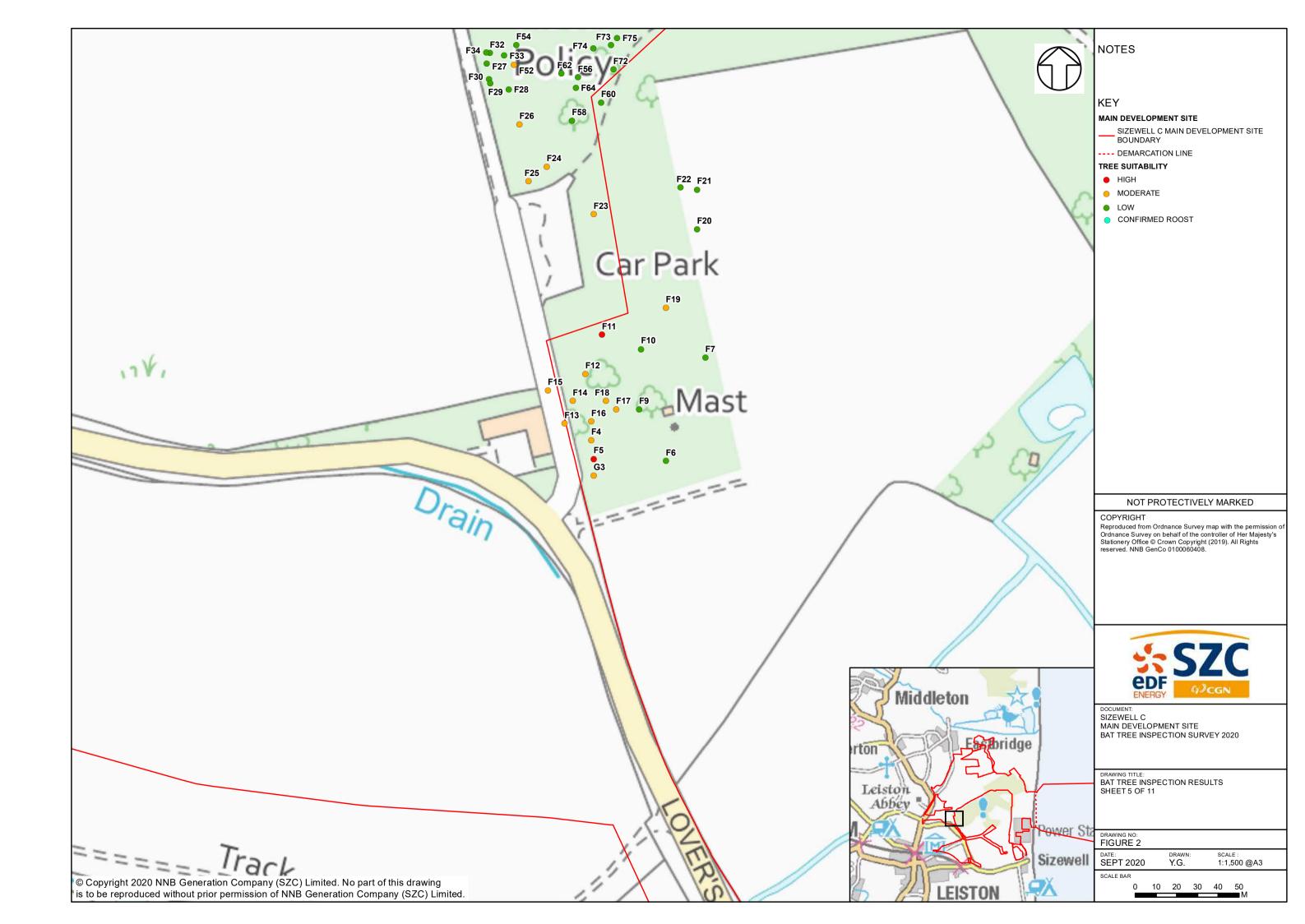


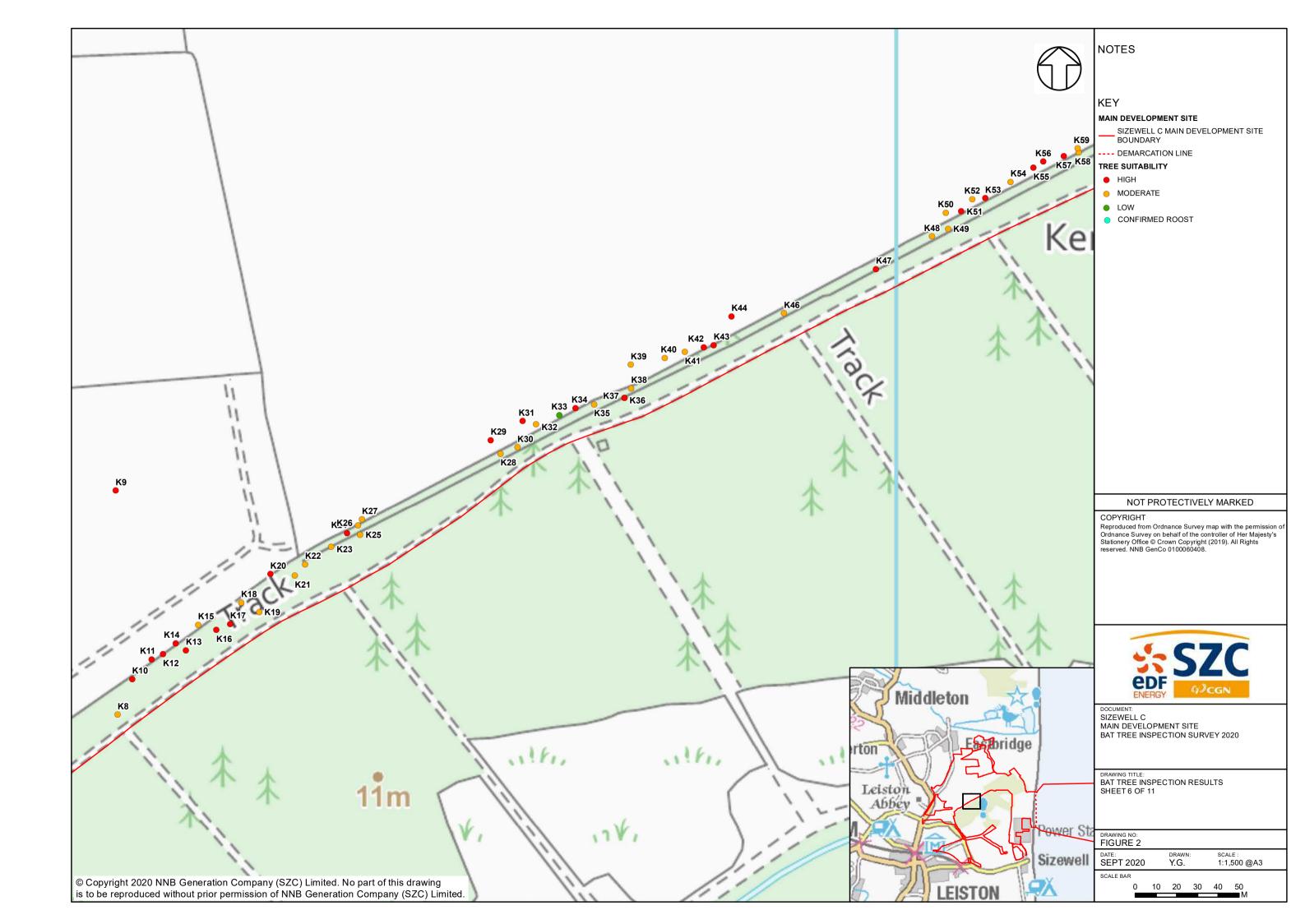


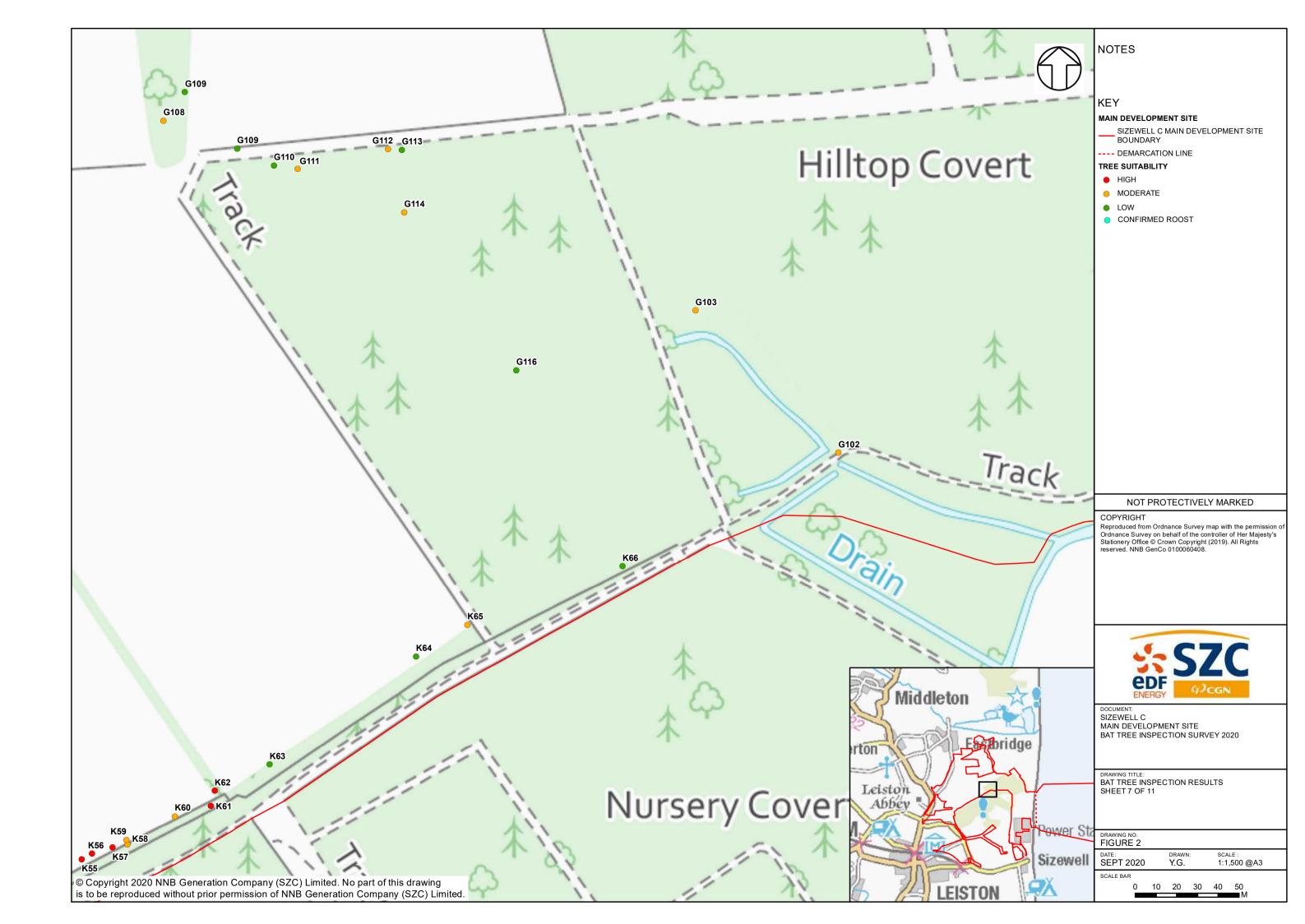


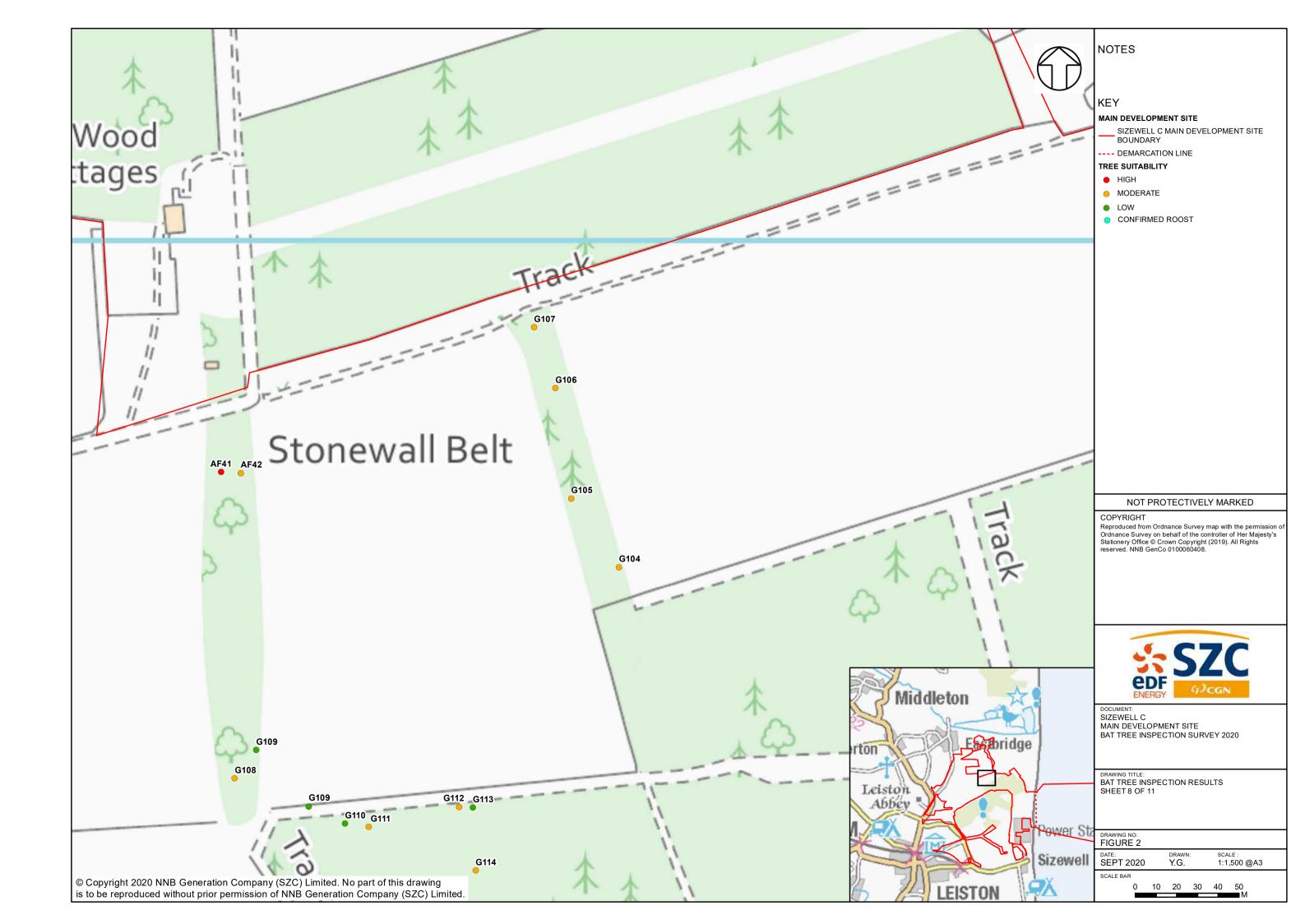


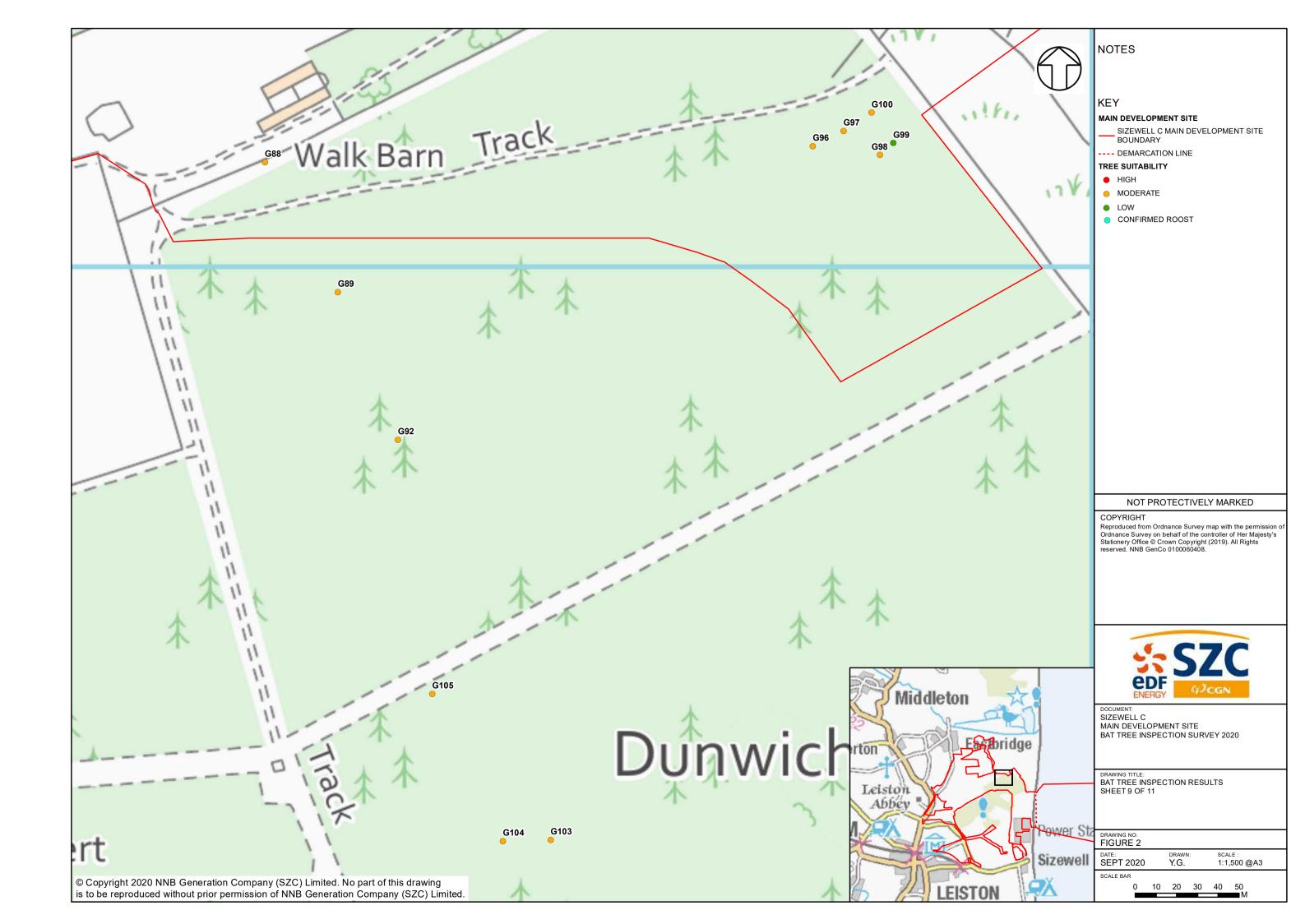


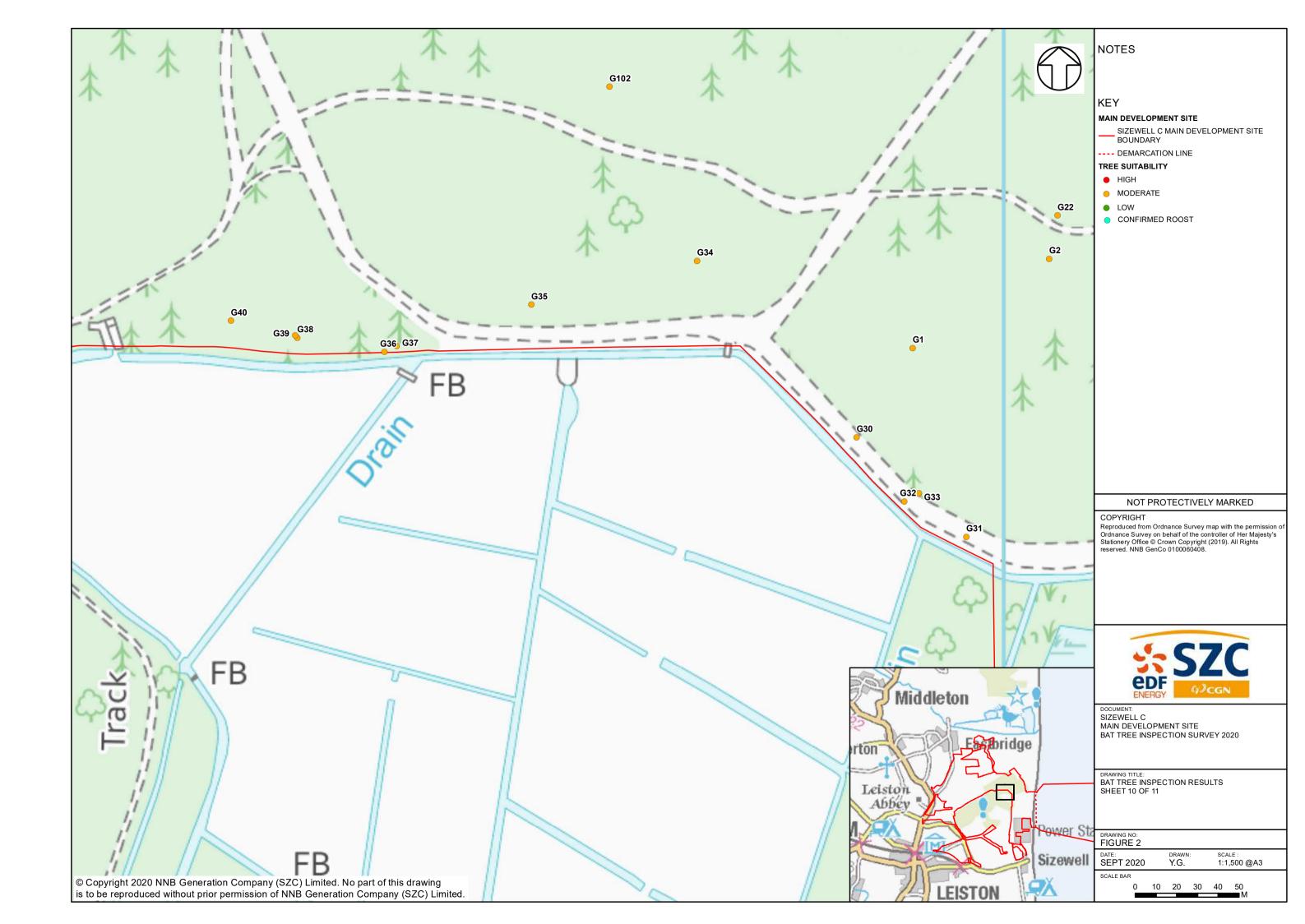


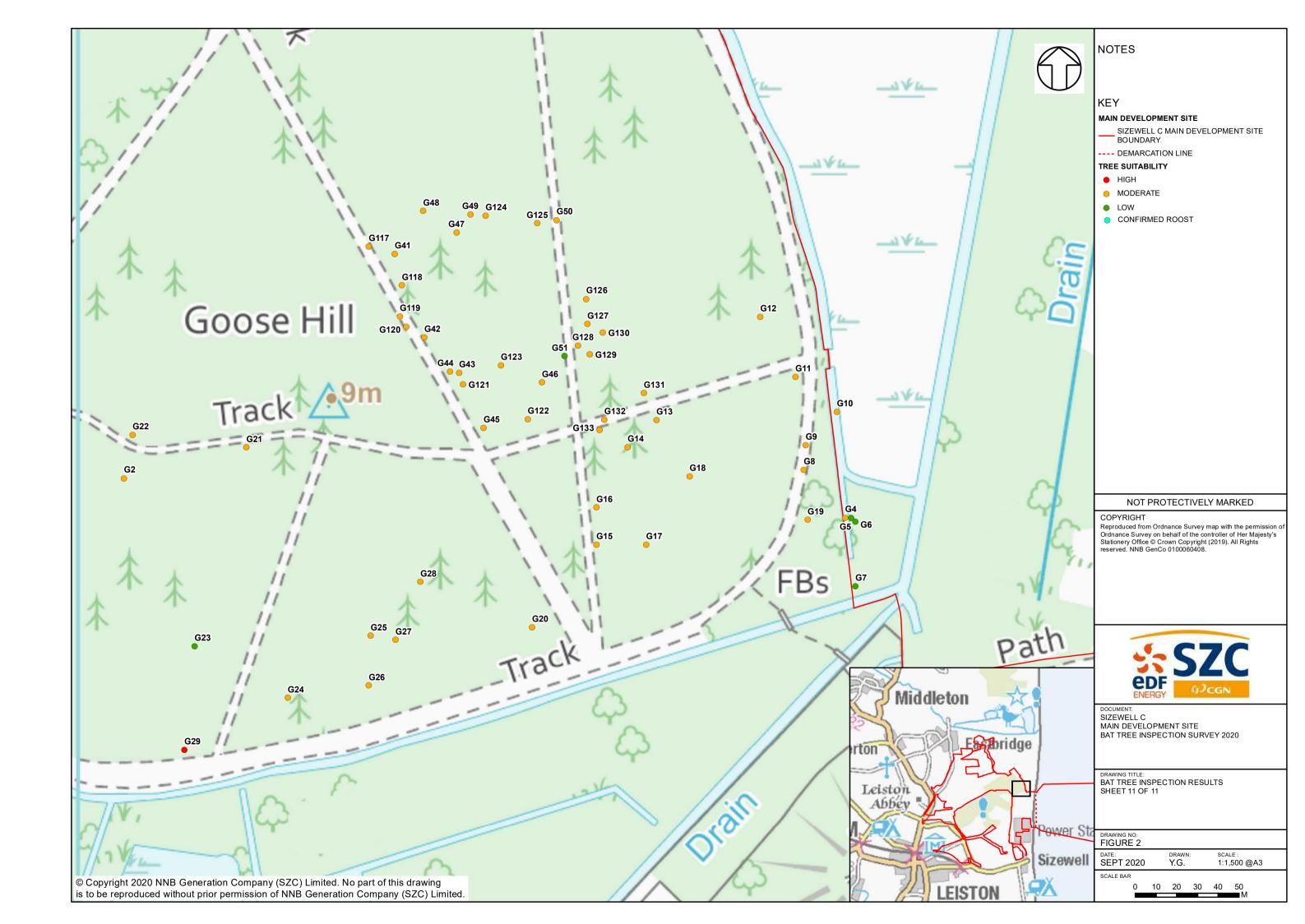


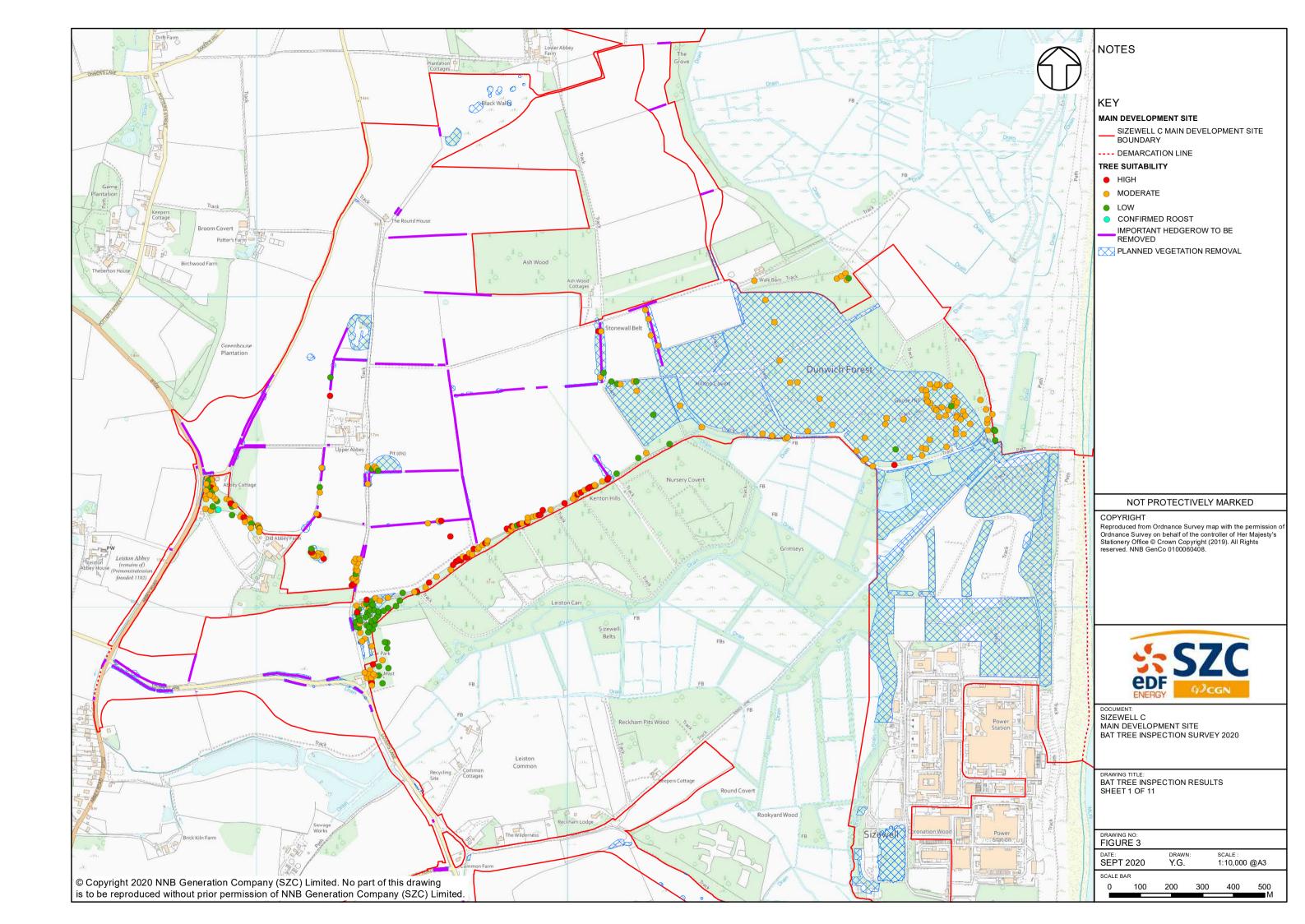


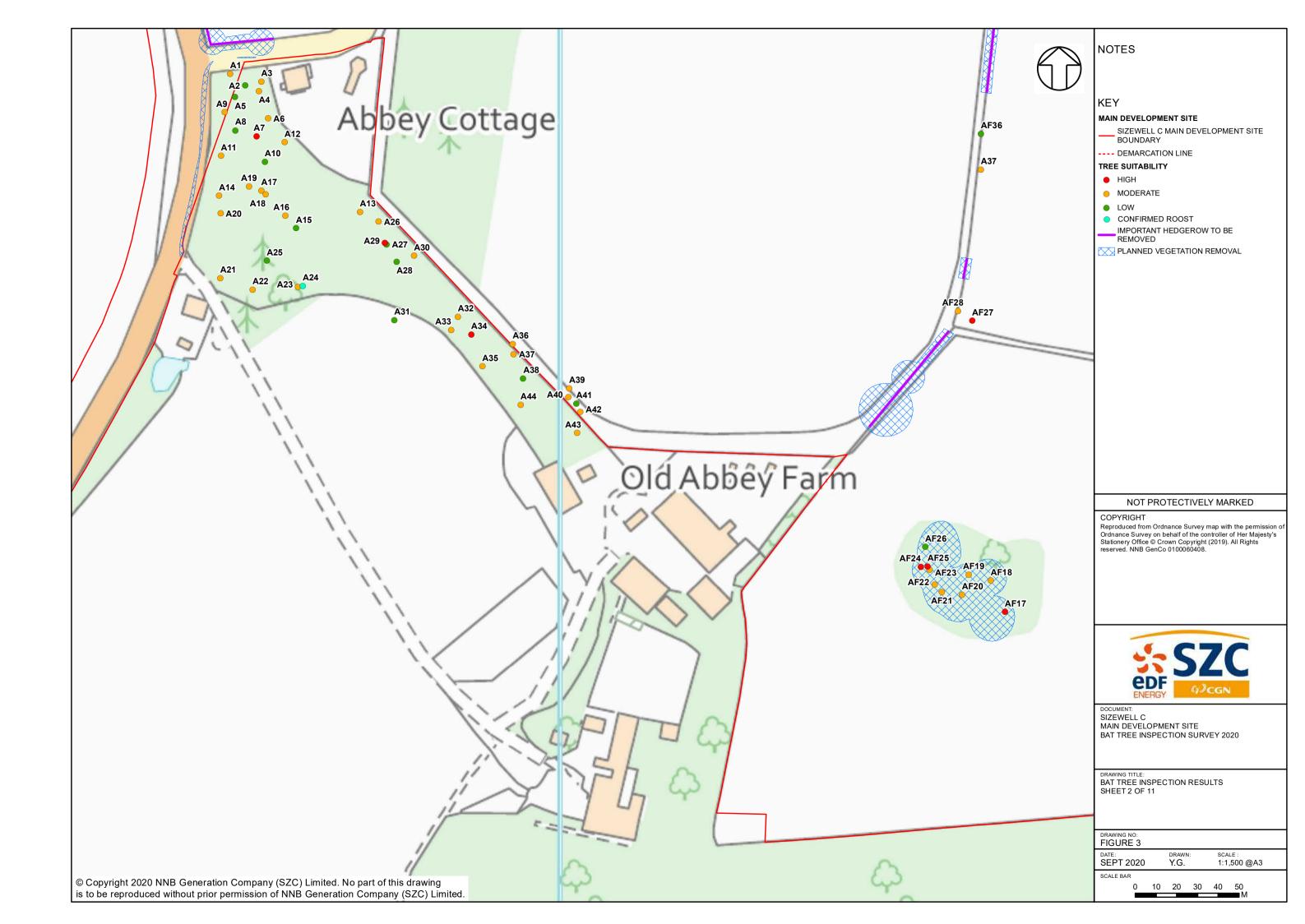


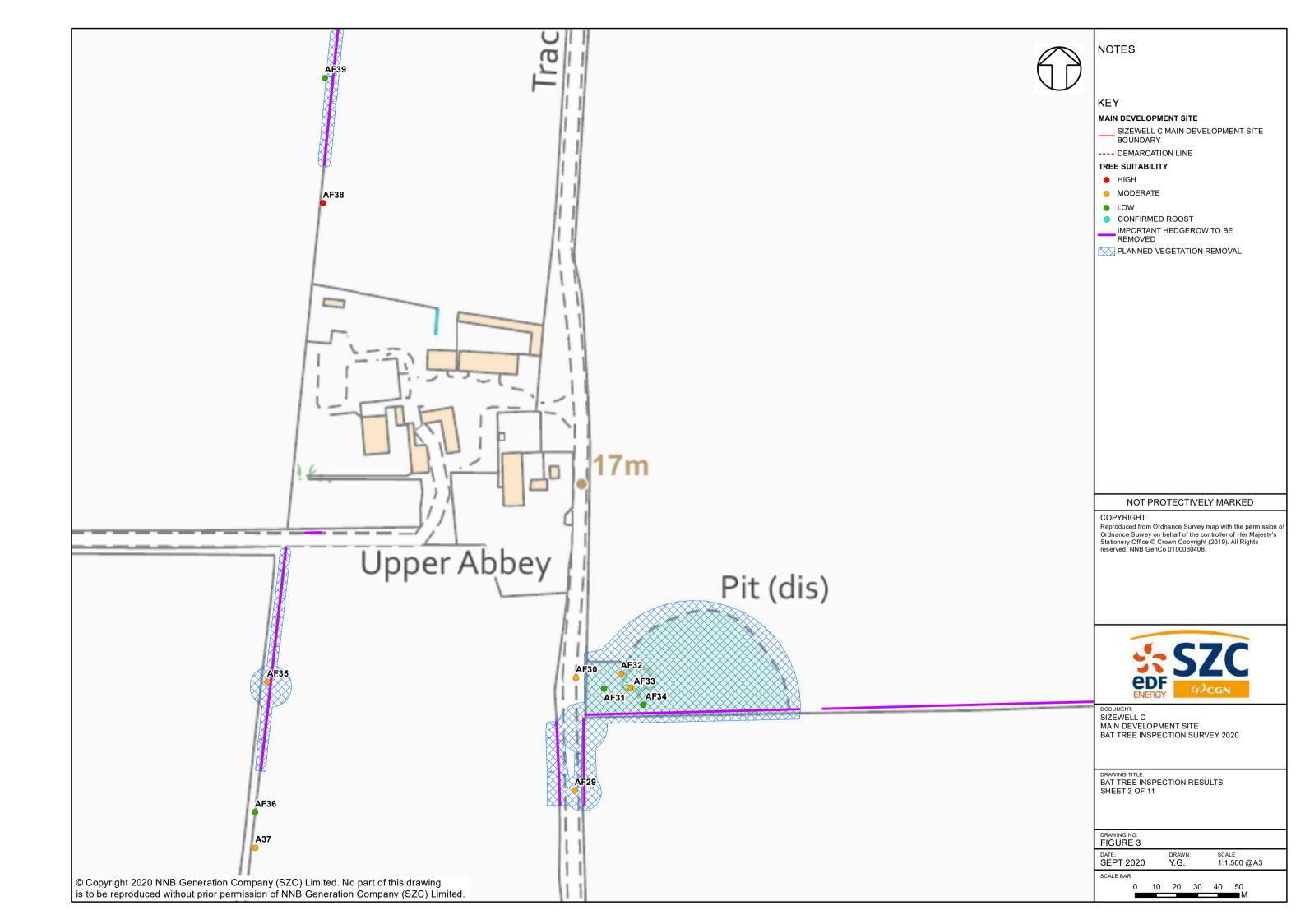


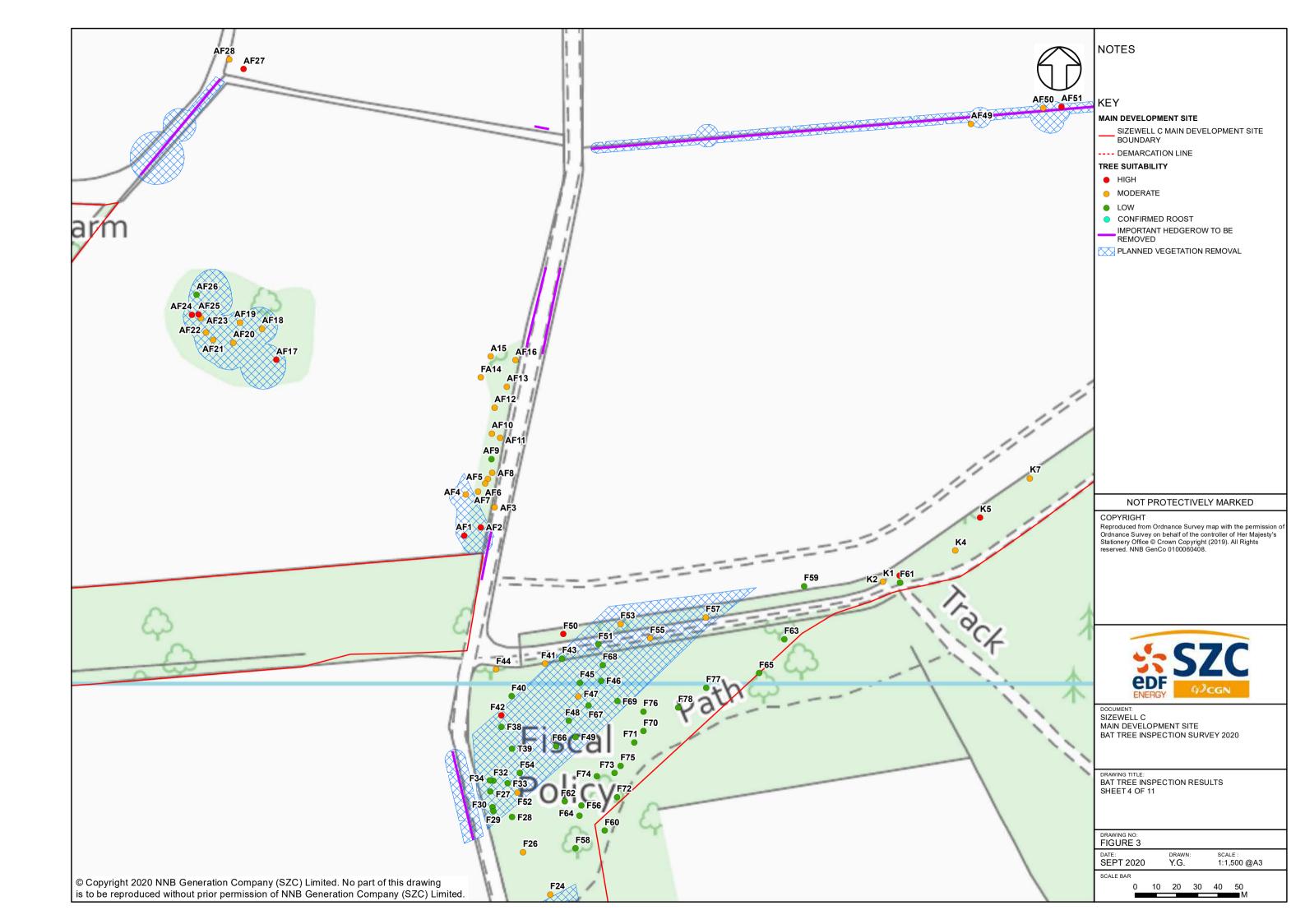


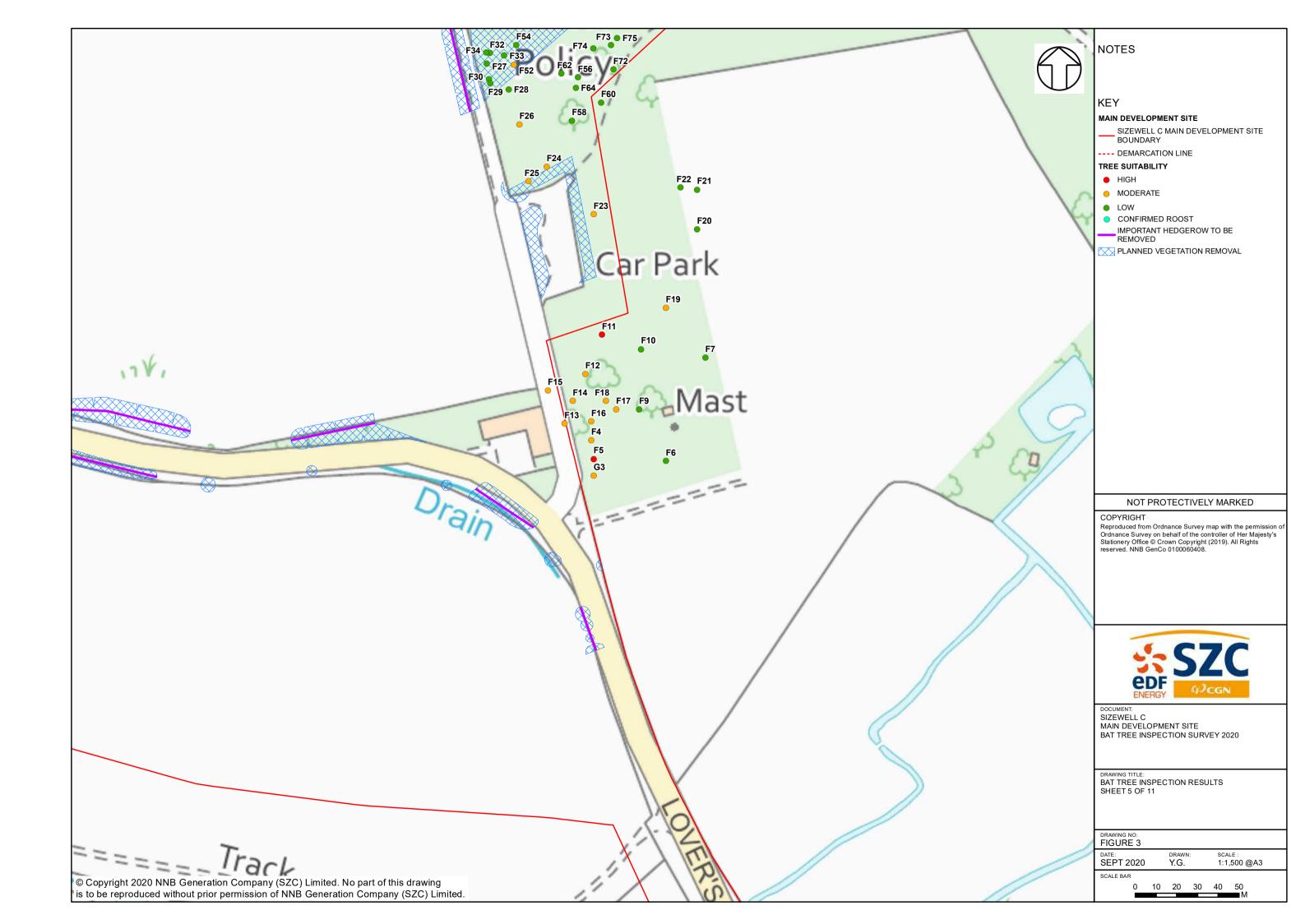


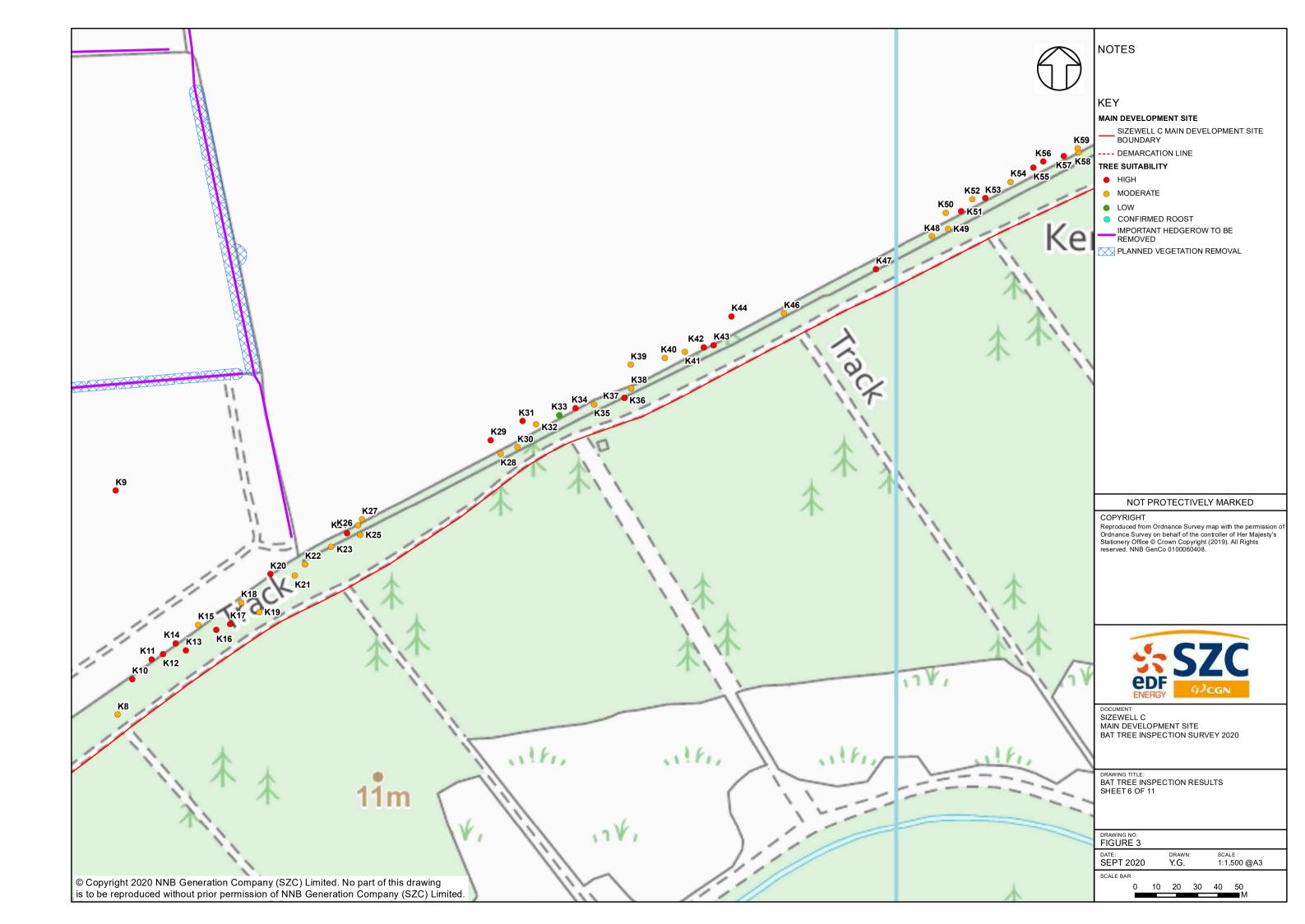


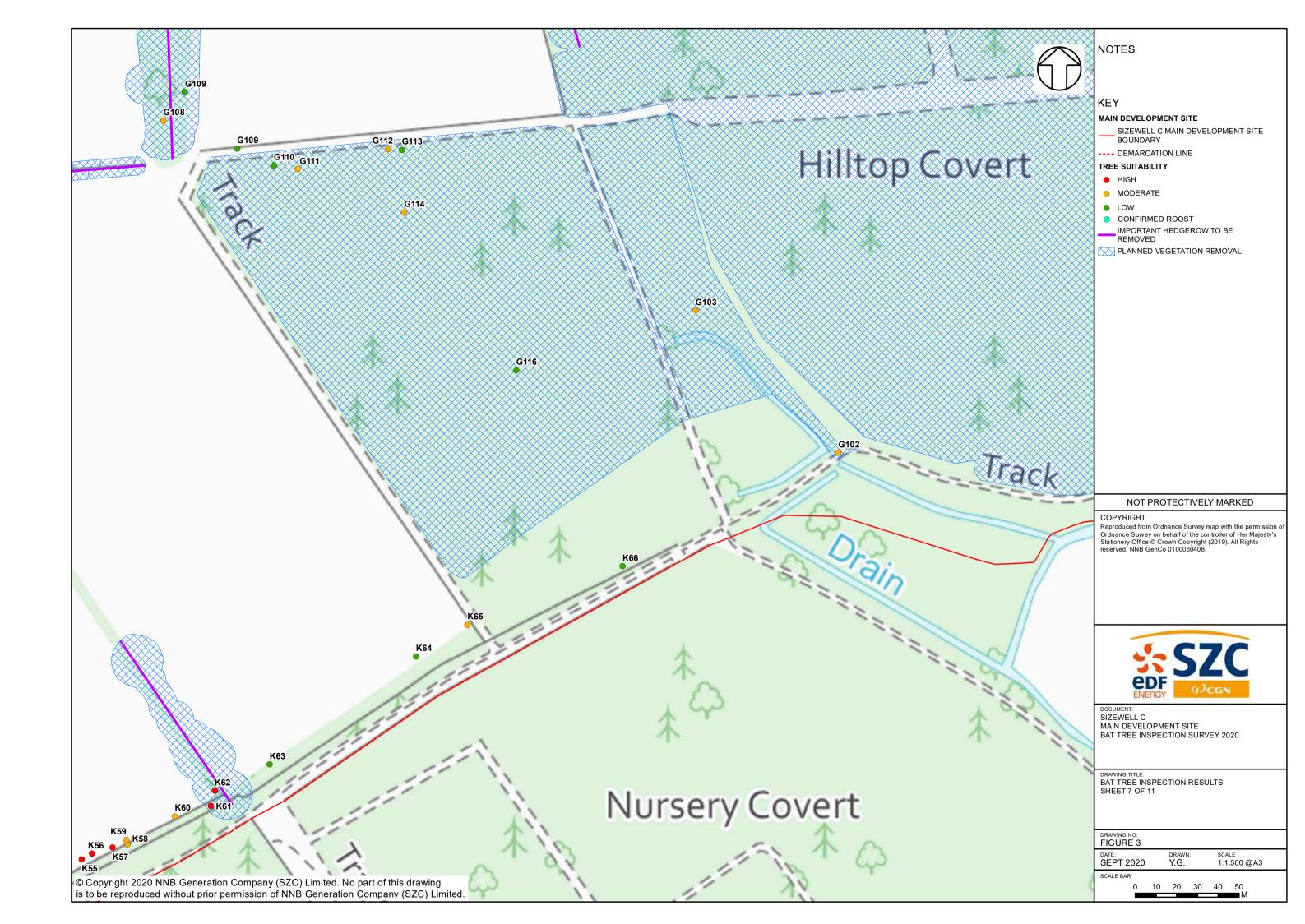


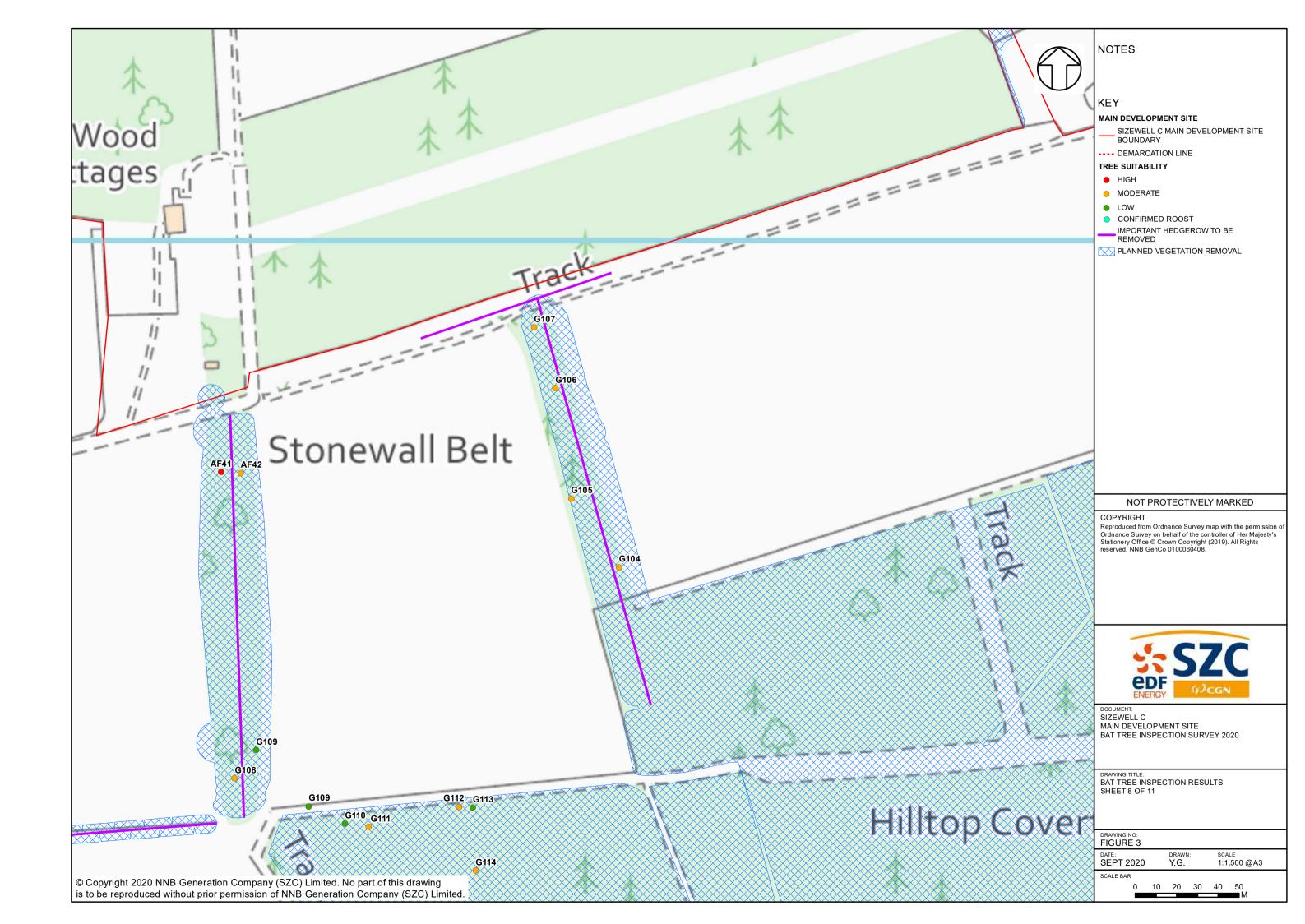


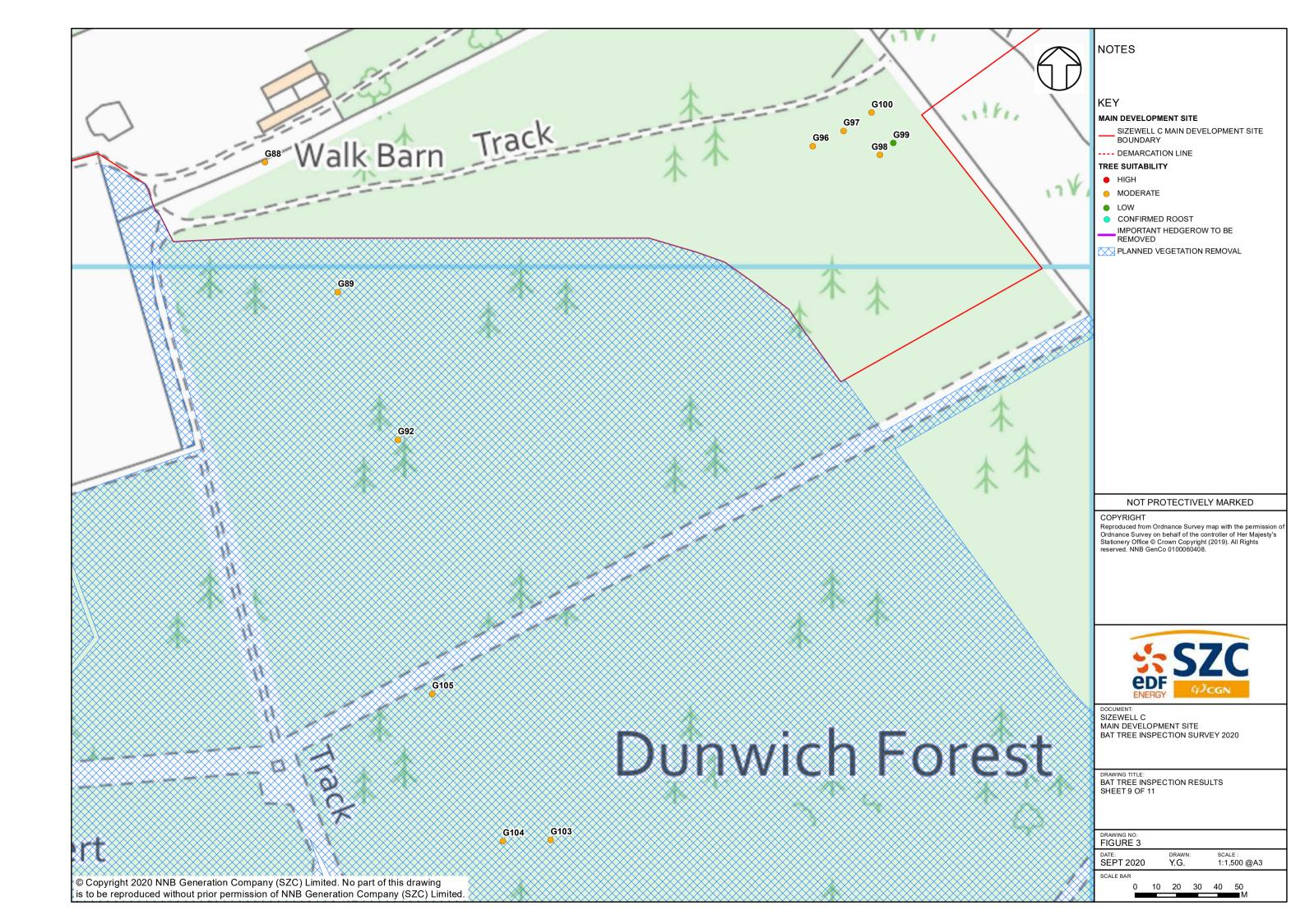


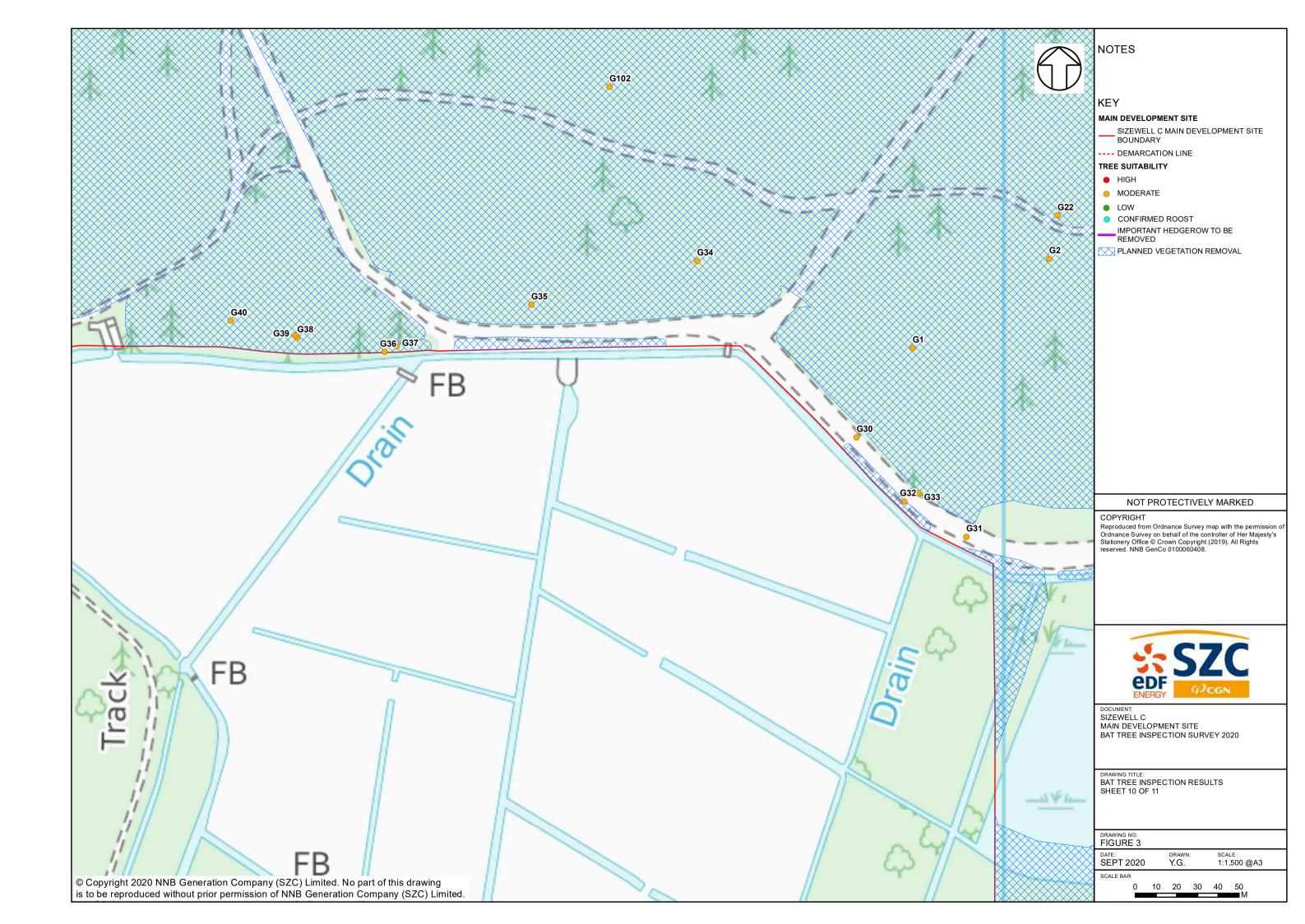


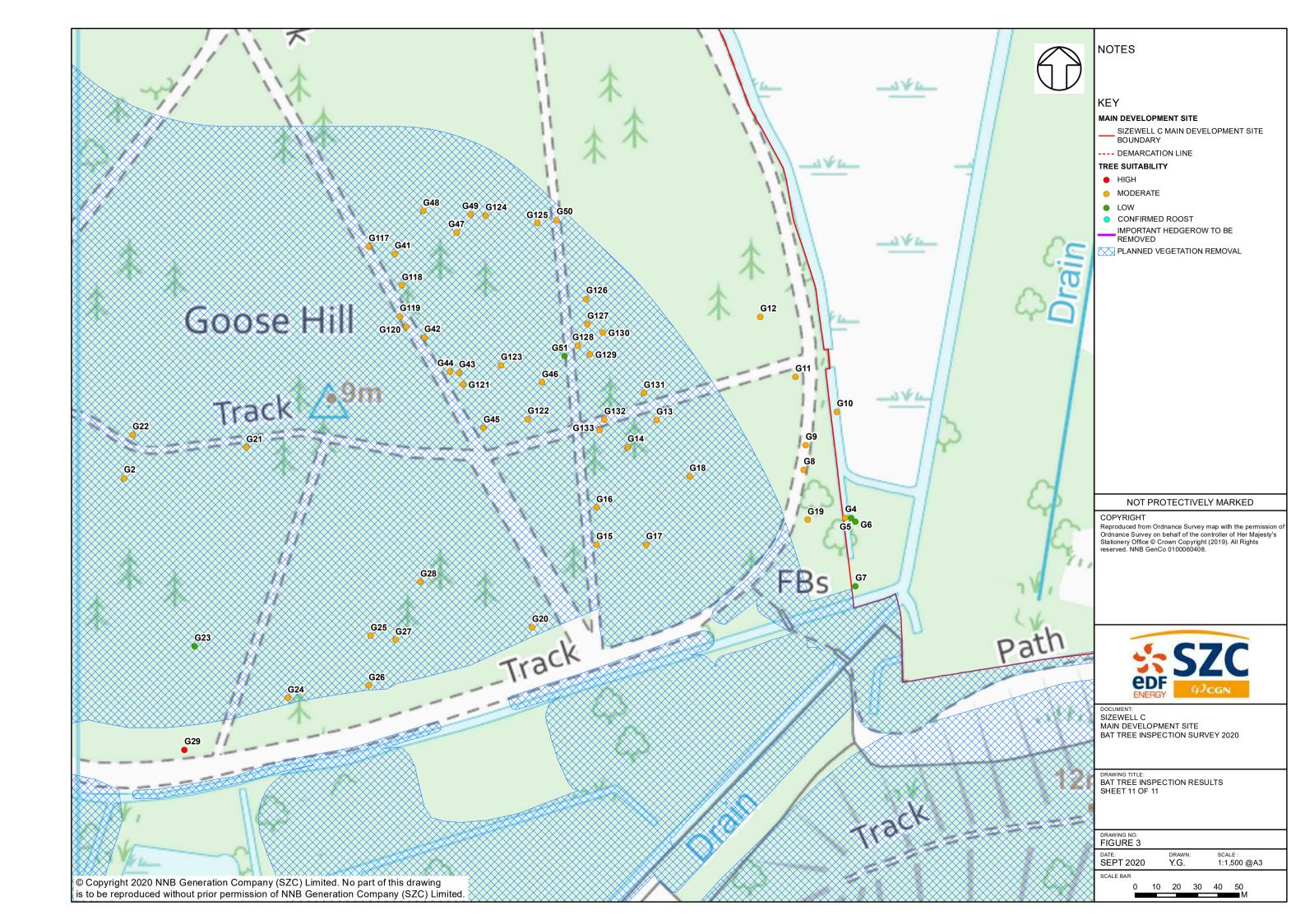














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## **BREEDING BIRD & WATERFOWL SURVEY REPORT 2020**



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## 1 SUMMARY

## 1.1 Receptor Status 2020 Summary Overview

- 1.1.1 This report presents the findings of the 2020 breeding bird and waterfowl surveys undertaken on the main development site of the proposed Sizewell C Nuclear Power Station project, and the wider area.
- 1.1.2 The surveys are part of on-going ecological monitoring of the main development site, following previous surveys undertaken on the site (App-237 and App-238) Ref. 1), to update the baseline and provide a baseline for future monitoring.
- 1.1.3 The 2020 surveys identified that the proposed main development site and adjacent habitats supported a diverse assemblage of bird species including 26 Important Ecological Features (IEFs), 22 schedule 1 species, 20 red listed species, 39 amber listed species and 47 species of no conservation concern. Not all of these species were presumed to be breeding, however 15 IEFs and 13 birds of conservation concern were confirmed to be breeding within the survey areas.
- 1.1.4 The Minsmere South Levels, Sizewell Marshes Site of Special Scientific Interest (SSSI) (including reedbed, Gooderhams Fen, Rookyard wood and Sizewell Belts), the arable fields and the existing Sizewell Power Station complex are all noted to be key areas for breeding birds and waterfowl.
- 1.1.5 Findings of previous breeding bird surveys on the site are detailed within the Sizewell C Project Environmental Statement (ES), in Appendix 14A7 Ornithology (App-237 and App-238) (Ref. 1), Annex 14A7.5 (App-238) (Ref. 2) and Annex 14A7.6 (App-238) (Ref. 3). The 2020 results are consistent with the application submitted Development Consent.

### 2 OVERVIEW

# 2.1 The Aims of the 2020 Survey Updates

2.1.1 The aim of the updated bird surveys were to determine the breeding bird and waterfowl assemblage and to gather spatial data regarding numbers and distribution of birds within the proposed main development site and wider area of the Sizewell C project. The surveys also aim to update the baseline and provide a baseline for future monitoring.

### 2.2 Submitted Baseline

2.2.1 As detailed in the Sizewell C Project ES (<u>App-237</u> and <u>App-238</u>) (Ref. 1), extensive bird survey work has been carried across the EDF Estate by



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Arcadis Consulting (UK) Limited (since 2012), Wood Group (2008 – 2012) and the EDF Energy Nuclear Generation Limited (NGL) in conjunction with the Suffolk Wildlife Trust (from 2004 – 2018). There were 32 IEFs brought forward from the ornithology baseline into the 2019 detailed Ecological Assessment of the site (App-237 and App-238) (Ref. 1), refer to Table 1.

2.2.2 Previous surveys found a diverse assemblage of birds across the main development site and wider area, with the Minsmere South Levels and Sizewell Marshes SSSI areas being the key areas for breeding birds and breeding waterfowl.

# 2.3 Updated Surveys

- 2.3.1 The 2020 surveys took place between 10th April and 19th June, following designated transects and survey areas to determine the breeding bird and waterfowl assemblage. The surveys were located within the main development site and adjacent habitats, including the Minsmere South Levels and Sizewell Marshes SSSI (hereafter referred to as 'survey areas').
- 2.3.2 The 2020 surveys identified that the proposed main development site and adjacent habitats supported a diverse assemblage of bird species including 26 Important Ecological Features (IEFs), 22 schedule 1 species, 20 red listed species, 39 amber listed species and 47 species of no conservation concern. Fifteen IEFs and 13 birds of conservation concern were confirmed to be breeding within the survey areas.
- 2.3.3 The results show that the key areas supporting breeding birds and waterfowl appear to be the Minsmere South Levels, Sizewell Marshes SSSI (including reedbed, Gooderhams Fen, Rookyard wood and Sizewell Belts), the arable fields and the existing Sizewell Power Station complex. Additionally, the breeding bird assemblage could be described as fairly typical for the habitat types surveyed. The 2020 results are consistent with the application submitted for development consent.



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# 3 METHODS

# 3.1 Desk Study

3.1.1 The scoping of bird species/assemblages, along with the desk-study information is fully detailed within the Sizewell C ES (<a href="App-237">App-237</a> and <a href="App-238">App-238</a>) (Ref. 1, Ref. 2 and Ref. 3). This includes previous survey findings across the EDF Estate. Other desk study sources included records from RSPB, Suffolk Bird Reports, Suffolk Biodiversity Information Service (SBIS) and British Trust for Ornithology Wetland Bird Survey (BTO WeBS). The conservation status of each bird species noted within this report are also fully detailed in the ES.

## 3.2 Field Study

- a) Overview and Surveyor Information
- 3.2.2 The surveys were undertaken by David Darrell-Lambert, Mike Hoit and Dave Andrews, all experienced ornithologists under a specific Risk Assessment and Method Statement.
- 3.2.3 A series of surveys were carried out on a monthly basis between April and June 2020 (inclusive), to record breeding bird and breeding waterfowl species observed or heard within the survey areas, following the previous survey methods detailed in the Sizewell C Project ES (App-237) (Ref. 4). The survey details including survey dates and times, surveyors and weather conditions are detailed in Tables 2 and 3 in Appendix A.
- The surveys were undertaken by surveyors equipped with binoculars and telescopes to aid identification. Observations were entered onto iPads, with the focus of the surveys being breeding birds and breeding waterfowl. Sightings of notable species were also recorded, including IEFs (refer to Table 1), species listed on Schedule 1 of the Wildlife and Countryside Act, 1981 (as amended) (Ref. 5), red and amber listed Birds of Conservation Concern (BOCC) (Ref. 6) and Species of Principal Importance under Section 41 (S41) of the Natural Environment and Rural Communities (NERC) Act, 2006 (Ref. 7).
- 3.2.5 All IEFs and species of importance observed or heard were mapped and recorded using standard BTO species and behaviour codes (Ref. 8). Species of no conservation concern were also recorded where possible. Incidental sightings were recorded throughout the other various bird surveys being undertaken in April to June 2020 (inclusive), which are also discussed within the results section of this report. This excludes incidental species recorded offshore during the targeted tern surveys in 2020 (May to August, inclusive), which will be detailed fully within the tern report.



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- 3.2.6 The Minsmere South Levels area was not previously surveyed within the spring/summer season; however it has been regularly surveyed as part of the wintering bird surveys.
  - b) Breeding Bird Surveys (BBS)
- 3.2.7 Seven breeding bird walking transect surveys were undertaken across the survey area in accordance with best practice survey guidance (Ref. 9). The transects were surveyed three times, once per month in April, May and June and aimed to determine the breeding status and distribution of birds across the survey area. The transects were predominantly located along field boundaries, tracks within arable fields, woodland edges and forest tracks. Any areas of reedbed were surveyed from tracks around the edge to avoid any areas of deep open water. The transect locations are listed below and shown on Figure 1 in **Appendix B**:
  - Arable fields;
  - Sizewell Marshes Reedbed:
  - Sizewell Beach:
  - Sizewell C Power Station Platform;
  - Goose Hill Woodland:
  - Coronation Wood; and
  - Leiston/Fiscal Policy.

### c) Breeding Waterfowl Surveys

- 3.2.8 A combination of walking transect surveys and Vantage Point (VP) counts were undertaken to record breeding waterfowl across the proposed main development site, in accordance with best practice survey guidance (Ref. 9). The areas were surveyed three times, once per month in April, May and June. Four transect surveys were undertaken, plus six VP's covering the Minsmere South Levels. Breeding waterfowl were also recorded as part of the breeding bird survey transects. The locations are listed below and shown on Figure 1 in **Appendix B**:
  - SSSI Marshes Reedbeds and Gooderhams Fen;
  - Sizewell Belts:
  - Rookyard Wood;
  - Aldhurst Farm Receptor area; and
  - Minsmere South Levels (BW\_VP 1 BW\_VP 6).
- 3.2.9 In the four survey areas, open water and ditches were the focus of the surveys. Areas of open water were surveyed for a duration of 15 20 minutes



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and where possible and where disturbance was not judged problematic, ditches were walked to observe waterfowl activity. In order to minimise disturbance, direct searching for nests was not undertaken.

- 3.2.10 The VPs at Minsmere South Levels were located on raised areas such as the sea wall and bunds (where possible), to provide extensive visibility and coverage of the survey area and avoid disturbance of breeding waterfowl. Additionally, the Minsmere South Levels contains extensive areas of standing water and marsh habitats, therefore they were surveyed from the VPs only for safety purposes.
- 3.2.11 Breeding pairs of certain dabbling and diving duck species (wigeon (*Anas penelope*), gadwall (*Anas strepera*), teal (*Anas crecca*), pintail (*Anas acuta*) and shoveler (*Anas clypeata*)) were estimated using the method set out in Gilbert et al (Ref. 9), shown below:

Count the following as breeding pairs:

- Single pair (m & f);
- Lone male:
- Males in groups of 2 4 (2–4 males = 2-4 breeding pairs);
- Small male groups chasing a female (2-4 males = 2-4 breeding pairs);
   and
- Lone females if their total number is greater than that of males.
- d) Breeding Status Analysis
- 3.2.12 To identify the breeding status of the species recorded, the data was analysed, and the BTO breeding evidence guidance was followed (Ref. 10). Records were classified into confirmed, probable, possible or non-breeding.
- 3.2.13 Records classified as 'non-breeding' indicated that no potential breeding behaviour was observed by the surveyor, however the species could have been breeding in the area. Records of birds singing were interpreted to determine possible or probable breeding, depending on how many visits the same species was recorded in the same location.
- 3.2.14 Additionally, with the duck species listed in paragraph 3.2.11 above, pairs were estimated following the wetland breeding bird method detailed in Gilbert et al (Ref. 9).
- 3.3 Limitations
- 3.3.1 Access was not available for BW\_VP 2 in April due to Covid-19 restrictions and therefore could not be surveyed. This is not considered to be a significant



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limitation as this VP was surveyed from May onwards (following approval from the RSPB). Additionally, during April, surveys were undertaken at BW\_VP 1 and BW\_VP 3 where BW\_VP 2 was covered as far as practicable and bird sightings were triangulated within the viewshed area.

- 3.3.2 The surveyors prioritised recording IEFs and bird of conservation concern during the surveys and therefore only recorded other species of no conservation concern where possible. This avoided missing any species which were the focus of the surveys and is not considered to significantly affect the results of the surveys.
- 3.4 Existing Information Overview
- 3.4.1 32 bird IEFs were identified and brought forward from the ornithology baseline into the 2019 detailed Ecological Assessment of the site (App-237 and App-238) (Ref. 1). A summary of the IEF's and their conservation status are shown in Table 1 below. The surrounding area, particularly the nearby statutory designated sites, are of international, European and national importance for a number breeding and wintering bird species.
- 3.4.2 The survey area consisted of various habitats, including reedbeds, standing water, grasslands (marsh, dune and semi-improved), coniferous and broadleaved woodland and plantations, scattered scrub, hedgerows, arable fields and shingle beach.

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# Table 1: Bird species identified as IEFs

IEF	Scientific Name	Conservation Status	Schedule 1	S41 NERC	Justification for IEF
Avocet	Recurvirostra avosetta	Amber	✓		Qualifying feature of Minsmere to Walberswick Special Protection Area (SPA) (breeding), Minsmere to Walberswick Ramsar site (breeding), Alde-Ore Estuary SPA (breeding and wintering), Alde-Ore Estuary Ramsar site (wintering) and Alde-Ore Estuary SSSI.
Barn owl	Tyto alba	Green	<b>√</b>		Confirmed to be breeding at Lower and Upper Abbey Farms (two pairs), and one breeding pair within Sizewell Marshes SSSI in 2015. Regularly recorded foraging across these areas throughout the year. Scoped in due to its legal protection and potential impact on the local barn owl population.
Bearded tit	Panurus biarmicus	Green	<b>√</b>		Qualifying feature of Minsmere to Walberswick Ramsar site (breeding).
Bittern	Botaurus stellaris	Amber	<b>√</b>	✓	Qualifying feature of Minsmere to Walberswick SPA (breeding) and Minsmere to Walberswick Ramsar site (breeding).
Black redstart	Phoenicurus ochruros	Red	<b>√</b>		Confirmed to be breeding within existing Sizewell A and B power station complex (up to three pairs) in 2015. The power station complex and adjacent coastal habitat provide suitable foraging habitat for the species.
Black-headed gull	Chroicocephalus ridibundus	Amber			Qualifying feature of Alde-Ore Estuary SPA (breeding).



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IEF	Scientific Name	Conservation Status	Schedule 1	S41 NERC	Justification for IEF
Black-tailed godwit	Limosa limosa	Red	✓	<b>√</b>	Qualifying feature of Alde-Ore Estuary Ramsar site (breeding and wintering) and Alde-Ore Estuary SSSI.
Cetti's warbler	Cettia cetti	Green	✓		Breed in suitable habitat within Sizewell Marshes SSSI (up to 13 pairs in 2007).
Common tern	Sterna hirundo	Amber			Qualifying feature of Outer Thames SPA (breeding).
Dunlin	Calidris alpina	Amber			Qualifying feature of Alde-Ore Estuary Ramsar site (breeding and wintering) and Alde-Ore Estuary SSSI.
Gadwall	Anas strepera	Amber			Qualifying feature of Minsmere to Walberswick SPA (wintering) and Minsmere to Walberswick Ramsar site (breeding).
Hen harrier	Circus cyaneus	Red	✓		Qualifying feature of Minsmere to Walberswick SPA (wintering)
Herring gull	Larus argentatus	Red		✓	Qualifying feature of Alde-Ore Estuary SPA (breeding).
Hobby	Falco subbuteo	Green	✓		Hobby were confirmed/ likely to be breeding within large mature trees at Goose Hill, Ash Wood and/ or Broom Covert (up to two pairs) in 2007, although no breeding pairs were recorded in 2018.
Kingfisher	Alcedo atthis	Amber	✓		Kingfisher were confirmed to be breeding within the site (at least one pair) and utilise the ditch network associated with the Sizewell Marshes SSSI as a foraging resource.



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IEF	Scientific Name	Conservation Status	Schedule 1	S41 NERC	Justification for IEF
Kittiwake	Rissa tridactyla	Red			The Sizewell Rigs County Wildlife Site (CWS) has been designated specifically for kittiwake. The rigs (associated with the Sizewell A and B power stations) are used by a relatively large colony of kittiwake (approximately 200 nests).
Lapwing	Vanellus vanellus	Red		<b>√</b>	Qualifying feature of Alde-Ore Estuary Ramsar site (breeding and wintering) and Alde-Ore Estuary SSSI.
Lesser black- backed gull	Larus fuscus	Amber			Qualifying feature of Alde-Ore Estuary SPA (breeding and wintering) and Alde-Ore Estuary Ramsar site (breeding).
Little tern	Sternula albifrons	Amber	✓		Qualifying feature of Minsmere to Walberswick SPA (breeding), Outer Thames SPA (breeding) and Alde-Ore Estuary SPA (breeding).
Marsh harrier	Circus aeruginosus	Amber	✓		Qualifying feature of Minsmere to Walberswick SPA (breeding), Minsmere to Walberswick Ramsar site (breeding) and Alde-Ore Estuary SPA (breeding).
Nightjar	Caprimulgus europaeus	Amber		<b>√</b>	Qualifying feature of Minsmere to Walberswick SPA (breeding) and Sandlings SPA (breeding).
Peregrine	Falco peregrinus	Green	✓		Known to breed on the existing Sizewell A and B power station complex (at least one pair) in 2014 and 2017. Peregrine forage widely over the proposed development site and wider landscape.



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IEF	Scientific Name	Conservation Status	Schedule 1	S41 NERC	Justification for IEF
Redshank	Tringa tetanus	Amber			Qualifying feature of Alde-Ore Estuary SPA (wintering), Alde-Ore Estuary Ramsar site (breeding and wintering) and Alde-Ore Estuary SSSI.
Red-throated diver	Gavia stellata	Green	✓		Qualifying feature of Outer Thames SPA (wintering).
Sandwich tern	Sterna sandvicensis	Amber			Qualifying feature of Alde-Ore Estuary SPA (breeding).
Shelduck	Tadorna tadorna	Amber			Qualifying feature of Alde-Ore Estuary Ramsar site (breeding and wintering) and Alde-Ore Estuary SSSI.
Shoveler	Anas clypeata	Amber			Qualifying feature of Minsmere to Walberswick SPA (breeding and wintering), Minsmere to Walberswick Ramsar site (breeding), Alde-Ore Estuary Ramsar site (breeding and wintering) and Alde-Ore Estuary SSSI.
Stone-curlew	Burhinus oedicnemus	Amber	✓	✓	A breeding species within the wider Minsmere to Walberswick Heaths and Marshes SSSI and have been recorded incidentally, with a single observation on Minsmere South Levels in April 2015.
Teal	Anas crecca	Amber			Qualifying feature of Minsmere to Walberswick SPA (breeding), Minsmere to Walberswick Ramsar site (breeding), Alde-Ore Estuary Ramsar site (breeding and wintering) and Alde-Ore Estuary SSSI.
White-fronted goose	Anser albifrons	Red		✓	Qualifying feature of Alde-Ore Estuary Ramsar site (breeding and wintering) and Alde-Ore Estuary SSSI.



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IEF	Scientific Name	Conservation Status	Schedule 1	S41 NERC	Justification for IEF
Wigeon	Anas penelope	Amber			Qualifying feature of Alde-Ore Estuary Ramsar site (breeding and wintering) and Alde-Ore Estuary SSSI.
Woodlark	Lullula arborea	Green	✓	✓	Qualifying feature of Sandlings SPA (breeding).



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## RESULTS 4

### 4 1 Overview

- 4.1.1 115 bird species were recorded during the surveys (including 47 species of no special conservation concern). 26 of the 32 IEFs were recorded and 22 schedule 1 species (Ref. 5), 20 species were included on the BOCC (Ref. 6) red list and 39 on the amber list. Additionally, 20 species are listed as Species of Principal Importance under Section 41 (S41) of the NERC Act (Ref. 7). The full details of the conservation status of each species found are detailed in within the ES (App-238 and App-238)(Ref. 2 and Ref. 3).
- 4.1.2 The results below present the findings of both the breeding bird and breeding waterfowl surveys undertaken in April – June 2020 (inclusive). This includes 'incidental sightings' during other bird surveys if they were observed within the main development site and Minsmere South Levels. Offshore records observed from the tern VPs during the targeted tern surveys will be discussed within the tern report following the completion of surveys in August 2020 (Ref. 11). Previous survey data was also reviewed (App-238 and App-238) (Ref. 2 and Ref. 3) and comparisons have been included within the results. Spatial data is illustrated in Figures 1-13 in Appendix B.

## 4.2 IEFs/Target Species

4.2.1 26 IEFs were recorded during the surveys in April to June (inclusive), with 12 of these being Schedule 1 species.

### a) **Avocet**

- 4.2.2 Avocet were recorded in May and June, with a peak count of four. The observations were mostly restricted to the Minsmere South Levels and along the coast, with the exception of one avocet heard within the Sizewell Belts area. A group of dependant juveniles were observed with parents on a single survey towards the north eastern part of the Minsmere South Levels. No signs of breeding were observed on the Minsmere South Levels, therefore it is likely that avocet were breeding nearby.
- 4.2.3 In previous surveys, avocet was observed commuting only. The RSPB reported that avocet has not bred on the Minsmere South Levels since 2010, although avocet regularly use the area for feeding. Avocet regularly breed at RSPB Minsmere, however comparable data is not available for 2020 as there was a reduced survey effort due to Covid19 restrictions (Ref. 12).

### b) Barn owl

4.2.4 Barn owl were recorded within the arable fields and Leiston/Fiscal Policy transects during April, with a peak count of one. Two barn owl roost sites



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were identified during targeted barn owl surveys in May and June 2020, with at least one confirmed breeding pair at Lower Abbey Farm. The full results are presented in the barn owl and nightjar report (Ref. 13).

4.2.5 Barn owl are known to forage and breed within the main development site from previous surveys. In 2015, breeding pairs of barn owl were confirmed at Lower Abbey Farm and Upper Abbey Farm. EDF reported a breeding barn owl pair in a box at the north end of Gooderhams Fen in 2018, along with successful breeding at Upper Abbey Farm in 2014, Lower Abbey Farm in 2007 and Gooderhams Fen in 2005 and 2006.

### Bearded tit c)

- 4.2.6 Bearded tit was recorded in April and June, with a peak count of eight. The observations were at the northeast section of the Minsmere South Levels. where breeding was confirmed as juveniles were observed with parents. Additionally, bearded tit was recorded on two occasions at Aldhurst Farm and were considered to be probable breeders.
- 4.2.7 In previous surveys, bearded tit was regularly recorded at Minsmere South Levels and incidentally recorded during marsh harrier surveys at Aldhurst Farm. These areas continue to support bearded tit.

### d) Bittern

- Bittern were recorded in April, May and June, with a peak count of one and 4.2.8 all sightings were at the northern half of the Minsmere South Levels or at the RSPB Minsmere reserve. On two occasions on 25<sup>th</sup> May, bittern was observed taking off from the Minsmere South Levels and carrying food towards the reserve, presumed to be taking food to active nests. On five other occasions, bittern was noted to be commuting over the levels, or flying from the levels towards the reserve. Additionally, a bittern was observed feeding on the levels on 19th June.
- 4.2.9 The habitat at the Minsmere South Levels is considered to be unsuitable for breeding bittern, as it is mostly very open with little reedbed cover. The foraging activity recorded is likely associated with breeding individuals from the reedbed areas of the RSPB Minsmere reserve north of the New Cut, as indicated by food-carrying behaviour. Additionally, bitterns were heard booming on numerous occasions during other bird surveys and based on the apparent direction, all were thought to be calling within RSPB Minsmere reserve.



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### e) Black-headed gull

- 4.2.10 Black-headed gulls were recorded in large numbers in April, May and June, with a peak count of 294 commuting along the coast to the east of Minsmere South Levels.
- 4.2.11 In previous surveys, black-headed gulls were mostly recorded in flight across the survey area and regularly recorded foraging near to the Sizewell A and B Power Stations and outfalls, where black-headed gull was known to breed. No breeding behaviour was observed during the 2020 surveys.

### f) Black redstart

- 4.2.12 Black redstarts were recorded during in April, May and June, with a peak count of two. All of the black redstarts were recorded singing at Sizewell A and B power stations and were observed from the Sizewell Beach transect. During the survey in April, two males were in territorial dispute with each other, indicating at least two breeding pairs present. In May, an individual was observed carrying food towards the Sizewell Power Station complex from Sizewell Beach.
- 4.2.13 In previous surveys, two to three pairs of black redstart were present within the existing Sizewell Power Station complex, during the breeding season and to forage within adjacent coastal habitats.

### g) Black-tailed godwit

- 4.2.14 Black-tailed godwit were recorded on two occasions, once in April and June, with a peak count of four. On 17<sup>th</sup> April, an individual was recorded possibly flying up from the ground and headed towards the RSPB Minsmere reserve. On 22<sup>nd</sup> June, four black-tailed godwit were observed commuting over Minsmere South Levels. Additionally, 42 were observed feeding on the north scrape of the RSPB Minsmere reserve during a tern VP survey on 3rd June. No signs of breeding behaviour were recorded during the surveys.
- 4.2.15 In previous surveys, black-tailed godwit was recorded within the EDF estate in small numbers, with no breeding behaviour observed.

### h) Cetti's warbler

- 4.2.16 Cetti's warbler were recorded in the April, May and June surveys, with a peak count of potentially up to six territories. These were recorded in suitable habitats close to Goose Hill woodland, Leiston/Fiscal Policy and on the west and east of Minsmere South Levels and were all considered to be probable breeders.
- 4.2.17 In previous surveys, Cetti's warbler were recorded breeding every year between 2004 and 2018, predominantly in Sizewell Marshes SSSI and



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Minsmere South Levels, and near to Lower Abbey Farm. Only one breeding pair were recorded during the latest surveys in 2018, compared with a peak of 21 in 2011.

### i) Common tern

- 4.2.18 Common tern were recorded on three occasions in May and June, with a peak count of seven. The sightings were along the coast to the east of Minsmere South Levels, commuting and displaying and these were considered to relate to probable breeders in the vicinity (RSPB Minsmere reserve). Additional sightings were recorded during the targeted tern surveys, being undertaken along the coast from May to August 2020 (inclusive). The results of the tern surveys will be presented in the tern survey report (Ref. 11), following the completion of the surveys at the end of August 2020.
- 4.2.19 In previous surveys, common terns were observed along the coast and foraging offshore, with no breeding behaviour recorded within the survey areas.

### Dunlin i)

- 4.2.20 Dunlin were recorded in small numbers in April and May, with a peak count of three commuting south along the beach to the east of Minsmere South Levels. Additionally, one dunlin was recorded feeding at Minsmere South Levels. No signs of breeding behaviour were recorded during the surveys or would be expected and the birds are considered to be passage migrants.
- 4.2.21 In previous surveys, dunlin were predominantly observed commuting along the coast and assumed to be passage migrants.

#### k) Gadwall

- 4.2.22 Gadwall were recorded in April, May and June, with a peak count of 38 commuting over the Minsmere South Levels. Based on field surveyor observations, a minimum of 3-4 pairs of gadwall were estimated to be breeding at Minsmere South Levels, with pairs, lone males and groups of males recorded. One pair of gadwall were also recorded at Gooderhams Fen in May. There were no gadwall sightings within the site boundary.
- 4.2.23 In previous surveys, gadwall were recorded breeding in relatively small numbers from 2004-2018 within Sizewell Marshes SSSI and Minsmere South Levels.

#### I) Herring gull

4.2.24 Herring gull were recorded in May and June, with a peak count of 90. The majority of the observations were along the coast, with a few groups



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commuting over the arable fields and a group of 27 foraging to the southwest of Rookyard Wood. One herring gull was recorded on an occupied nest located on one of the offshore structures to the east of the Sizewell Power Station complex and therefore herring gull are confirmed to be breeding there. No other breeding evidence was observed.

4.2.25 In previous surveys, herring gull were primarily observed along the coast and were considered unlikely to breed within the survey area due to the limited suitable habitat. High numbers of herring gull were recorded foraging near to the offshore structures close to the Sizewell B outfall.

### Hobby m)

- 4.2.26 Hobby was recorded in April, May and June, with a peak count of two. The observations were mostly restricted to the northern half of the arable fields. Sizewell Belts, Minsmere South Levels and the edges of Goose Hill woodland. One pair of hobby was confirmed to be breeding on the east edge of Goose Hill woodland, adjacent to BW VP 5. There were also signs of a second pair with behaviour suggesting probable breeding within the northern part of the arable fields, near to Lower Abbey Farm.
- 4.2.27 In previous surveys, breeding hobby have been recorded, with likely and/or confirmed nesting locations at Goose Hill woodland, Ash Wood and Broom Covert although breeding had not been confirmed for several years.

### n) Kingfisher

- 4.2.28 Kingfishers were recorded in May and June at Sizewell Belts only, with a peak count of four. One kingfisher was observed at the south edge of Sizewell Belts which was a possible breeder. Additionally, three juveniles and an adult were observed to the western edge of Sizewell Belts where a ditch runs on the edge of the woodland. Kingfisher were confirmed to be breeding in this location.
- 4.2.29 Additionally, an incidental sighting of a kingfisher was recorded during other ecological surveys at Aldhurst Farm. The kingfisher was noted with a fish in its mouth and flew towards the pond by Brick Kiln Farm, indicating that an occupied nest was present.
- 4.2.30 In previous surveys, kingfishers were recorded mostly within the Sizewell Marshes SSSI and were considered likely to be breeding there but not confirmed.

### 0) Kittiwake

4.2.31 Kittiwakes were recorded in April, nesting on the offshore structures to the east of the Sizewell Power Station complex. At least 100 individuals were



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recorded with some carrying nesting material and therefore confirming that kittiwake were breeding here.

4.2.32 In previous surveys, kittiwake were associated with the offshore structures only and breed on them annually.

### p) Lapwing

- 4.2.33 Lapwing were recorded in April, May and June, with a peak count of 30 observed at Aldhurst Farm. The remaining lapwing observed were restricted to the Minsmere South Levels where they were recorded displaying, an occupied nest was recorded, and juveniles were seen with parents in multiple groups. Therefore, lapwing was confirmed to be breeding at Minsmere South Levels.
- 4.2.34 In previous surveys, lapwing had not been confirmed breeding within the survey area but had been recorded in the breeding season and during winter surveys.
  - Lesser black-backed gull q)
- 4.2.35 Lesser black-backed gulls were recorded commuting or foraging in May and June, with a peak count of 44. No breeding behaviour was recorded throughout the surveys and lesser black-backed gull were considered to be non-breeders on within the survey area.
- 4.2.36 In previous surveys, lesser black-backed gulls were observed commuting over the survey areas and roosting within the Minsmere South Levels with no breeding behaviour observed.

### Marsh harrier r)

- 4.2.37 Marsh harriers were observed across most of the survey area, with the majority recorded commuting or hunting. Evidence of breeding activity was observed within Aldhurst Farm, with two marsh harriers using distraction display and carrying nest material in Spring 2020, confirming breeding in this area.
- 4.2.38 Targeted marsh harrier surveys are being undertaken across the survey areas from April to September 2020 (inclusive). The results of the marsh harrier surveys will be presented in the marsh harrier survey report (Ref. 14), following the completion of the surveys at the end of September 2020.
- 4.2.39 In previous surveys, marsh harriers were recorded breeding at Aldhurst Farm (2019) and have been observed foraging widely across the survey area, particularly at the Minsmere South Levels and occasionally towards the northern arable fields and Sizewell Marshes SSSI.



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### s) Peregrine

- 4.2.40 Peregrines were recorded in May and June, with a peak count of two. A pair were observed passing food on the southwest corner of the Sizewell A nuclear reactor building, which implied that peregrines were probably breeding on the building. Peregrines were seen carrying food on two other occasions, once over Minsmere South Levels flying towards the power station complex and another offshore which was mobbed by kittiwakes.
- 4.2.41 Other individuals were observed commuting or hunting over Minsmere South Levels and Sizewell Belts throughout the surveys.
- 4.2.42 In previous surveys, peregrines were regularly recorded at the Minsmere South Levels. Peregrine pairs were probable breeders on the Sizewell A Power Station in both 2014 and 2015, although breeding was not confirmed a single juvenile has been observed during other surveys hunting over the Sizewell Belts.

### t) Redshank

- Redshank were recorded in April, May and June, with a peak count of four 4.2.43 (with an estimate of three to five pairs). All of the observations were at Minsmere South Levels, where small groups of redshank were observed displaying and therefore were considered to be probable breeders.
- In previous surveys, redshank was observed in low numbers along the coast 4.2.44 in winter and observed within Minsmere South Levels in the breeding season, but no breeding behaviour was observed. However, RSPB Minsmere Reserve reported that redshank have bred on the Minsmere South Levels since 2004 (Ref. 12).

### Sandwich tern u)

- 4.2.45 Sandwich terns were recorded on two occasions, with a peak count of three in June. Both sightings were of sandwich tern commuting along the beach to the east of Minsmere South Levels, no breeding behaviour was observed. Additional sightings were recorded during the targeted tern surveys, being undertaken along the coast from May to August 2020 (inclusive). The results of the tern surveys will be presented in the tern survey report (Ref. 11). following the completion of the surveys at the end of August 2020.
- 4.2.46 In previous surveys, sandwich terns were observed offshore and were recorded breeding at RSPB Minsmere in 2019 and 2020 (Ref. 11). Based on the observations over the course of the surveys, it would appear that sandwich terns have not had a very successful breeding year in 2020 (Ref. 15). Further details will be provided in the targeted tern report (Ref. 11).



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### v) Shelduck

- 4.2.47 Shelduck were recorded in April, May and June, with a peak count of 18. Shelduck were confirmed to be breeding at Minsmere South Levels where juveniles were seen with adults. The remaining records were of commuting birds or individuals. Shelduck were considered to be possible breeders within Gooderhams Fen, Sizewell Belts, SSSI Reedbed, arable fields, Leiston/Fiscal Policy and Platform survey areas. However, breeding in these other areas could not be confirmed during the surveys although attempts to breed are likely.
- 4.2.48 In previous surveys, shelduck were observed commuting along the coast and recorded within Minsmere South Levels during the breeding and winter seasons. No breeding behaviour was noted during previous surveys.

### w) Shoveler

- 4.2.49 Shoveler were recorded in small numbers in April, May and June, with a peak count of two. Shoveler were observed at Minsmere South Levels only with one pair recorded in April, a lone male in May and a group of males in June. Therefore, based on surveyor observations, at least one pair of shoveler are estimated to be breeding at Minsmere South Levels. There were no shoveler sightings within the main development site boundary.
- 4.2.50 In previous surveys, shoveler were mostly recorded during the winter, within Sizewell Marshes SSSI and Minsmere South Levels.

#### X) Teal

- 4.2.51 Teal were recorded in small numbers in April, May and June, with a peak count of eleven. Based on surveyor observations, at least one pair of teal were estimated to be breeding at Minsmere South Levels where a pair were observed copulating in April. Other sightings at Minsmere South Levels included mixed groups of teal. A group of eight in June were recorded as non-breeding adults as identifying the sex of the individuals was not possible due to males showing eclipse plumage (moulting males). There were no teal sightings within the main development site boundary.
- 4.2.52 In previous surveys, teal have been observed infrequently in the breeding season but have been recorded in higher numbers during the winter. No breeding behaviour was noted during previous surveys undertaken within the accessible areas of the Sizewell Estate.



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## V) Wigeon

- 4.2.53 Wigeon were recorded in April only, with a peak count of 68 observed at Minsmere South Levels. One pair of wigeon was recorded in this area and therefore at least one breeding pair were estimated based on surveyor observations. There were no wigeon sightings within the main development site boundary.
- 4.2.54 In previous surveys, wigeon were observed predominantly within the Minsmere South Levels, Sizewell Marshes SSSI and along the coast, with more observations during the winter than breeding season. No breeding behaviour was noted during previous surveys.

### Woodlark z)

- 4.2.55 Woodlarks were recorded in April, with a peak count of two. Woodlarks were only recorded on two occasions, a pair heard within the field to the south of Sizewell Belts and an individual singing along the boundary of the arable fields and Kenton Hills woodland area. Woodlark were not heard or seen in the same location more than once, however they were heard in suitable breeding habitat, therefore they are considered to be possibly breeding.
- 4.2.56 In previous surveys, woodlark have been occasionally observed within the survey areas, however no breeding behaviour was recorded. Larger populations are known to be present at Dunwich Forest, Minsmere to Walberswick and the Sandlings SPA.

## 4.3 Schedule 1 Species

4.3.1 Ten schedule 1 species (not including the IEFs) were recorded throughout the breeding bird and waterfowl surveys in April - June 2020. Common crossbill (Loxia curvirostra), firecrest (Regulus ignicapilla) and red kite (Milvus milvus) are green listed species and all others detailed below are amber listed.

#### a) Common crossbill

- Common crossbills were recorded in June with a peak count of 46 which 4.3.2 were observed on the southern boundary of Goose Hill woodland, where it meets Gooderhams Fen. Common crossbills were considered to be possible breeders in this area although there was an influx of common crossbills in summer 2020 and this flock is perhaps more likely to refer to migrants.
- 4.3.3 In previous surveys, common crossbills were not recorded, therefore no comparisons can be made alongside the 2020 data.



## NOT PROTECTIVELY MARKED

### b) Dartford warbler

- 4.3.4 Dartford warblers (Sylvia undata) were recorded in April, May and June with a peak count of four. The observations were all restricted to sand dune habitats, along the coast. At the northeast of Minsmere South Levels, an individual carrying food was observed and juveniles were seen with parents, therefore Dartford warbler are confirmed to be breeding here. Additionally, on the Beach and Platform transects, Dartford warbler were considered to be probable breeders.
- 4.3.5 In previous surveys, no Dartford warbler was recorded during the breeding season. However, Dartford warbler have been observed in winter surveys, foraging in the Broom Covert area (2018) and during the wintering bird surveys in 2019/2020 (Ref. 16) a pair were observed calling and feeding in suitable breeding habitat in the western corner of Retsom's Field (2020).

### c) **Firecrest**

- 4.3.6 Firecrests were recorded in April and May with a peak count of two. They were considered to be possible breeders in the Kenton Hills woodland, Goose Hill woodland, Leiston/Fiscal Policy and Sizewell Belts survey areas.
- 4.3.7 In previous surveys, firecrest have been recorded in low numbers, predominantly in the arable fields and Goose Hill woodland, however no breeding evidence had been observed.

### d) Green sandpiper

One green sandpiper (Tringa ochropus) was observed in June at Minsmere 4.3.8 South Levels and is presumed to be a passage migrant. In previous surveys, green sandpiper was rarely recorded, mostly at locations outside of the main development site.

### Greylag goose e)

- 4.3.9 Greylag goose (Anser anser) was recorded in April, May and June, with a peak count of 20. All observations were at Minsmere South Levels, where greylag geese were confirmed to be breeding as juveniles were observed with parents in June.
- 4.3.10 In previous surveys, greylag goose were most frequently recorded over the winter and occasionally breeding, although the locations of breeding records were not confirmed.



## NOT PROTECTIVELY MARKED

## f) Honey buzzard

4.3.11 One honey buzzard (Pernis apivorus) was observed in June, flying over Minsmere South Levels. No breeding behaviour was observed. Honey buzzard was not recorded in previous surveys.

### g) Mediterranean gull

- 4.3.12 Mediterranean gulls (Larus melanocephalus) were recorded in May and June, with a peak count of seven. They were all observed commuting, mostly along the coast, with two small groups seen flying over the arable fields. Eight individuals were also observed on one of the east scrapes of the RSPB Minsmere reserve. No breeding behaviour was observed within the survey area.
- 4.3.13 In previous surveys, Mediterranean gull have been observed within the survey areas during the breeding season, however the closest breeding site is on the scrape at the RSPB Minsmere reserve.

### h) Pintail

4.3.14 One male pintail (Anas acuta) was observed in May, within the north east section of the Minsmere South Levels. Therefore, based on surveyor observations, at least one breeding pair were estimated to be using the Minsmere South Levels. There were no pintail sightings within the main development site boundary. In previous surveys, pintail has been frequently observed at Minsmere South Levels, however no breeding evidence was previously recorded.

### Red kite i)

4.3.15 Two red kites were observed in June, commuting to the south of Eastbridge. No breeding behaviour was observed. In previous surveys, red kite have been rarely observed within the survey areas with occasional sightings of red kite flying over the arable fields, Goose Hill woodland and Minsmere South Levels.

### j) Spoonbill

One spoonbill (Platalea leucorodia) was observed commuting across the 4.3.16 Minsmere South Levels in June, no breeding behaviour was observed. In previous surveys, spoonbill have been observed very rarely offshore and within the Minsmere South Levels, with no breeding evidence recorded.



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## 4.4 **Red Listed Species**

4.4.1 A total of 15 other red listed species (not including IEFs) were recorded throughout the breeding bird and waterfowl surveys in April – June 2020.

### a) Cuckoo

- 4.4.2 Cuckoos (Cuculus canorus) were recorded in May and June in various survey areas, with a peak count of six. Cuckoo were considered to be probable breeders within the Leiston/Fiscal Policy area. They were considered as possible breeders in the arable and Goose Hill woodland areas, along with Aldhurst Farm, Rookyard Wood, SSSI Reedbed and Gooderhams Fen, Sizewell Belts and Minsmere South Levels. Based on surveyor observations, there are likely to be two to four pairs of cuckoo breeding within the survey areas.
- 4.4.3 In previous surveys, cuckoo have been recorded throughout the breeding season mostly within the arable fields and Goose Hill woodland areas. It was considered likely that there were at least two breeding pairs in 2014 and at least one in 2015.

### b) Curlew

- 4.4.4 Curlews (Numenius arguata) were recorded in April, May and June, with a peak count of three commuting over the arable fields. A curlew was heard in the fields south of Sandy Lane in the Leiston/Fiscal Policy area, where they were considered to be a possible breeder although there was no further evidence of breeding.
- 4.4.5 In previous surveys, curlew were only recorded during winter surveys, within the northern arable fields, Minsmere South Levels and commuting along the coast.

### c) Grasshopper warbler

4.4.6 One grasshopper warbler (Locustella naevia) was heard singing to the northeast of Sizewell Belts in June and is therefore considered to be a possible breeder. Grasshopper warbler was not recorded in previous surveys.

#### d) House sparrow

4.4.7 House sparrows (*Passer domesticus*) were recorded in April, May and June, with a peak count of 18. House sparrow were considered to be probable breeders at Sizewell Beach and Leiston/Fiscal Policy survey areas.



## NOT PROTECTIVELY MARKED

4.4.8 In previous surveys, house sparrows were recorded often in the breeding season, likely associated with domestic and farm buildings and Sizewell Beach.

## e) Linnet

- 4.4.9 Linnets (Carduelis cannabina) were recorded across various survey areas in April, May and June, with a peak count of 60 recorded in the arable fields. Linnets were confirmed to be breeding in the arable fields, Sizewell Beach, Leiston/Fiscal Policy and Minsmere South Levels areas.
- In previous surveys, linnet were recorded breeding within the survey areas, 4.4.10 mostly associated with the arable fields and Sizewell Beach areas.

### f) Marsh tit

- 4.4.11 Marsh tits (*Poecile palustris*) were recorded in May and June, with a peak count of ten. Marsh tit were confirmed to be breeding to the south of Rookyard Wood and within Ash Wood (adjacent to the arable field transect), where juveniles were observed with parents. A marsh tit carrying food was observed at the south of Gooderhams Fen and therefore were confirmed to be breeding in this location too. Marsh tits were possibly breeding at the east of Goose Hill woodland.
- 4.4.12 In previous surveys, marsh tits were recorded breeding within the survey areas, mostly associated with woodlands within the arable fields, the Sizewell Marshes SSSI and Kenton Hills woodland.

#### g) Mistle thrush

4.4.13 Mistle thrush (*Turdus viscivorus*) was recorded in May and June, with a peak count of one. Mistle thrush were considered to be possible breeders in the arable fields and Aldhurst farm areas. In previous surveys, mistle thrushes were recorded breeding in the northern arable fields area.

### **Nightingale** h)

4.4.14 Nightingales (Luscinia megarhynchos) were recorded in June, with a peak count of one. Two nightingales were heard singing in two separate locations on the Leiston/Fiscal Policy transect and one singing at Sizewell Belts and were considered to be possible breeders in both of these areas, due to singing in suitable breeding habitats. However, there were no repeated records in the same locations (closest records 0.45km apart) and therefore there was no evidence of breeding nightingale within the survey areas in 2020.



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- 4.4.15 In previous surveys, breeding nightingale have been recorded, however, no confirmed breeding has been observed since 2016.
  - i) Ring ouzel
- 4.4.16 One ring ouzel (Turdus torquatus) was observed in April, to the north of Goose Hill woodland, and is considered to be a passage migrant. Ring ouzel have only been observed migrating across the area in previous surveys.
  - j) Skylark
- 4.4.17 Skylarks (*Alauda arvensis*) were recorded in April, May and June, with a peak count of five. Skylark confirmed to be breeding at Minsmere South Levels as juveniles were observed with parents. The majority of the skylark sightings were restricted to the arable fields and improved grassland habitats, where skylarks were considered to be probably breeding. This includes within the arable, Leiston/Fiscal Policy, Platform and Aldhurst Farm survey areas, along with the southern fields of the Minsmere South Levels. Across the survey area, based on field surveyor observations, 20-40 breeding pairs of skylark are present.
- 4.4.18 In previous surveys, skylark were recorded during the breeding season every year from 2004-2018, with no surveys undertaken in 2019. The majority of the records were restricted to the arable fields.
  - k) Song thrush
- 4.4.19 Song thrush (*Turdus philomenos*) was recorded in April, May and June, with a peak count of one. Song thrush were confirmed to be breeding within the arable and Leiston/Fiscal Policy survey areas as individuals were seen carrying food. They were considered to be possibly breeding within Coronation Wood, Goose Hill woodland and Sizewell Marshes reedbed.
- 4.4.20 In previous surveys, song thrush were recorded during the breeding season every year from 2004-2018, with no data available in 2019. The majority of the records were from the Kenton Hills and Goose Hill woodland, arable fields and Sizewell Marshes SSSI.
  - I) Starling
- 4.4.21 Starlings (Sturnus vulgaris) were recorded in May and June, with a peak count of 30 commuting over the Goose Hill woodland area. Starling were confirmed to be breeding in the arable fields as juveniles were seen with parents and possibly breeding at Goose Hill woodland and Leiston/Fiscal Policy survey areas.
- 4.4.22 In previous surveys, starling were recorded in the arable fields and Sizewell Beach areas during the breeding season.



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### m) Turtle dove

- 4.4.23 Turtle doves (Streptopelia turtur) were observed in May and June, with a peak count of one. A turtle dove was heard singing along Sandy Lane to the south of Sizewell Belts and was therefore considered to be a possible breeder. Another was observed on a separate occasion along the track to the south of Rookyard Wood, this individual was perched but likely to be breeding nearby.
- 4.4.24 In previous surveys, turtle dove were recorded within the survey area in the breeding season in the Sizewell Marshes SSSI and the northern arable fields. Confirmed breeding was last recorded in 2016.
  - Yellow wagtail n)
- One yellow wagtail (Motacilla flava) was observed on Sizewell Beach to the 4.4.25 east of the Platform area and is likely to have been a passage migrant in this location. In previous surveys, only one record of yellow wagtail has been recorded.
  - Yellowhammer 0)
- 4.4.26 Yellowhammer (*Emberiza citronella*) were observed in April, May and June, with a peak count of four. Yellowhammer were considered to be probable breeders within the arable fields and possible breeders within the Leiston/Fiscal Policy area. Across the survey area, based on field surveyor observations, 7 to 12 breeding pairs of yellowhammer were estimated.
- 4.4.27 In previous surveys, yellowhammer have regularly been recorded in the breeding season within the arable fields, Sizewell Marshes SSSI and in the Leiston/Fiscal policy area.
- 4.5 **Amber Listed Species**
- 4.5.1 A total of 17 other amber listed species (not including IEFs or Schedule 1) were recorded throughout the breeding bird and waterfowl surveys in April – June 2020.
  - a) Barnacle goose
- 4.5.2 Barnacle Goose (Branta leucopsis) was recorded in April and May, with a peak count of 63 observed feeding at Minsmere South Levels. Of which, a large number were paired up indicating breeding within the survey area. During the surveys, barnacle geese were only recorded at Minsmere South Levels. This reflects previous survey data, where barnacle geese have been recorded at Minsmere South Levels and commuting along the coast. During the 2020 surveys, an individual was recorded from a ringed wild flock of



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barnacle geese from Scandinavia, which was thought to be breeding within the Minsmere feral population.

### b) Bullfinch

- 4.5.3 Bullfinch (*Pyrrhula pyrrhula*) was recorded in June, with a peak count of four. On the arable transect, juveniles were seen with parents and therefore were confirmed to be breeding. Additionally, a bullfinch was heard calling at Sizewell Belts and therefore considered to be a probable breeder.
- 4.5.4 In previous surveys, bullfinch have been recorded breeding in low numbers in the arable fields and Goose Hill woodland areas.

## c) Common gull

4.5.5 Common gulls (Larus canus) were recorded in small numbers in May and June, with a peak count of two. Common gulls were only recorded commuting over Minsmere South Levels and Sizewell Beach and no breeding behaviour was observed. This reflects previous survey data, where common gull has not been recorded breeding and has been observed more frequently during winter surveys.

### d) Dunnock

- 4.5.6 Dunnocks (*Prunella modularis*) were recorded in April, May and June, with a peak count of 11. Observations were recorded across the majority of the survey areas with the exception of Minsmere South Levels. Almost all of the dunnocks recorded were singing. Dunnock were considered to be probable breeders in the arable fields, Sizewell Beach, Goose Hill woodland, Leiston/Fiscal Policy and Platform transects and across most of the survey area. They were also possible breeders in Rookyard Wood.
- 4.5.7 In previous surveys, dunnock have been recorded in good numbers during the breeding season from 2004 - 2018, with no data available for 2019. Breeding was observed within the Platform, Goose Hill woodland, arable fields and Sizewell Marshes SSSI areas.

#### e) Great black-backed gull

Great black-backed gulls (Larus marinus) were recorded in low numbers in 4.5.8 May and June, with a peak count of eight. The observations were mostly restricted to Minsmere South Levels and along the coast. No breeding behaviour was observed. This also reflects previous survey data, where great black-backed gull records have been mostly restricted to the coast.



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# f) House martin

4.5.9 A group of four house martins (*Delichon urbicum*) was observed in May, commuting over the field to the northwest of Lower Abbey Farm. No breeding behaviour was observed. This reflects previous survey data where house martin have been found in very low numbers and not confirmed to be breeding. However, the survey areas were considered to be suitable for foraging and the buildings at Upper Abbey Farm and elsewhere are suitable for breeding.

### Kestrel g)

- 4.5.10 Kestrels (Falco tinnunculus) were recorded in April, May and June, with a peak count of two. A pair were displaying in Rookyard Wood and were therefore probable breeders. Kestrel were also considered to be possible breeders in all survey areas excluding Sizewell Beach, Coronation Wood and Goose Hill woodland.
- 4.5.11 In previous surveys, one record of breeding kestrel was recorded in 2007, however the location was not reported. No other breeding evidence has been recorded.

### h) Mallard

- 4.5.12 Mallards (Anas platyrhynchos) were recorded in April, May and June, with a peak count of 25, observed at Aldhurst Farm. Mallard were recorded in all waterfowl survey areas and were confirmed to be breeding at Rookyard Wood as juveniles were observed with parents. They were probable breeders at Aldhurst Farm, Sizewell Belts and Minsmere South Levels and possible breeders within the SSSI reedbed, Gooderhams Fen and Leiston/Fiscal Policy.
- In previous surveys, mallard have been observed across the survey areas 4.5.13 throughout the breeding season, predominantly within the Sizewell Marshes SSSI areas and Minsmere South Levels.

### i) Meadow pipit

- 4.5.14 Meadow pipits (Anthus pratensis) were recorded in small numbers in April and June, with a peak count of one. Meadow pipit were considered to be probable breeders in the arable and beach transects.
- 4.5.15 In previous surveys, meadow pipits were recorded in small numbers, with breeding confirmed most years since 2004 (up to maximum of three pairs). The records were mostly from the Platform and Sizewell Beach.



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# Mute swan

- 4.5.16 Mute swans (*Cygnus olor*) were recorded in April, May and June, with a peak count of ten. Mute swans were confirmed to be breeding at Sizewell Belts where juveniles with parents were observed and at the south east corner of Minsmere South Levels (to the east of Goose Hill woodland), where an occupied nest was recorded.
- 4.5.17 In previous surveys, mute swans were observed breeding from 2004 – 2018. Observations were mostly recorded within Sizewell Marshes SSSI, Minsmere South Levels and along the coast.

## k) Oystercatcher

- 4.5.18 Oystercatchers (Haematopus ostralegus) were observed in April, May and June, with a peak count of two. Juveniles were observed at Minsmere South Levels and so oystercatchers were confirmed to be breeding in this area. Additionally, they were considered to be possibly breeding at Sizewell Beach where a pair were recorded in April and June in a similar location.
- 4.5.19 In previous surveys, one pair of oystercatchers was confirmed to be breeding within the survey areas in 2009, however the location was not reported. Individual birds have been recorded in the breeding season, often in the northern arable fields, however breeding has not been confirmed here.

### Reed bunting I)

- 4.5.20 Reed buntings (Emberiza schoeniclus) were recorded across much of the survey areas in April, May and June, with a peak count of two. An individual was observed carrying food at Sizewell Marshes reedbed and therefore confirmed to be breeding there. Another individual carrying food was observed just south of RSPB Minsmere reserve at the South Levels.
- 4.5.21 Reed bunting were considered to be probable breeders at the south eastern extent of Minsmere South Levels (to the east of Goose Hill woodland), Leiston/Fiscal Policy, Aldhurst Farm, Rookyard Wood, Gooderhams Fen and Sizewell Belts. They were also possibly breeding within the Platform area.
- 4.5.22 In previous surveys, reed buntings were observed breeding in small numbers from 2004-2018, with breeding locations predominantly within Sizewell Marshes SSSI.

#### Snipe m)

4.5.23 One snipe (Gallinago gallinago) was recorded in April within Sizewell Belts, the bird was flushed by the surveyor and therefore snipe considered unlikely to be breeding.



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4.5.24 In previous surveys, snipe were recorded during the breeding season near the Platform, Goose Hill woodland and the northern arable fields. Fewer observations were recorded during the 2020 breeding season, which could be due to under recording, as snipe only flush from the ground when the surveyor is in close proximity.

## Stock dove n)

- 4.5.25 Stock doves (Columba oenas) were observed in April, May and June, with a peak count of 15. Stock dove were considered to be probably breeding within the arable fields, Goose Hill woodland and Rookyard Wood areas. They were possibly breeding within the Leiston/Fiscal Policy, Platform, Sizewell Marshes reedbed and Gooderhams Fen, Aldhurst Farm and Sizewell Belts.
- 4.5.26 In previous surveys, stock dove were recorded breeding in relatively small numbers across the survey areas between 2004 and 2018. Breeding was confirmed at Upper Abbey Farm, Ash Wood, Goose Hill woodland and the arable fields.

### Swift 0)

4.5.27 Swifts (Apus apus) were recorded in May and June, with a peak count of 24. Two individuals were observed flying towards Lower Abbey Farm and were noted to be associated with the buildings, are so were considered to be possibly breeding here. Swift were also recorded in other survey areas but with no breeding behaviour observed. In previous surveys, swift have not been recorded breeding within the survey areas.

#### p) Tawny owl

- Tawny owls (Strix aluco) were recorded in May and June, with a peak count 4.5.28 of two during the targeted barn owl surveys. Tawny owls were heard calling in Goose Hill woodland, Ash Wood and to the west of Lower Abbey Farm. Tawny owls were considered to be possibly breeding in these areas.
- 4.5.29 In previous surveys, tawny owls were recorded in multiple years between 2004 and 2018, with one to two pairs. Targeted tawny owl surveys have not been undertaken and given the suitable habitats it is likely that tawny owl have been under recorded within the survey areas.

### q) Willow warbler

4.5.30 Willow warblers (*Phylloscopus trochilus*) were recorded in April and May, with a peak count of one. Willow warblers were recorded in four separate locations within the Goose Hill woodland and Leiston/Fiscal Policy transects and within the scrub on the west edge of Minsmere South Levels. There were no repeated records in the same locations, with the closest records being



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0.8km apart. The willow warblers recorded were likely to be passage migrants and therefore unlikely to be breeding within the survey areas.

4.5.31 In previous surveys, willow warbler were recorded breeding in small numbers between 2004 and 2018. Breeding was recorded at the Platform, the wet woodland to the south of Goose Hill woodland and in the arable fields.

## 4.6 Other Species

4.6.1 Observations of bird species with no particular conservation concern were also recorded during the surveys. In total, 47 additional species were recorded, with the full species list and peak counts per month detailed in Table 4 in Appendix C.

## 5 DISCUSSION

- 5.1.1 The 2020 breeding bird and waterfowl surveys have shown that the survey areas, including the main development site, continues to support a diverse range of bird species within the various habitat types present. The results of the 2020 surveys are comparable to previous surveys undertaken, which were submitted as part application for development consent.
- 5.1.2 Fifteen of the IEF's were recorded as breeding within the survey areas and one IEF (peregrine) was likely to be breeding.
- 5.1.3 At the Minsmere South Levels, breeding species included: bearded tit, gadwall, lapwing, pintail, shoveler, shelduck, teal and wigeon. Barn owl were confirmed breeding at Lower Abbey Farm, hobby at the east of Goose Hill woodland, kingfisher at Sizewell Belts and Aldhurst Farm, marsh harrier at Aldhurst Farm and black redstart at Sizewell A Power Station. Herring gull and kittiwake were recorded breeding on the offshore structures to the east of the Sizewell Power Station complex. Peregrines were also likely to be breeding on the existing Sizewell A Power Station.
- 5.1.4 Thirteen other species of conservation concern were recorded as breeding within the survey areas.
- 5.1.5 At the Minsmere South Levels, breeding species included: Dartford warbler, greylag goose, linnet, mute swan, oystercatcher and skylark. In the other survey areas, species confirmed to be breeding included: bullfinch, linnet, mallard, marsh tit, mute swan, reed bunting, siskin, song thrush and starling.
- 5.1.6 There were a large number of other species that were considered to be possible or probable breeders within the survey areas, however the behaviour observed by the surveyors could not determine whether these species were definitely breeding.



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5.1.7 During the surveys a number of predators were observed by the survey team and therefore based on the observations it is likely there is a high predation rate of ground nesting birds which would include waders and wildfowl.

## 52 Notable trends

- 5.2.1 Although the overall results of the 2020 surveys are widely comparable with previous surveys, there are a few notable trends and changes to highlight.
- 5.2.2 Greylag goose, lapwing and shelduck were all confirmed to be breeding at Minsmere South Levels, none of these species had been recorded as confirmed breeders during previous surveys.
- 5.2.3 Kingfisher was noted to be a likely breeder within the Sizewell Marshes SSSI area in previous surveys, however they were confirmed to be breeding at the western end of Sizewell Belts and within Aldhurst Farm in the 2020 surveys.
- 5.2.4 Curlew was previously only recorded during the winter bird surveys, however in the 2020 surveys, curlew were recorded calling within the fields to the south of Sandy Lane and were considered to be possible breeders.
- 5.2.5 Common crossbill were not mentioned in the previous surveys, therefore it is assumed that they were not previously observed within the survey areas. During the 2020 surveys, relatively large groups of 35-46 individuals were observed within the Sizewell Marshes SSSI area (reedbed and Gooderhams Fen) and individuals in the arable fields. Although no confirmed breeding was observed, common crossbill were present in good numbers. However, the influx of common crossbills in summer 2020 is perhaps likely to refer to migrants.
- 5.2.6 Cetti's warbler were recorded breeding within some of the survey areas every year between 2004 and 2018, with only one breeding pair recorded in 2018, compared with a peak of 21 in 2011. In the 2020 surveys, no confirmed breeding was observed, however, Cetti's warbler were considered to be probable breeders at Goose Hill woodland, Leiston/Fiscal Policy and on the west and east of Minsmere South Levels with six pairs recorded.
- 5.2.7 House sparrow were previously recorded regularly in the breeding season. In the 2020 surveys, house sparrows were considered to be probable breeders at Sizewell Beach and Leiston/Fiscal Policy survey areas, but no confirmed breeding was observed.

## 6 CONCLUSION

6.1.1 A total of 115 bird species were recorded (including 47 species of no special conservation concern), although not all species were confirmed to be



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breeding. There were 26 of the 32 IEFs recorded. Including IEFs, there were 22 schedule 1 species, 20 red listed species and 39 amber listed species.

- 6.1.2 Fifteen of the IEF's and 13 other species of conservation concern were confirmed to be breeding within the survey areas.
- 6.1.3 Overall, the results of the 2020 surveys are similar to previous surveys undertaken and consistent with the submitted application for development consent. The breeding bird assemblage could be described as fairly typical for the habitat types surveyed. The key areas supporting breeding birds appear to be the Minsmere South Levels, Sizewell Marshes SSSI (including reedbed, Gooderhams Fen, Rookyard wood and Sizewell Belts), the arable fields and the existing Sizewell Power Station complex.



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# **APPENDIX A:** SURVEY DETAILS AND WEATHER CONDITIONS

A.1.1. Table 2 and Table 3 below detail the survey timings and weather conditions during each survey. Temperature is measured in Celsius, cloud cover is measured in Oktas and wind speed is measured using the Beaufort Scale.

Table 2: Survey details for breeding bird surveys 2020

Survey Area	Survey Details	April	May	June
Arable fields	Date	10/04/2020	06/05/2020	01/06/2020
	Survey timings	06:00 - 10:00	05:45 – 10:00	05:15 – 09:15
	Surveyors	Dave Andrews (DA)	DA	DA
	Weather conditions	Temp: 9-14°C, cloud: 0/8, wind: 1, no rain, excellent visibility	Temp: 4-8°C, cloud: 0/8, wind: 1, no rain, excellent visibility	Temp: 12°C, cloud: 1/8, wind: 1, no rain, excellent visibility
Sizewell	Date	13/04/2020	07/05/2020	05/06/2020
Marshes Reedbed	Survey timings	08:15 – 10:00	08:15 – 09:00	05:45 – 07:35
Recubed	Surveyors	DA	DA	Mike Hoit (MH)
	Weather conditions	Temp: 6°C, cloud: 8/8, wind: 4-5 air, no rain, excellent visibility	Temp: 10-12°C, cloud: 2/8, wind: 1, no rain, excellent visibility	Temp: 10°C, cloud: 7/8, wind: 2-3, no rain, excellent visibility
Sizewell	Date	13/04/2020	07/05/2020	05/06/2020
Beach	Survey timings	06:00 - 09:30	06:00 - 07:30	05:30 - 09:30
	Surveyors	МН	МН	DA
	Weather conditions	Temp: 6°C, cloud: 7/8, wind: 4, no rain, excellent visibility	Temp: 10-12°C, cloud: 2/8, wind: 1, no rain, excellent visibility	Temp: 10°C, cloud: 4/8, wind: 1, no rain, excellent visibility
Sizewell C	Date	13/04/2020	07/05/2020	05/06/2020
Power Station	Survey timings	06:00 - 08:00	07:30 – 08:15	05:40 – 08:15
Platform	Surveyors	DA	DA	МН
	Weather conditions	Temp: 6°C, cloud: 8/8, wind:	Temp: 10-12°C, cloud: 2/8, wind:	Temp: 10°C, cloud: 7/8, wind:



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Survey Area	Survey Details	April	May	June
		4-5, no rain, excellent visibility	1, no rain, excellent visibility	2-3, no rain, excellent visibility
Goose Hill	Date	10/04/2020	06/05/2020	01/06/2020
woodland	Survey timings	06:00 - 09:30	05:45 – 10:00	05:15 – 09:15
	Surveyors	МН	МН	МН
	Weather conditions	Temp: 9-14°C, cloud: 0/8, wind: 1, no rain, excellent visibility	Temp: 4-8°C, cloud: 0/8, wind: 1, no rain, excellent visibility	Temp: 12-17°C, cloud: 1-2/8, wind: 2-3, no rain, excellent visibility
Coronation	Date	17/04/2020	05/05/2020	04/06/2020
Wood	Survey timings	09:45 – 10:30	06:15 – 07:00	08:00 - 08:30
	Surveyors	МН	МН	МН
	Weather conditions	Temp: 8-11°C, cloud: 6/8, wind: 3, no rain, excellent visibility	Temp: 7-9°C, cloud: 6/8, wind: 3-4, no rain, excellent visibility	Temp: 12°C, cloud: 8/8, wind: 3, no rain, excellent visibility
Leiston/Fiscal	Date	14/04/2020	05/05/2020	04/06/2020
Policy	Survey timings	06:00 - 09:00	05:40 - 09:30	05:30 - 09:30
	Surveyors	DA & MH	DA & MH	DA & MH
	Weather conditions	Temp: 4-7°C, cloud: 8/8, wind: 1, no rain, excellent visibility	Temp: 7-9°C, cloud: 6/8, wind: 3-4, no rain, excellent visibility	Temp: 12°C, cloud: 8/8, wind:3-4, light drizzle showers, excellent visibility

Table 3: Survey details for breeding waterfowl surveys 2020

Survey Area	Survey Details	April	May	June
Sizewell	Date	17/04/2020	22/05/2020	12/06/2020
Marshes Reedbed and	Survey timings	06:00 - 07:30	06:30 - 08:30	09:01 – 12:15
Gooderhams Fen	Surveyors	Dave Andrews (DA)	Mike Hoit (MH)	David Darrell- Lambert (DDL)
	Weather conditions	Temp: 8-11°C, cloud: 3-6/8, wind:	Temp: 15-16°C, cloud: 8/8, wind:	Temp: 15-16°C, cloud: 8/8, wind:



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Survey Area	Survey Details	April	May	June
		3, no rain, excellent visibility	2-4, no rain, excellent visibility	4, no rain, good visibility
Sizewell Belts	Date	17/04/2020	22/05/2020	12/06/2020
	Survey timings	08:50 – 10:40	05:00 – 06:00	06:03 – 08:37
	Surveyors	DA	MH	DDL
	Weather conditions	Temp: 8-11°C, cloud: 3-6/8, wind: 3, no rain, excellent visibility	Temp: 15-16°C, cloud: 8/8, wind: 2-4, no rain, excellent visibility	Temp: 15-16°C, cloud: 8/8, wind: 4 NE, no rain, good visibility
Rookyard	Date	17/04/2020	22/05/2020	12/06/2020
Wood	Survey timings	07:45 – 09:30	08:50 – 11:35	06:00 - 08:00
	Surveyors	Mike Hoit (MH)	DDL	DA
	Weather conditions	Temp: 8-11°C, cloud: 4/8, wind: 3, no rain, excellent visibility	Temp: 16-20°C, cloud: 8-4/8, wind: 4, no rain, excellent visibility	Temp: 16°C, cloud: 8/8, wind: 1, drizzle/mist, moderate visibility
Aldhurst Farm	Date	17/04/2020	22/05/2020	12/06/2020
Receptor area	Survey timings	06:00 – 07:30	06:15 – 08:35	08:00 – 10:30
	Surveyors	МН	DDL	DA
	Weather conditions	Temp: 8-11°C, cloud: 4/8, wind: 3, no rain, excellent visibility	Temp: 15-16°C, cloud: 8/8, wind: 3, no rain, excellent visibility	Temp: 17°C, cloud: 8/8, wind: 1, drizzle/mist, moderate visibility
Minsmere	Date	17/04/2020	22/05/2020	12/06/2020
South Levels: BW_VP 1	Survey timings	06:00 - 09:00	05:10 – 10:30	06:00 – 09:45
BW_VP 2 BW_VP 3	Surveyors	DDL	DA	MH
	Weather conditions	Temp: 8-11°C, cloud: 4/8, wind: 3, no rain, excellent visibility	Temp: 15-16°C, cloud: 8/8, wind: 2-4, no rain, excellent visibility	Temp: 14°C, cloud: 8/8, wind: 3-4, patchy mist/no rain, moderate-good visibility
	Date	17/04/2020	22/05/2020	19/06/2020
	Survey timings	07:30 – 08:30	08:45 – 10:15	07:52 – 10:00



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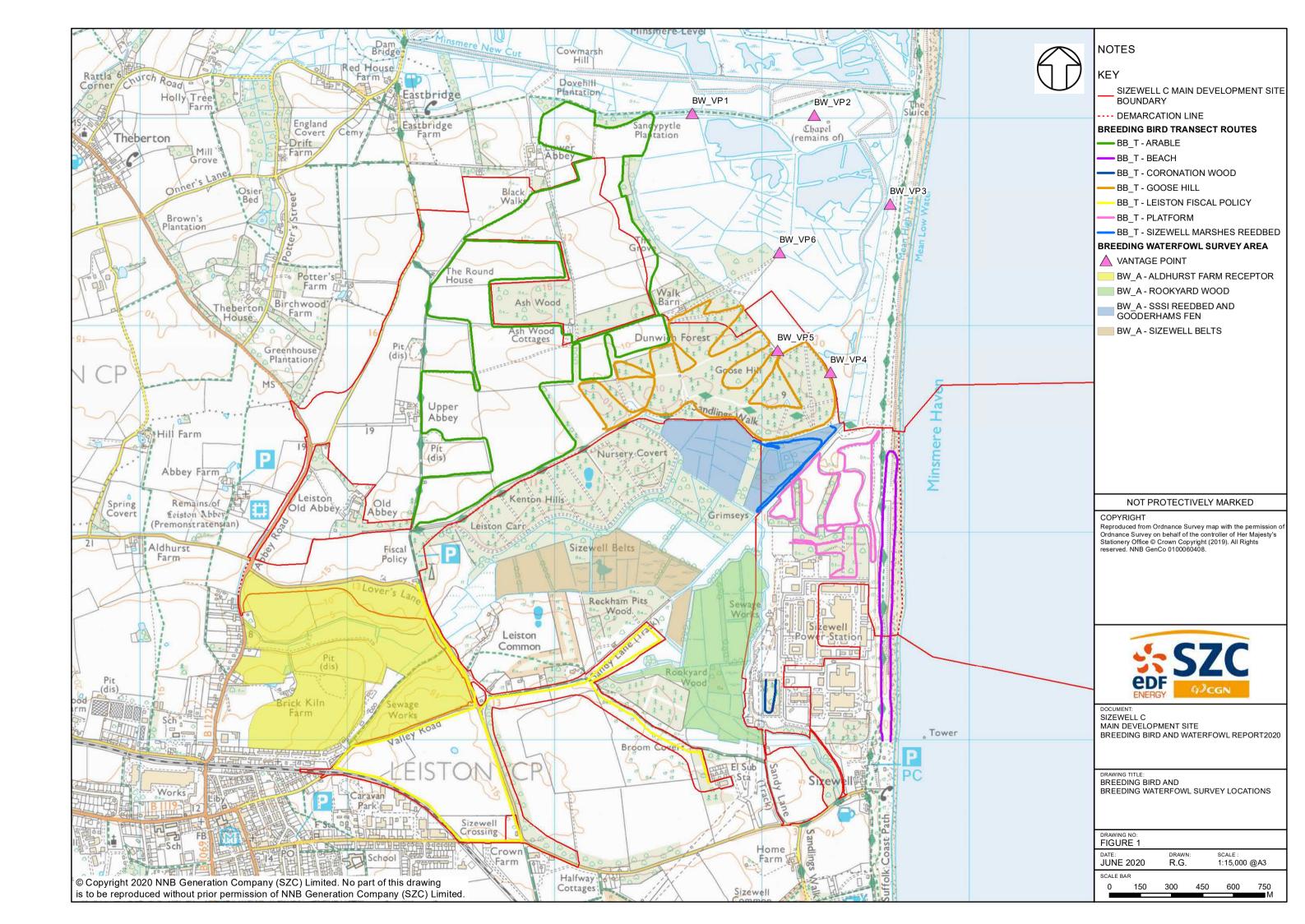
Survey Area	Survey Details	April	May	June
Minsmere	Surveyors	DA	MH	DDL
South Levels: BW_VP 4 BW_VP 5 BW_VP 6	Weather conditions	Temp: 8-11°C, cloud: 3-6/8, wind: 3, no rain, excellent visibility	Temp: 15-16°C, cloud: 8/8, wind: 2-4, no rain, excellent visibility	Temp: 18°C, cloud: 0-8/8, wind: 5, short light shower, excellent visibility

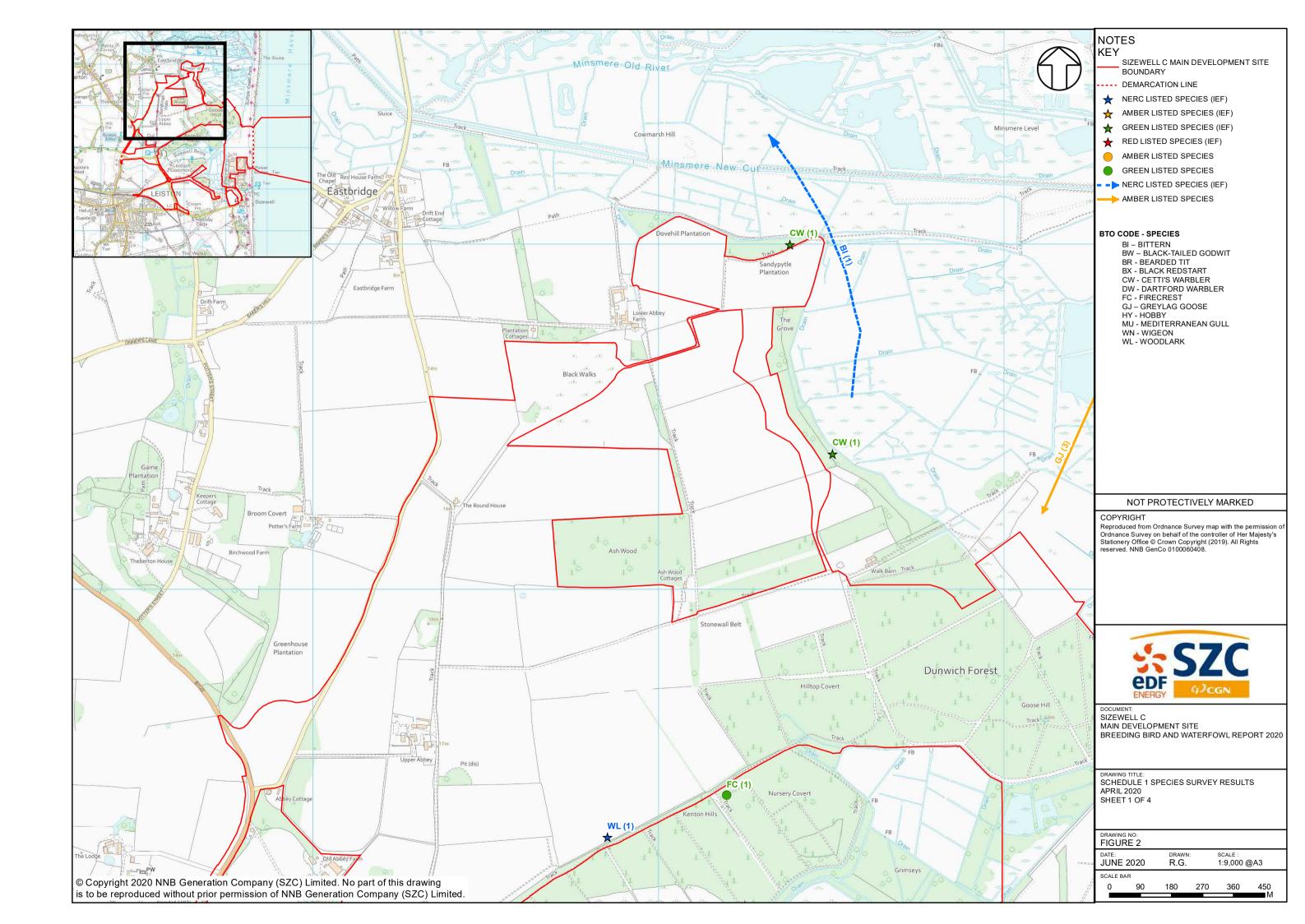


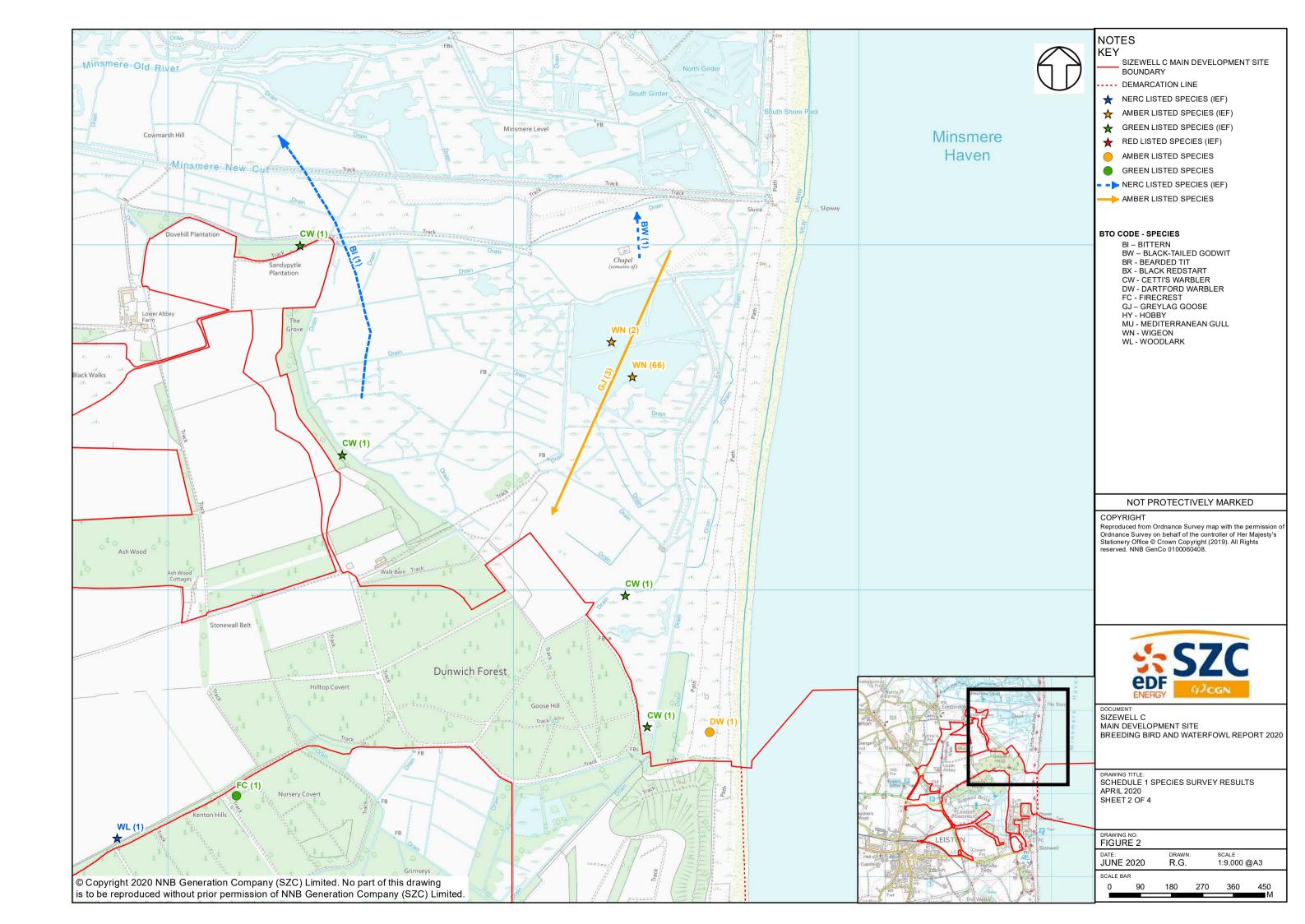
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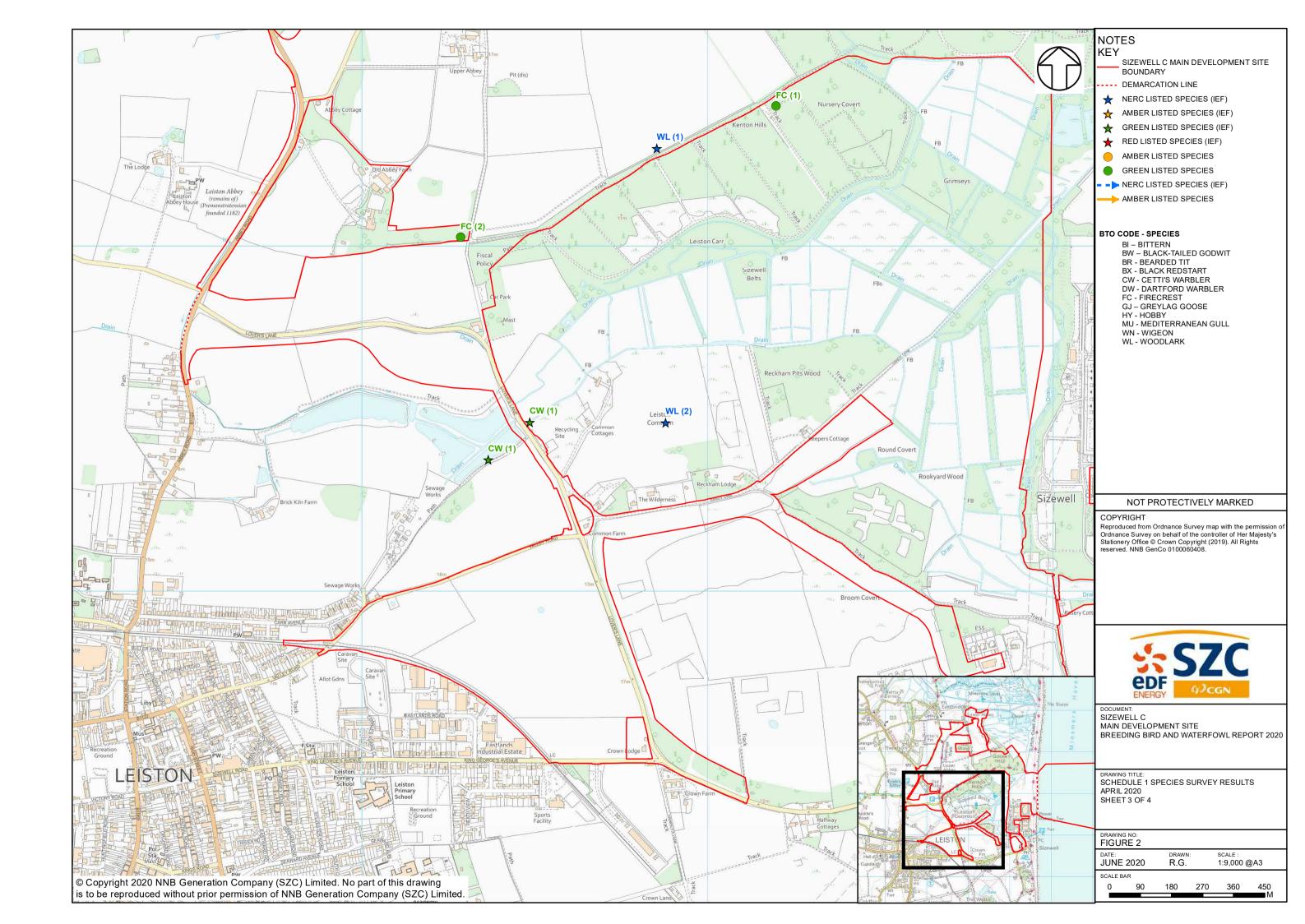
# APPENDIX B: FIGURES

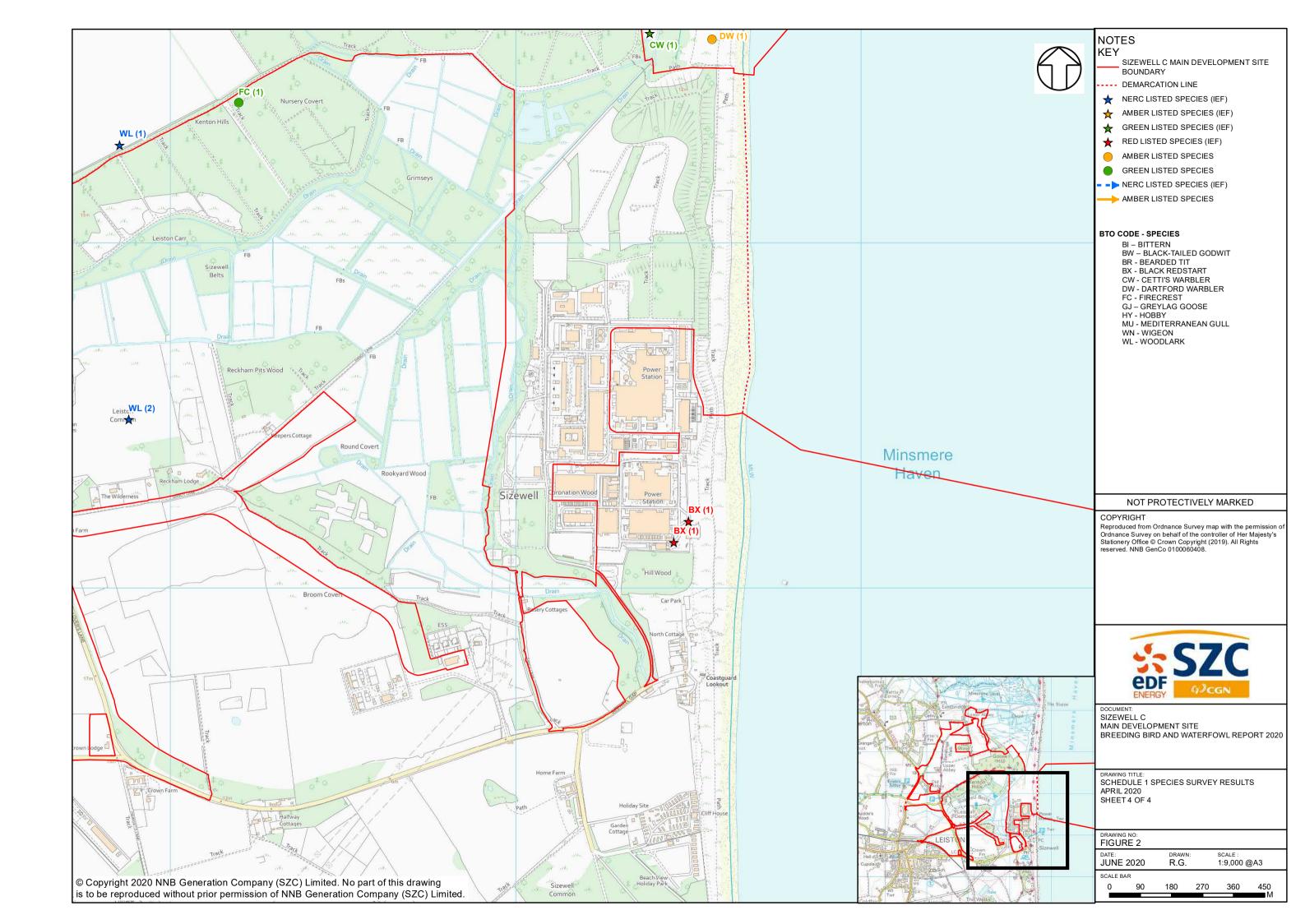
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- Figure 2 Breeding Bird and Waterfowl Results Schedule 1 April 2020
- Figure 3 Breeding Bird and Waterfowl Results Schedule 1 May 2020
- Figure 4 Breeding Bird and Waterfowl Results Schedule 1 June 2020
- Figure 5 Breeding Bird Results Local and National Importance April 2020
- Figure 6 Breeding Bird Results Local and National Importance May 2020
- Figure 7 Breeding Bird Results Local and National Importance June 2020
- Figure 8– Breeding Waterfowl Results Local and National Importance April 2020
- Figure 9 Breeding Waterfowl Results Local and National Importance May 2020
- Figure 10 Breeding Waterfowl Results Local and National Importance June 2020
- Figure 11 Incidental Bird Results Local and National Importance April 2020
- Figure 12 Incidental Bird Results Local and National Importance May 2020
- Figure 13 Incidental Bird Results Local and National Importance June 2020

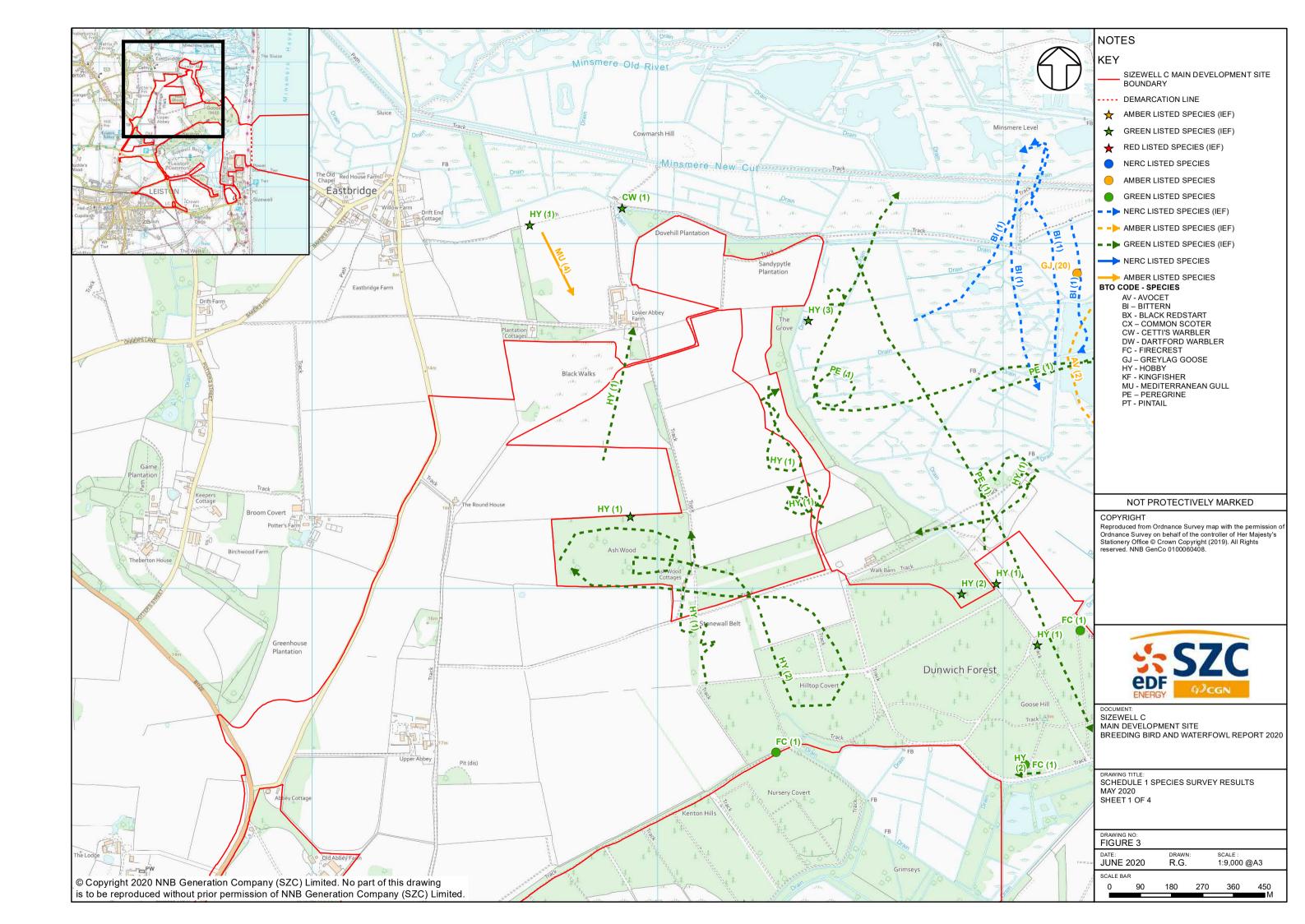


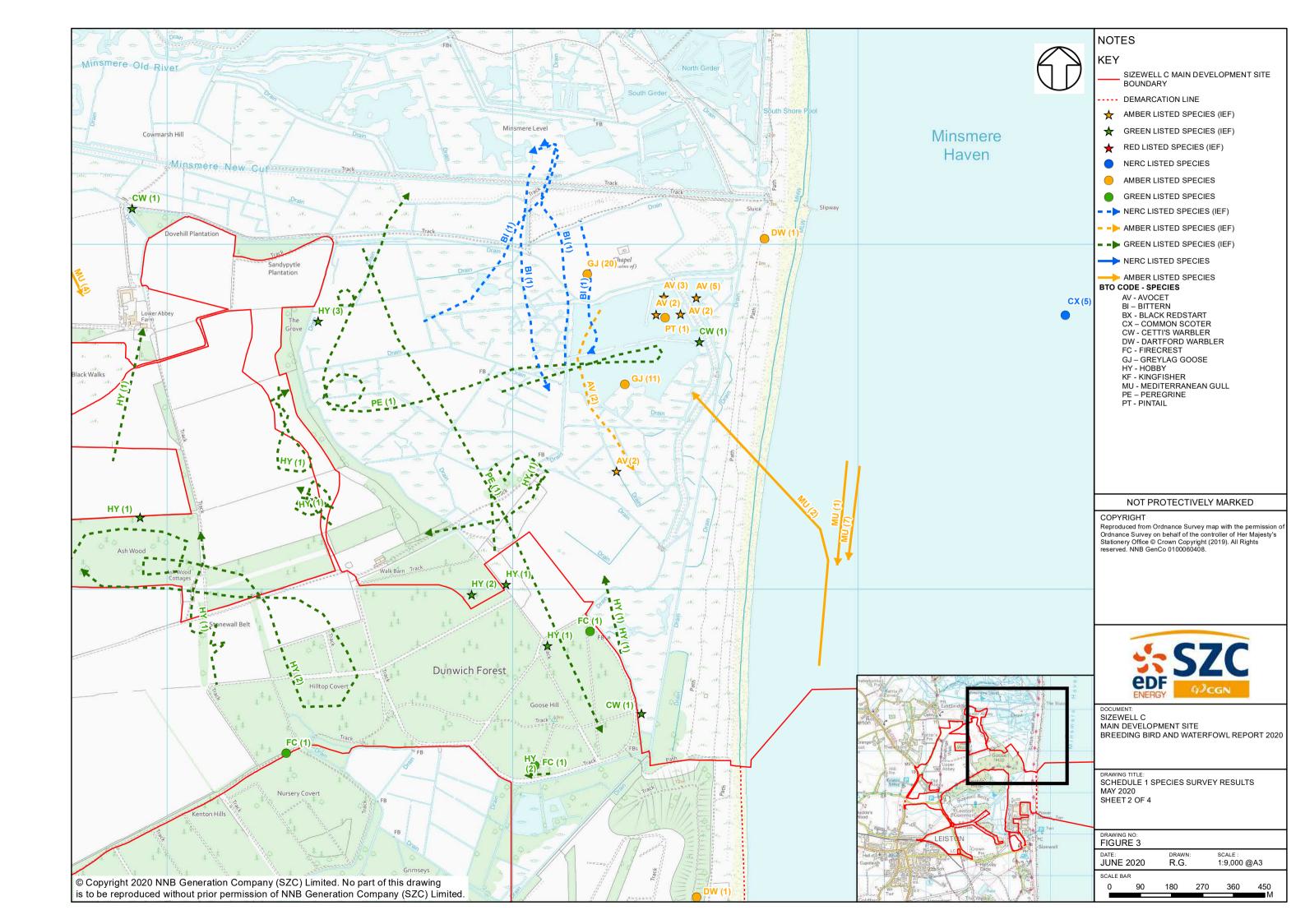


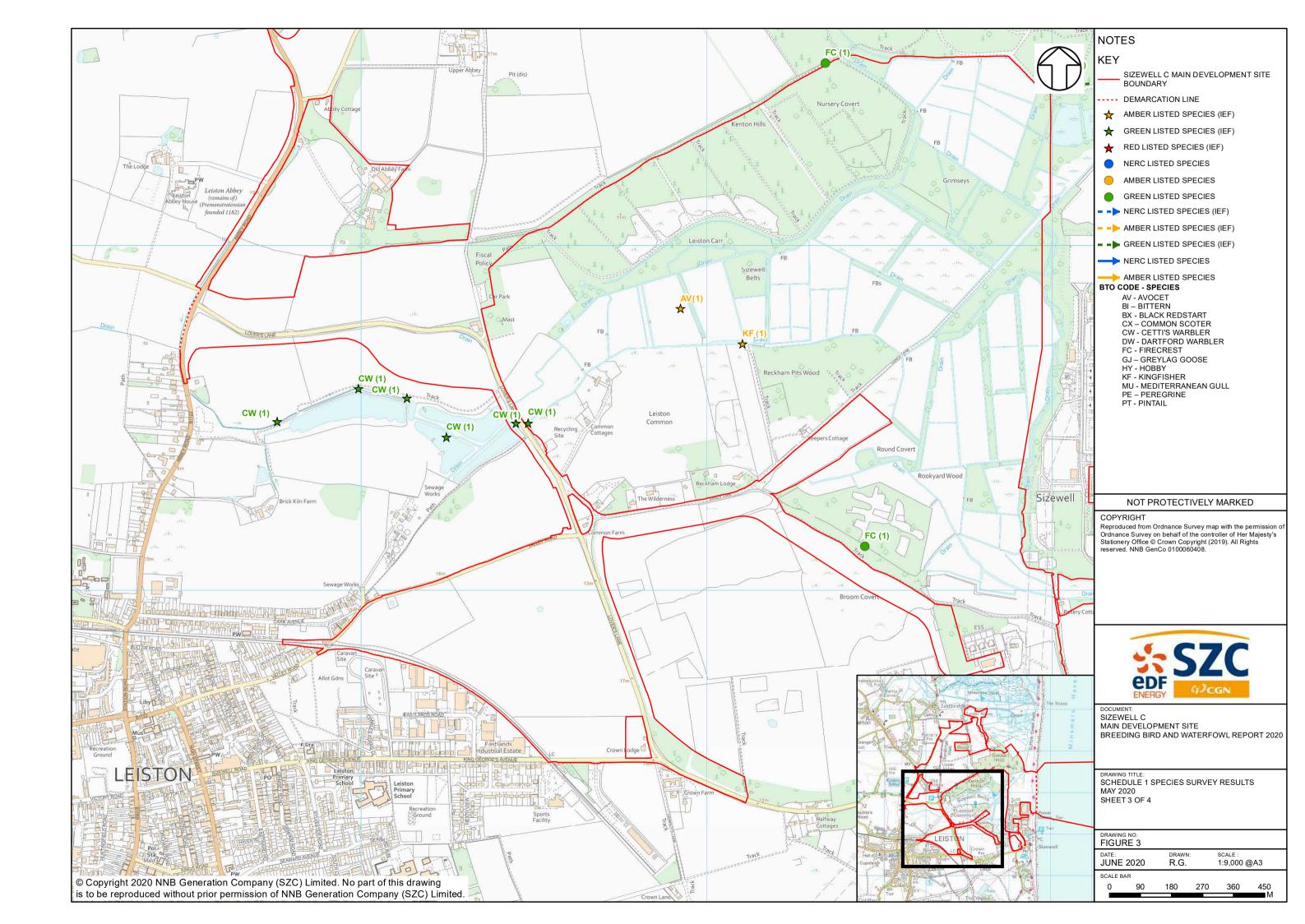


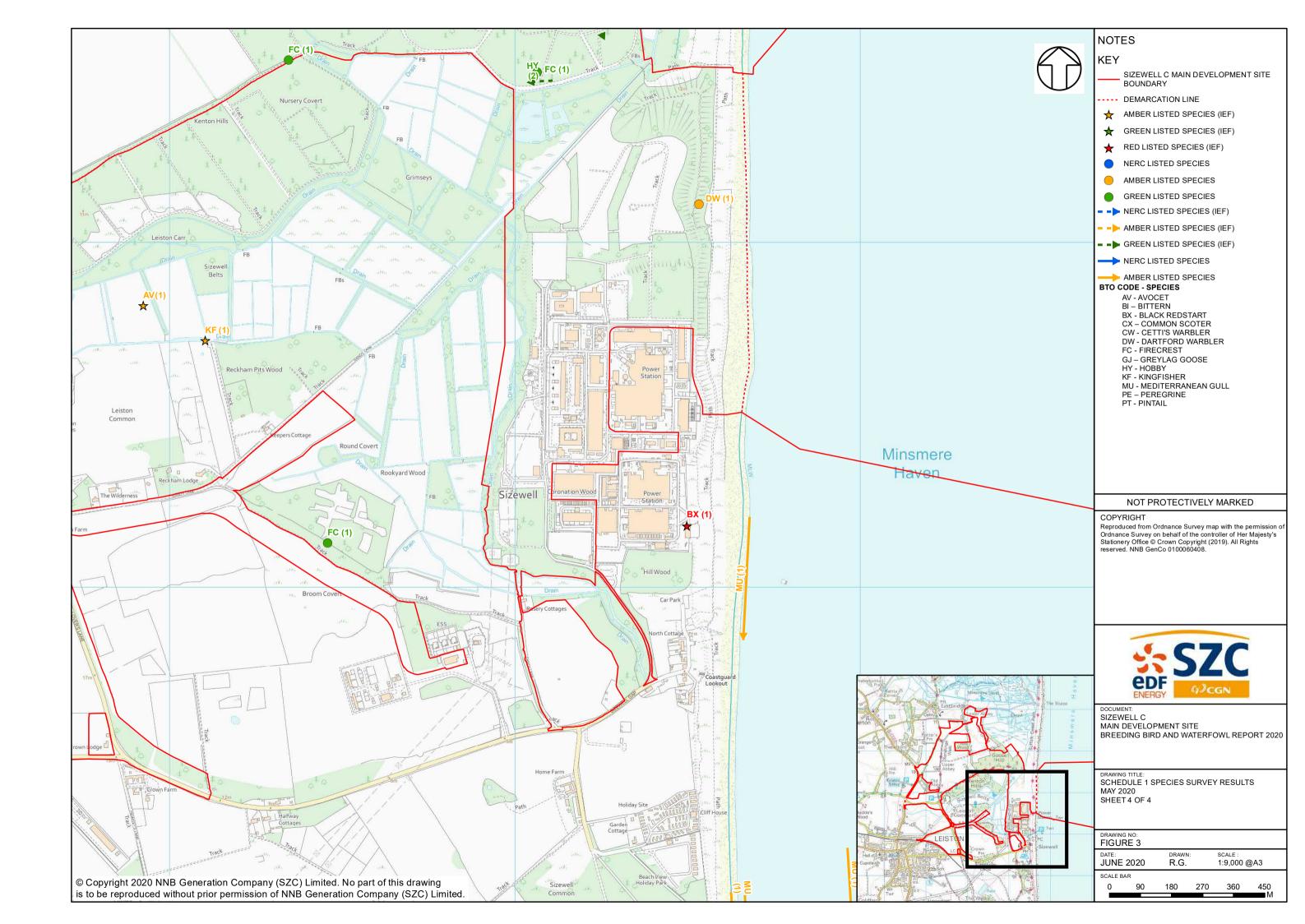


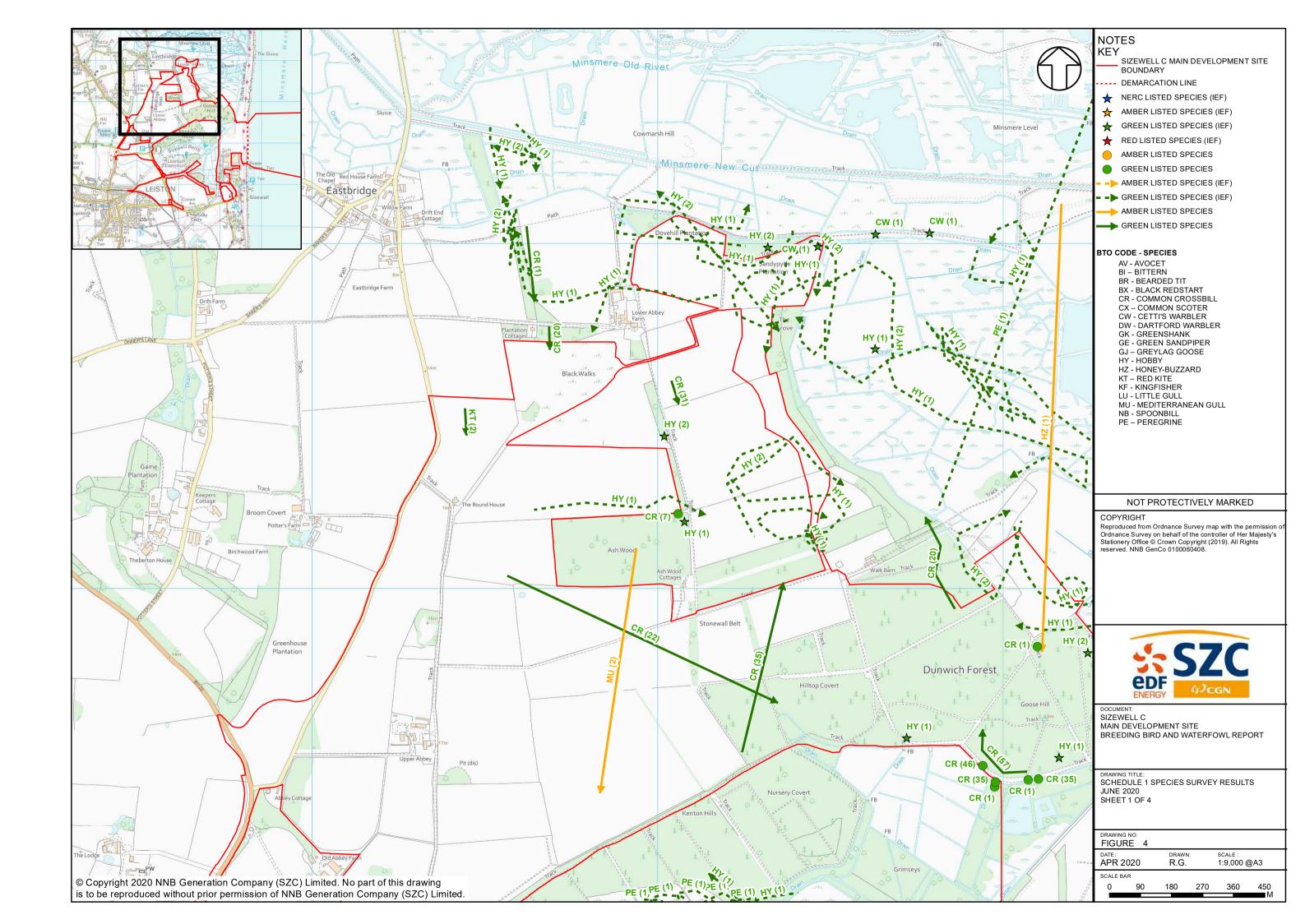


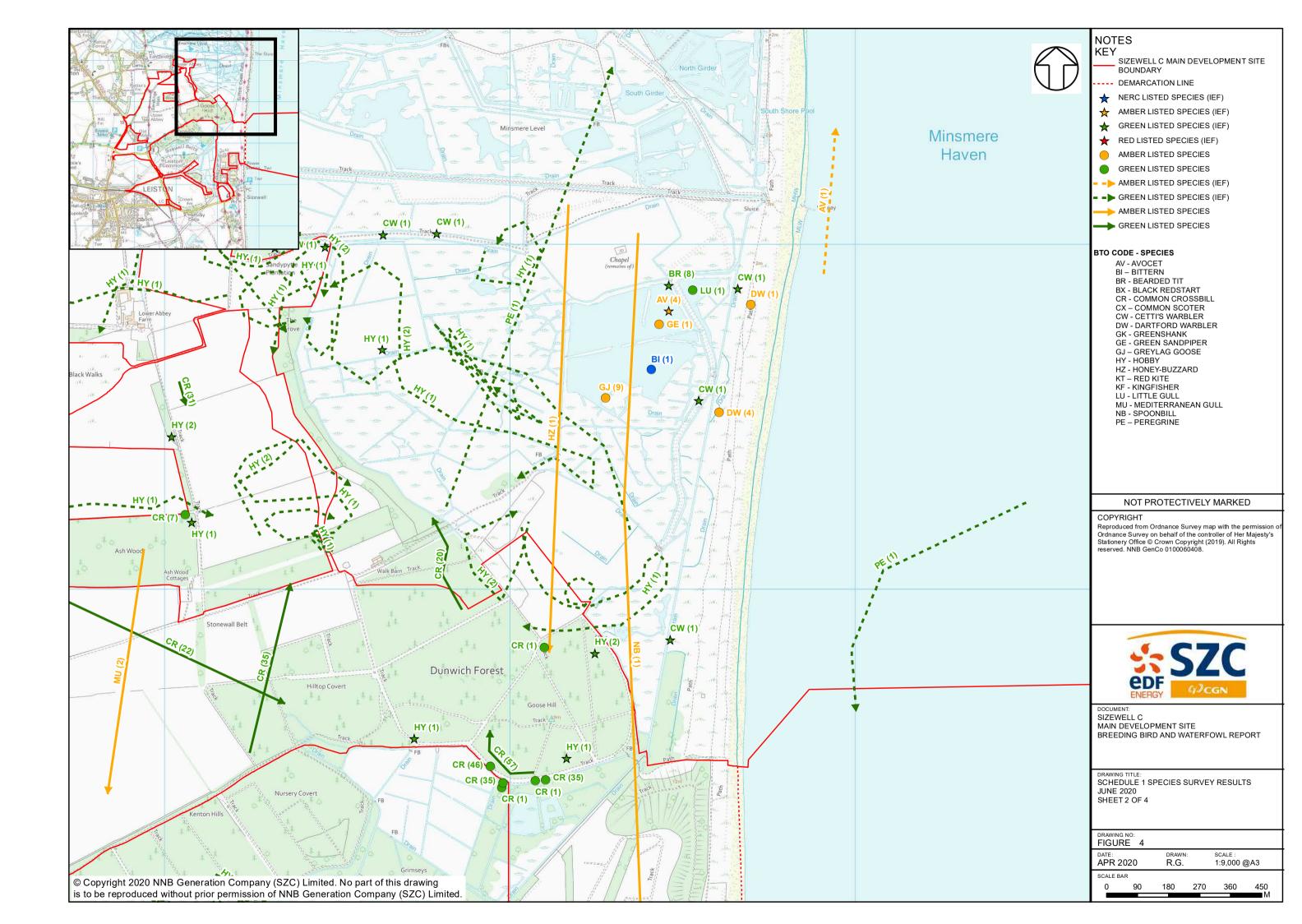


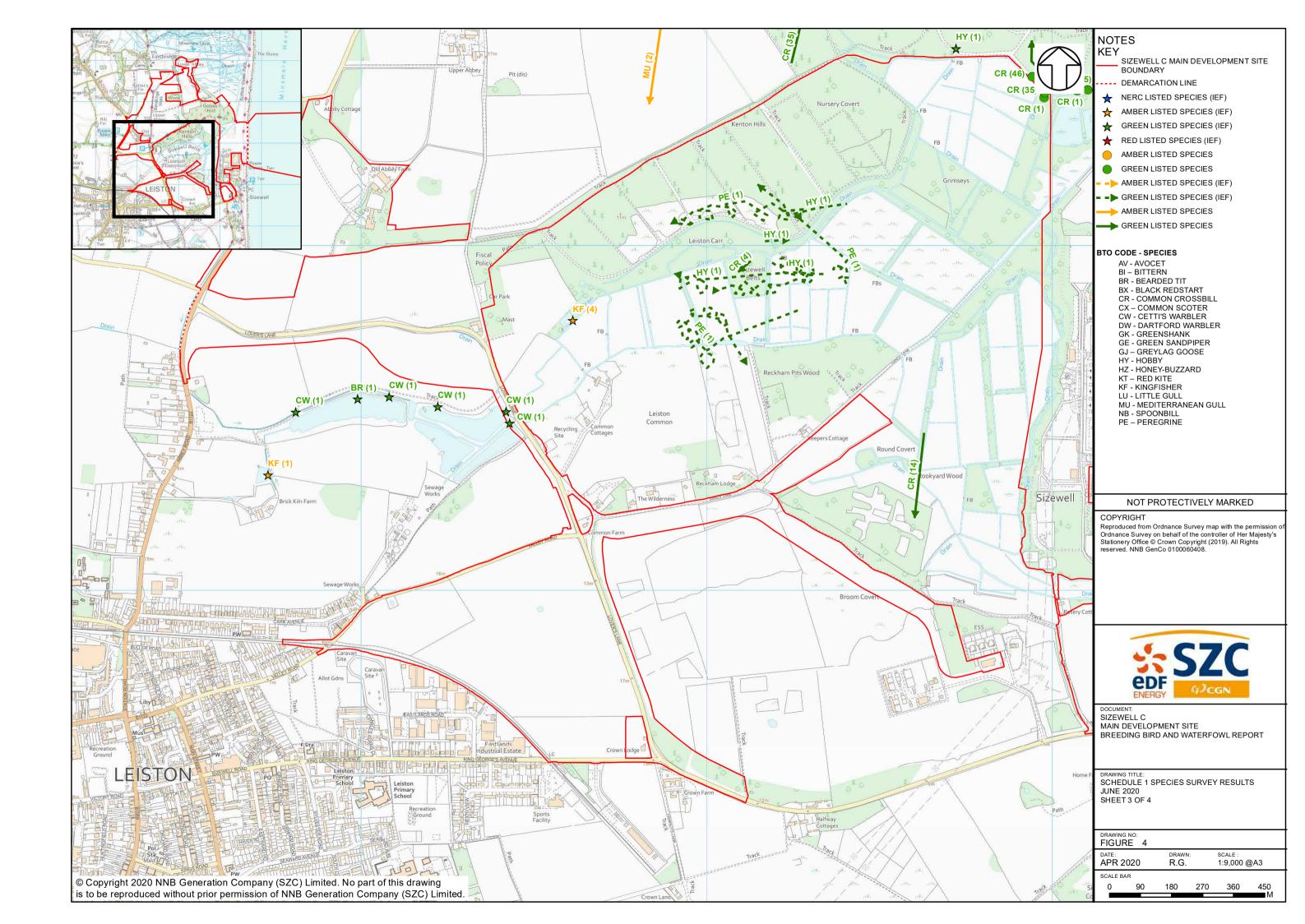


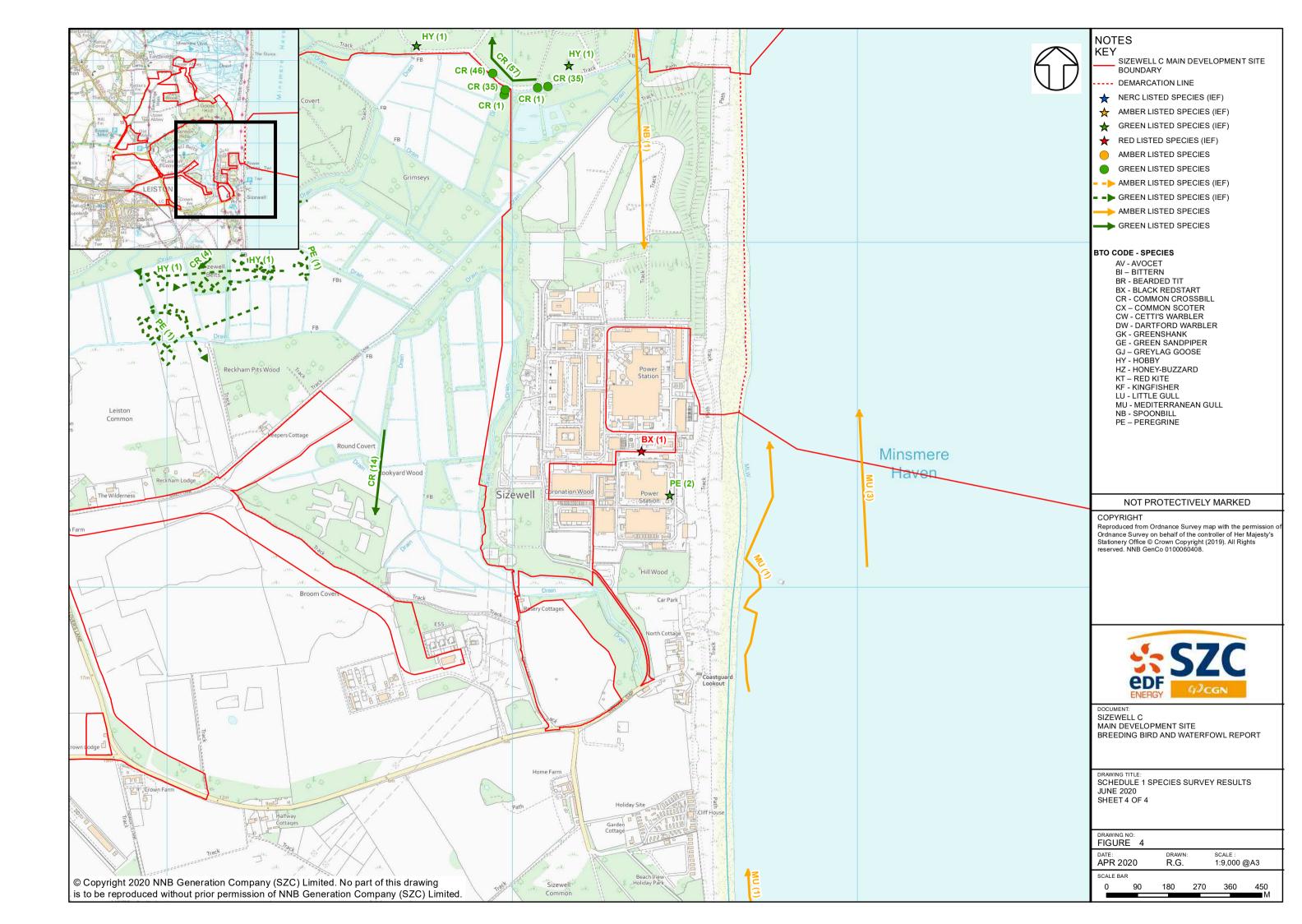


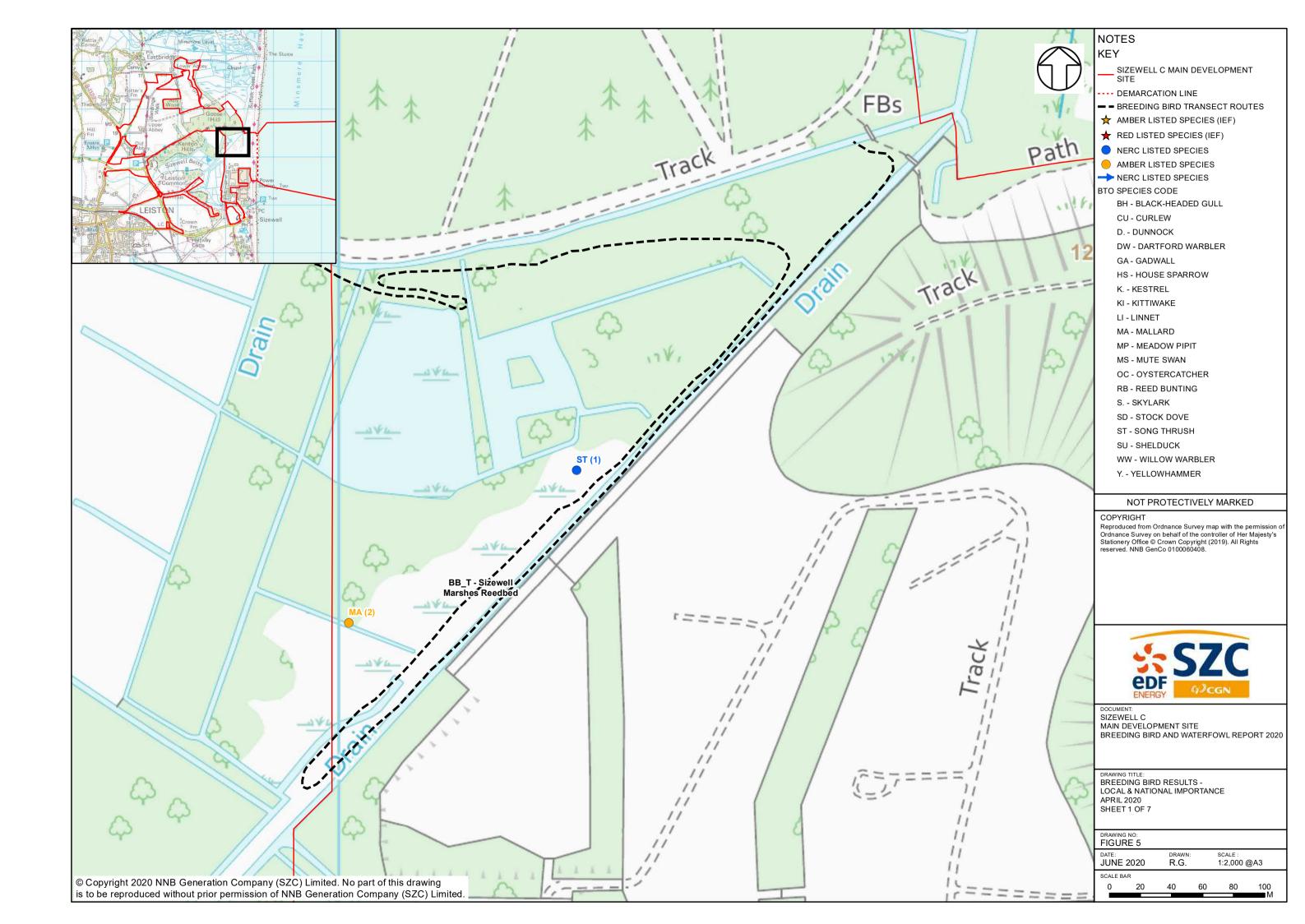


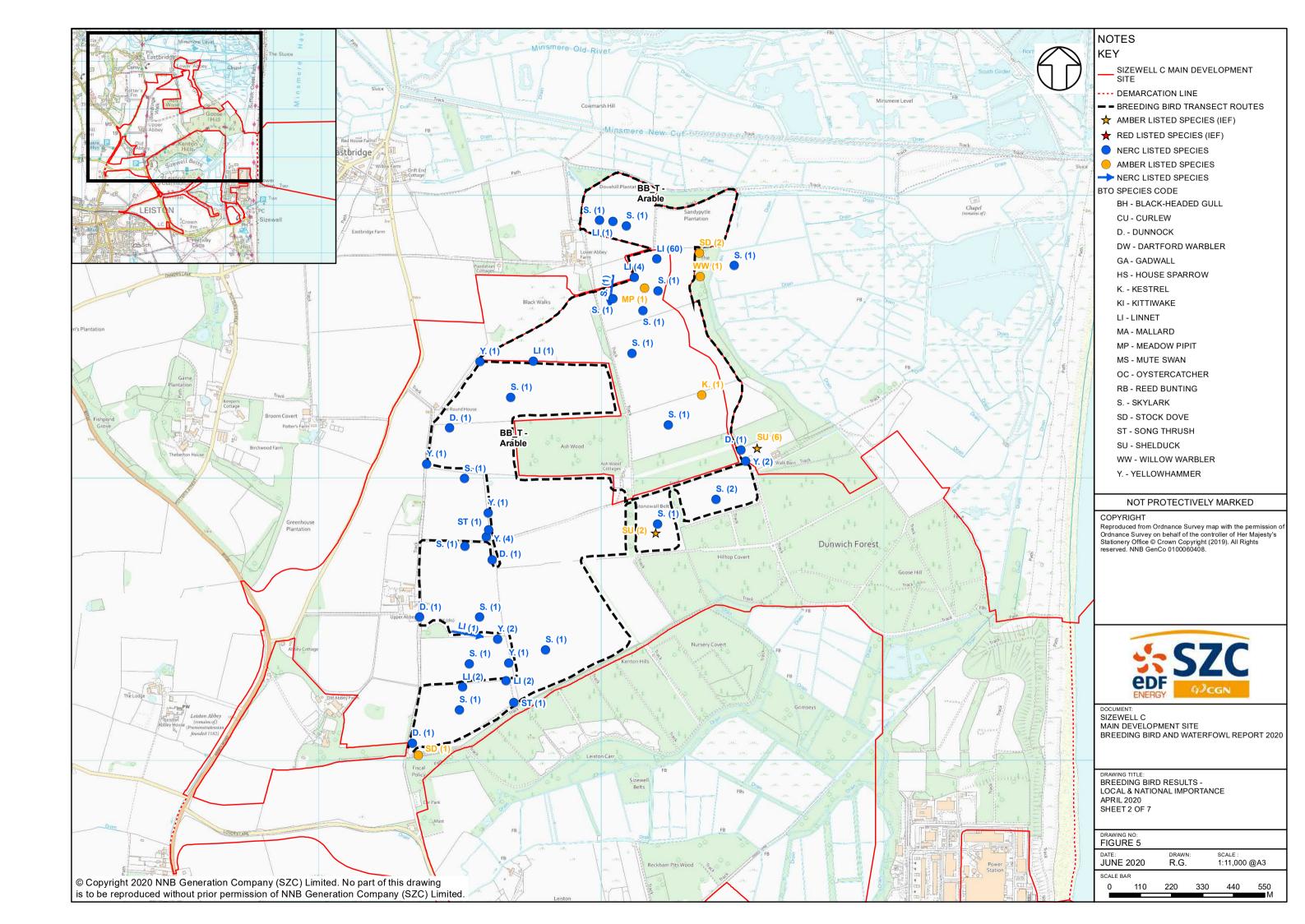


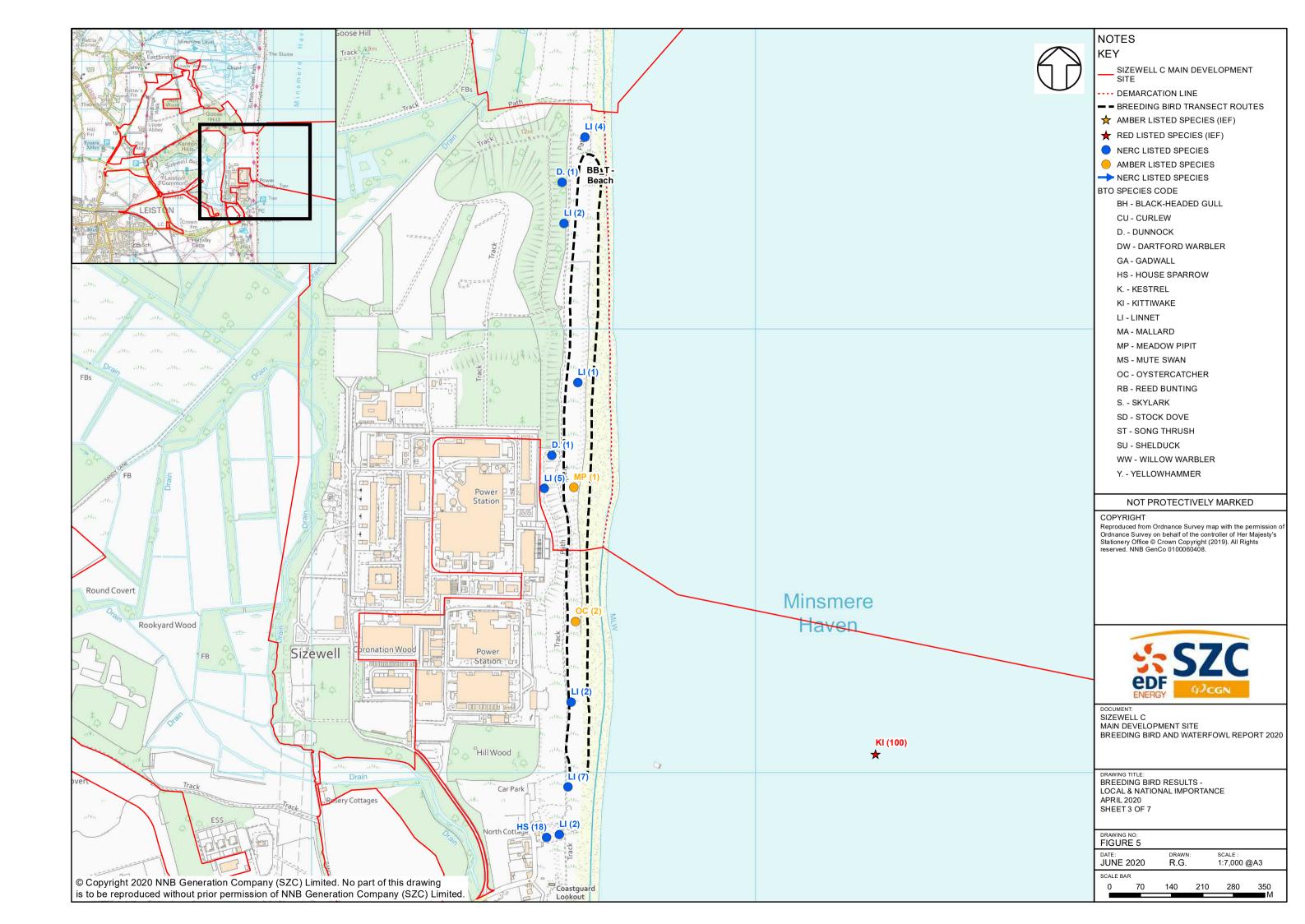


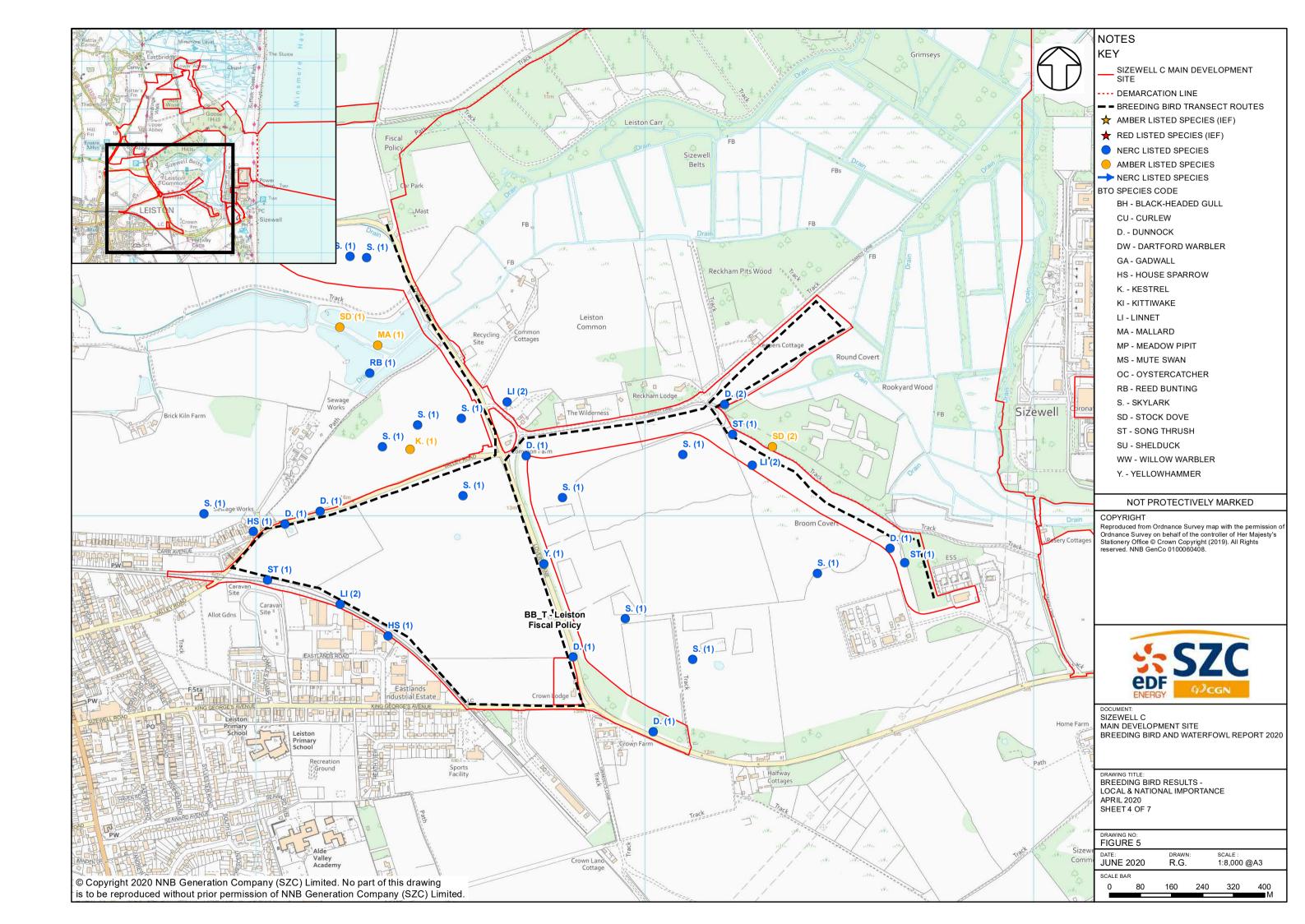


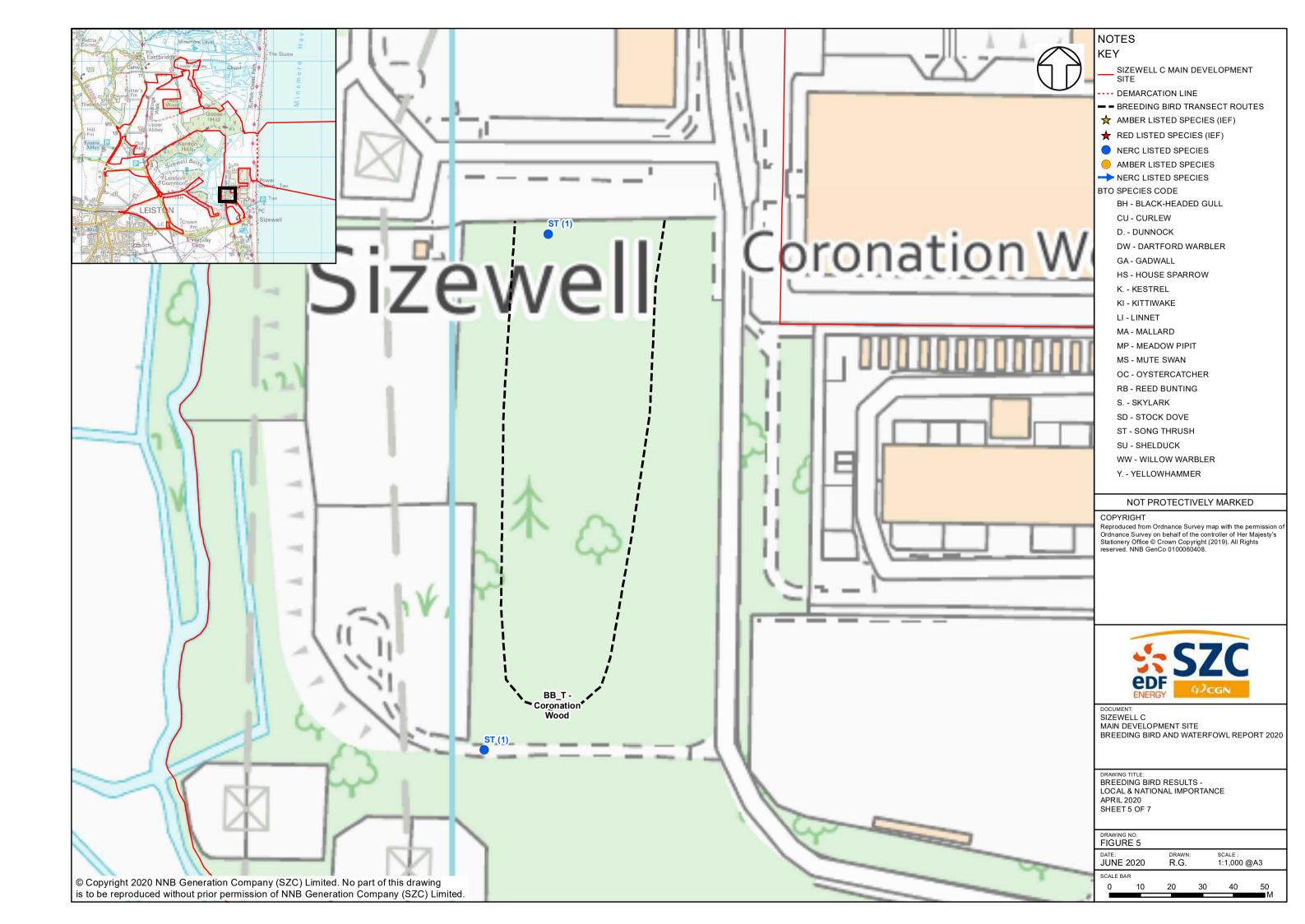


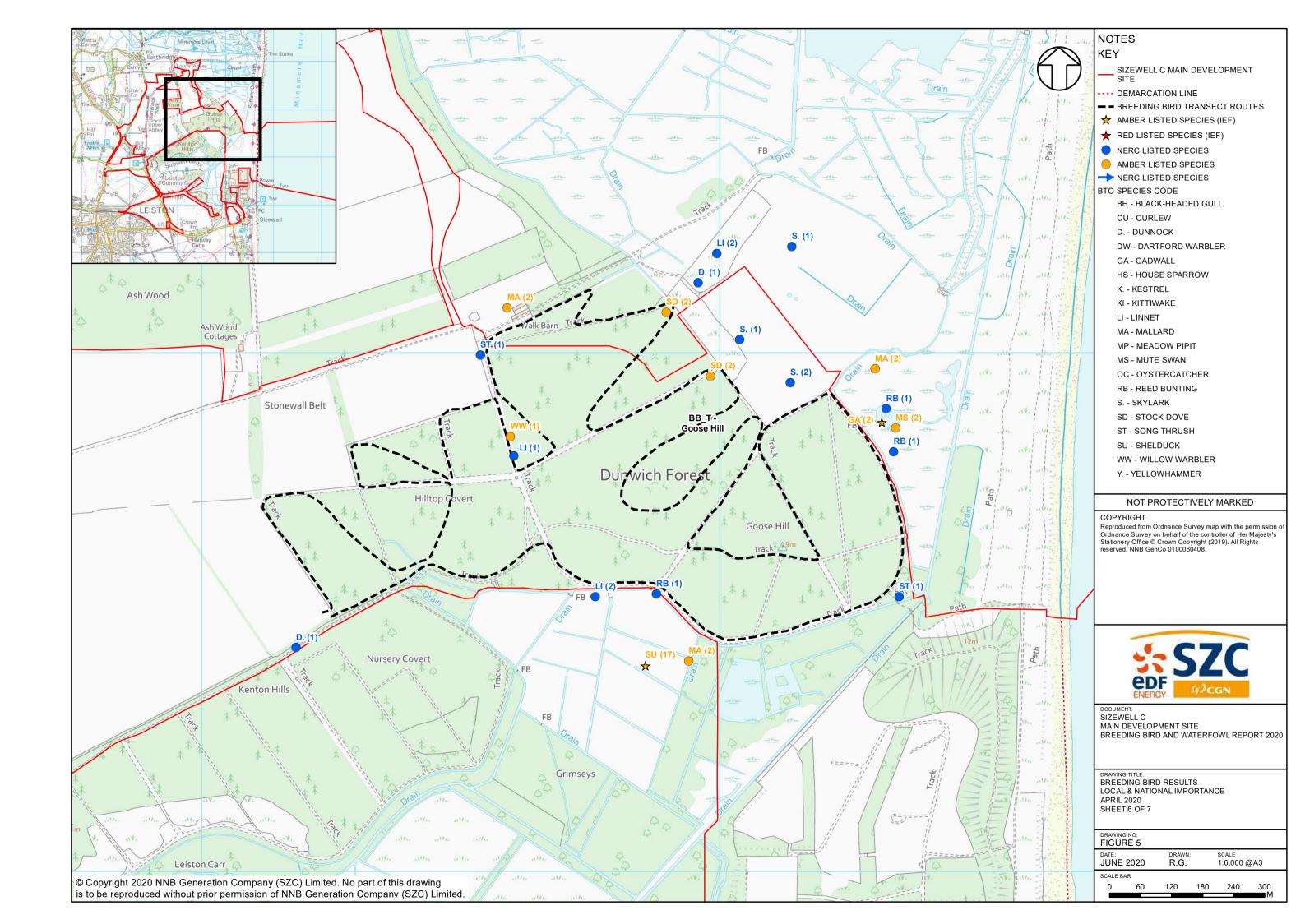


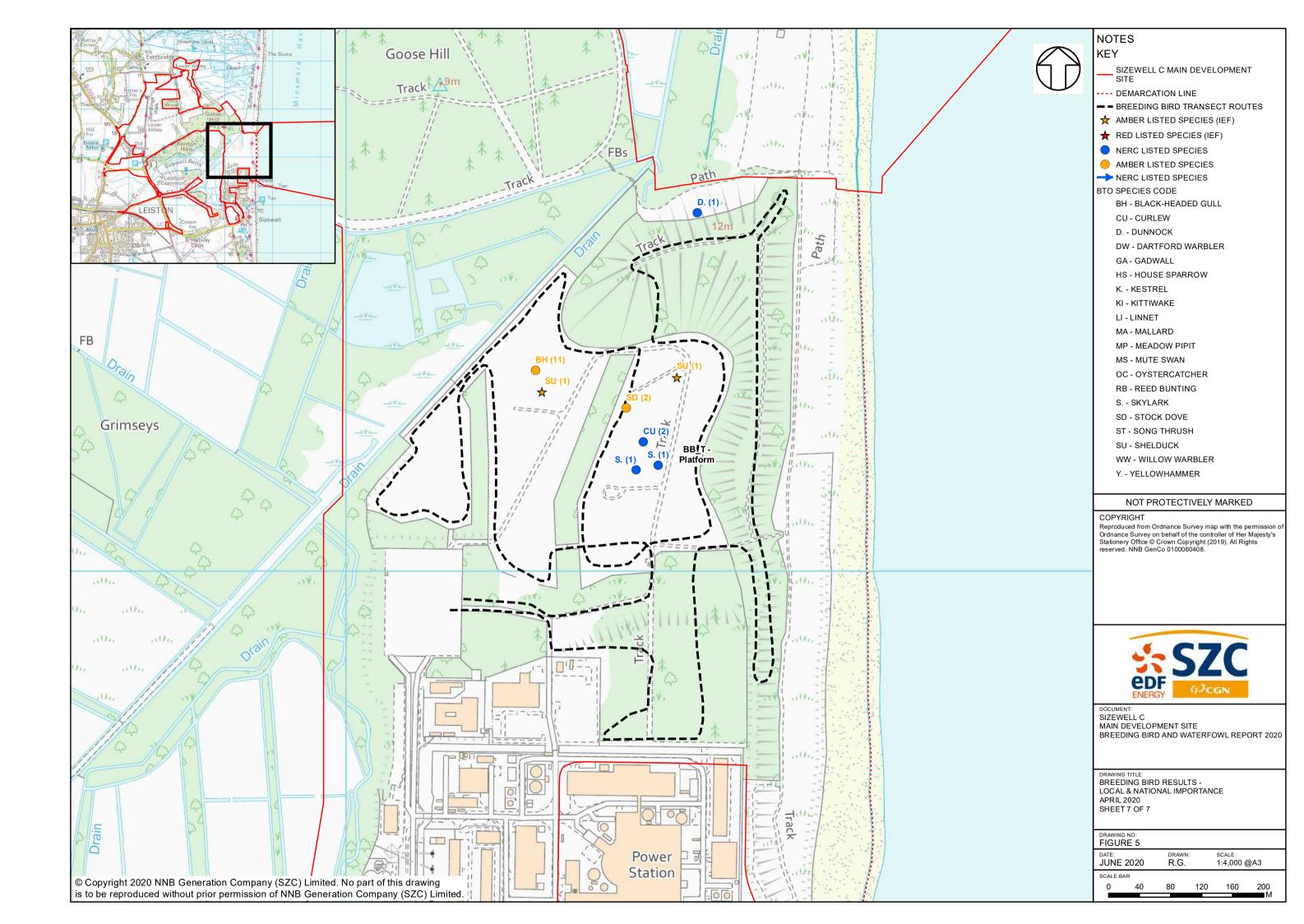


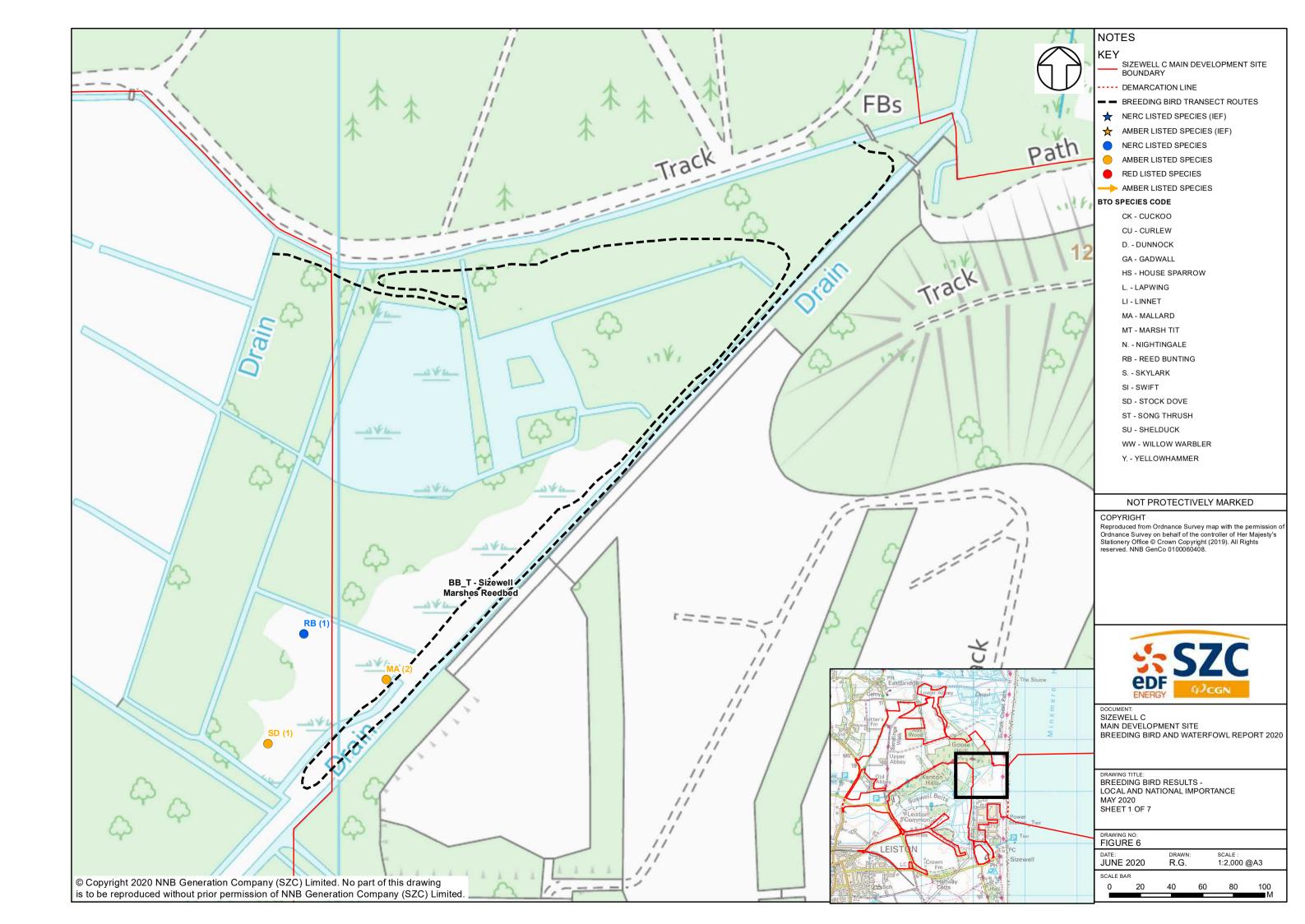


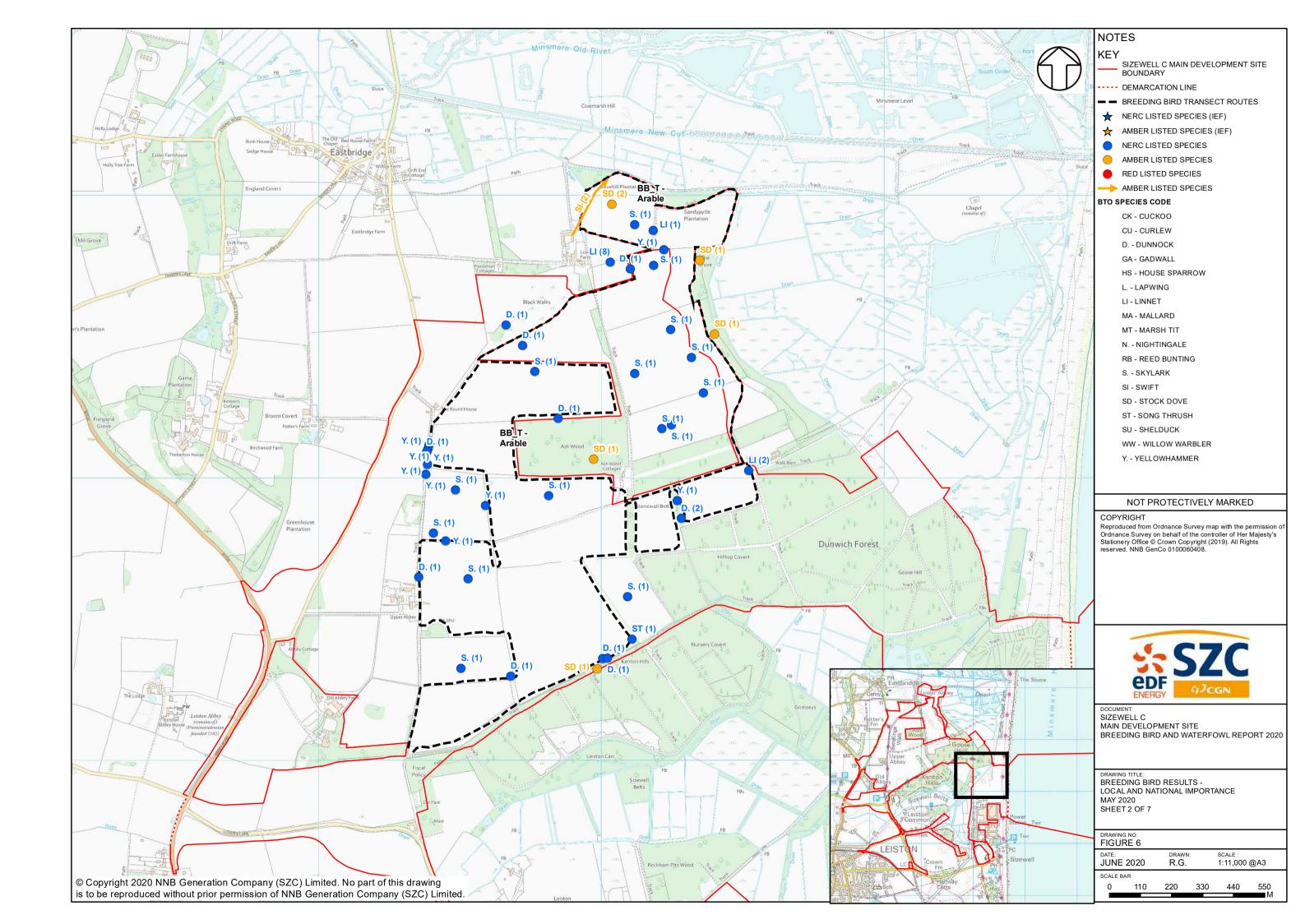


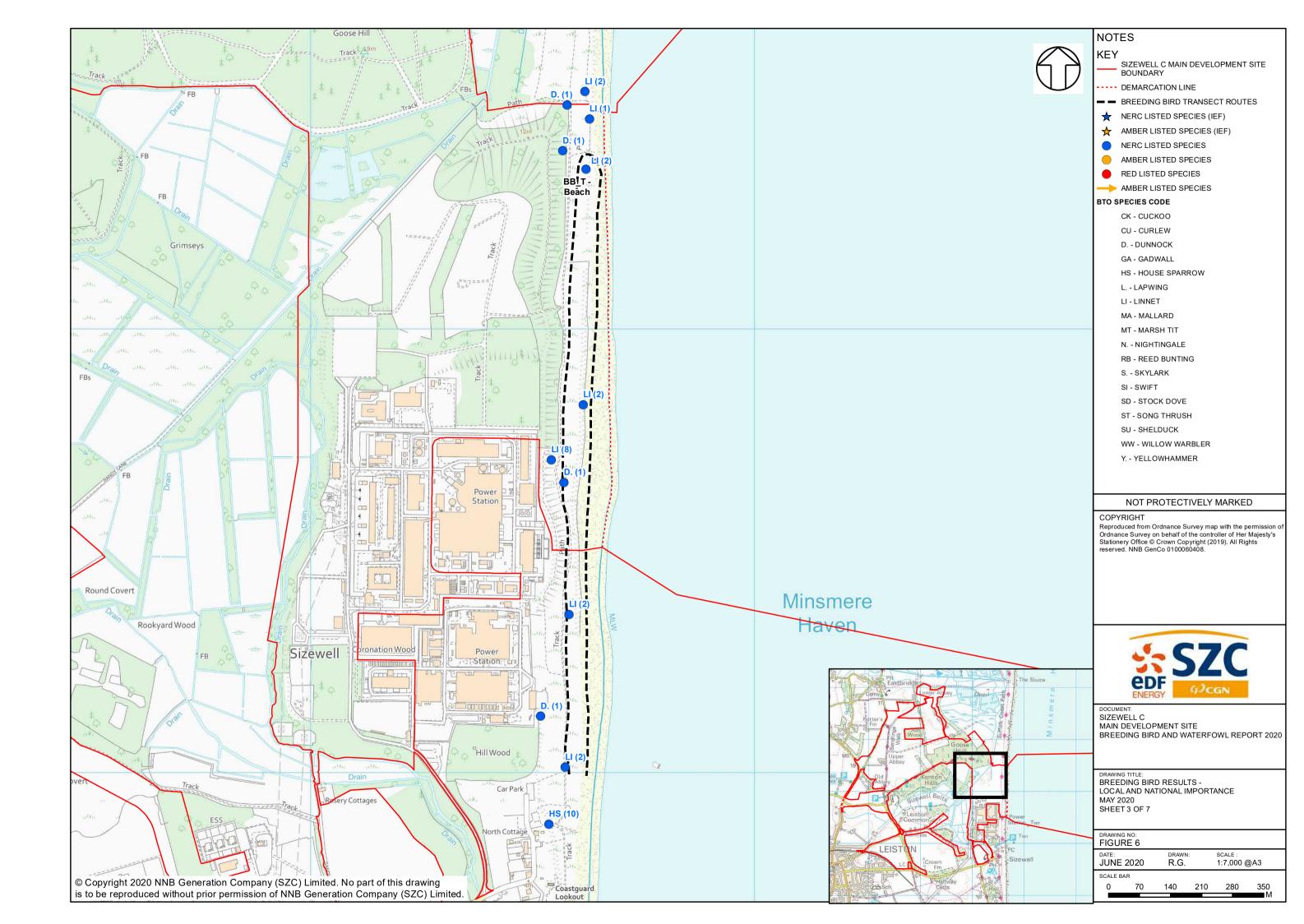


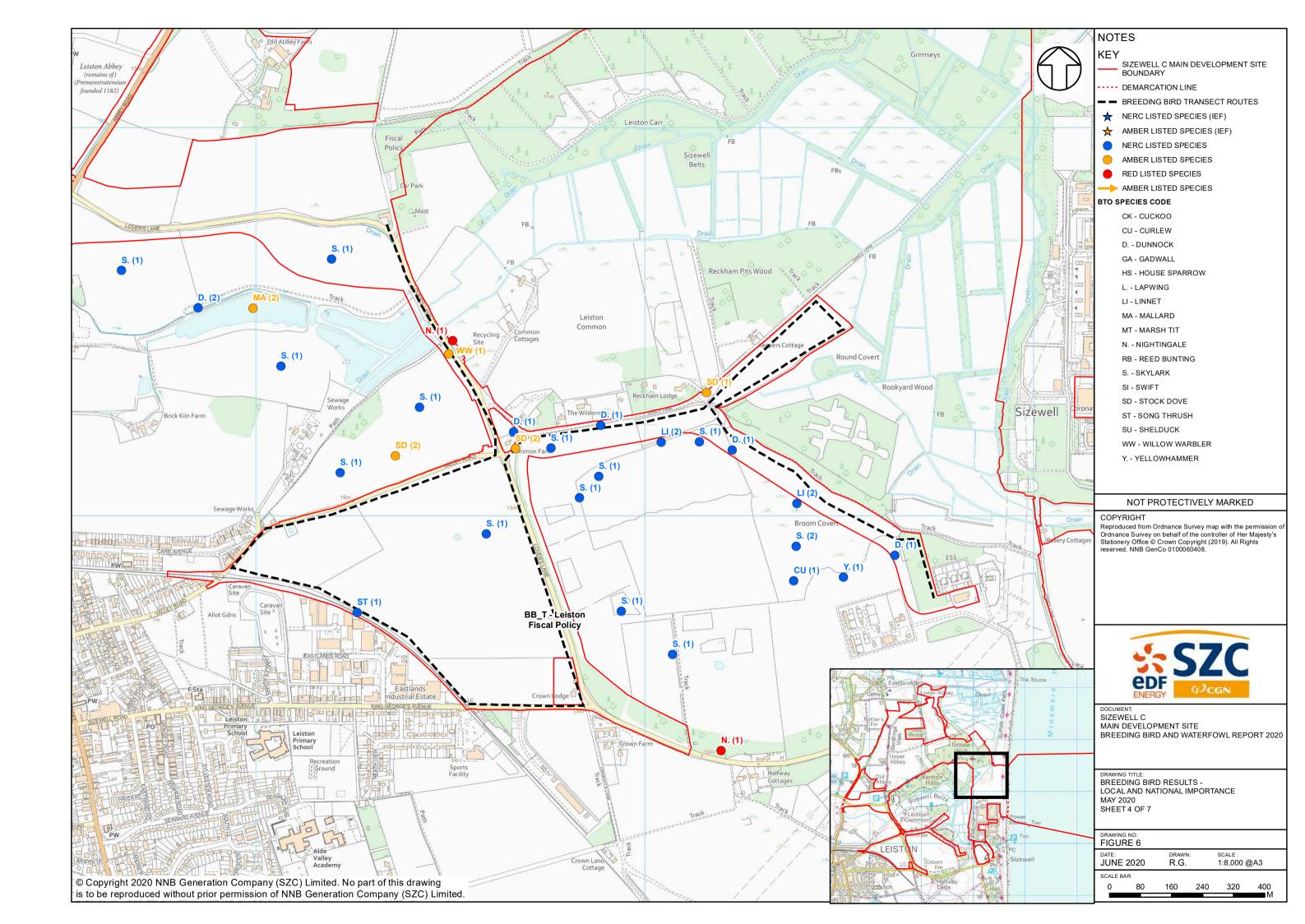


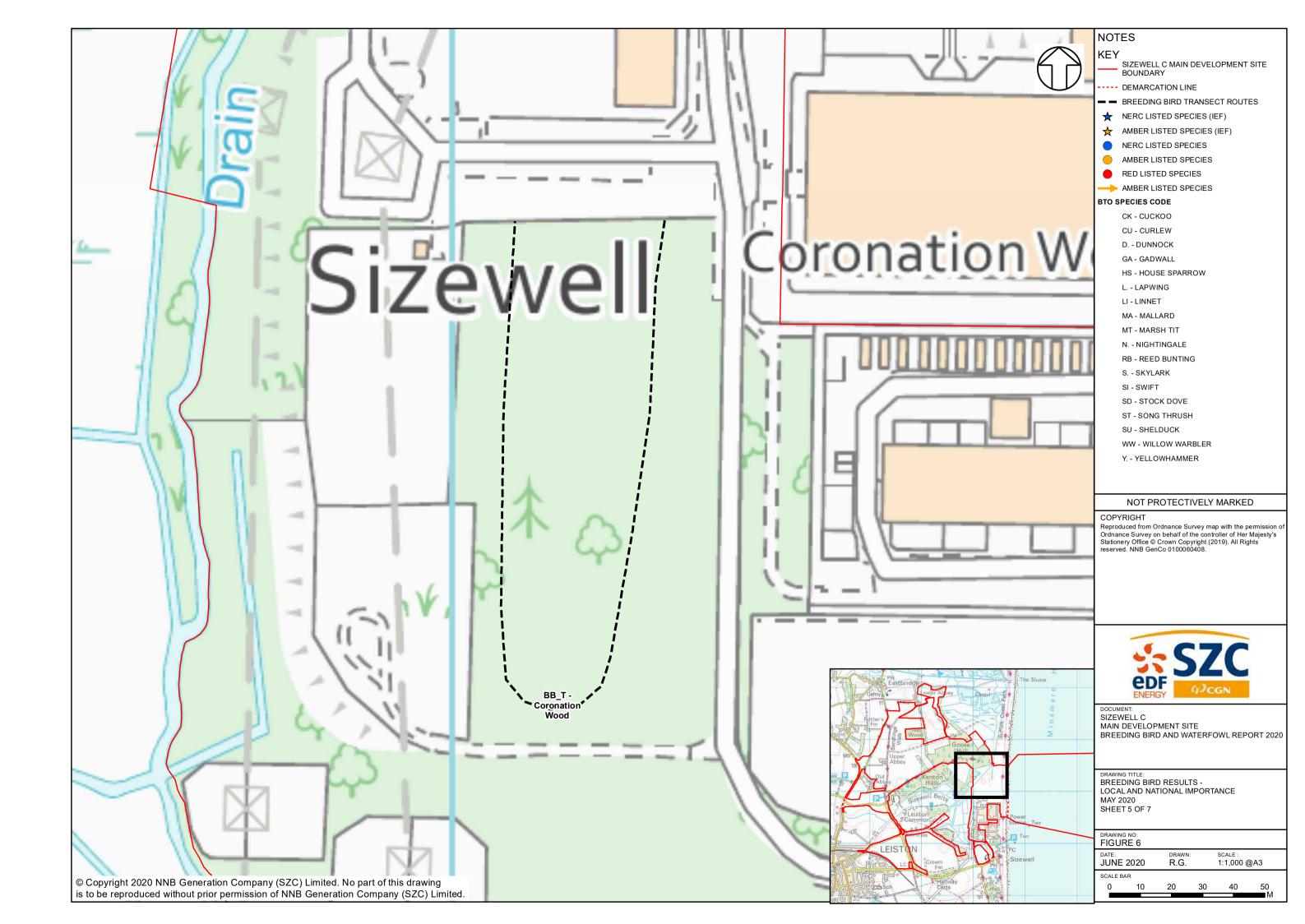


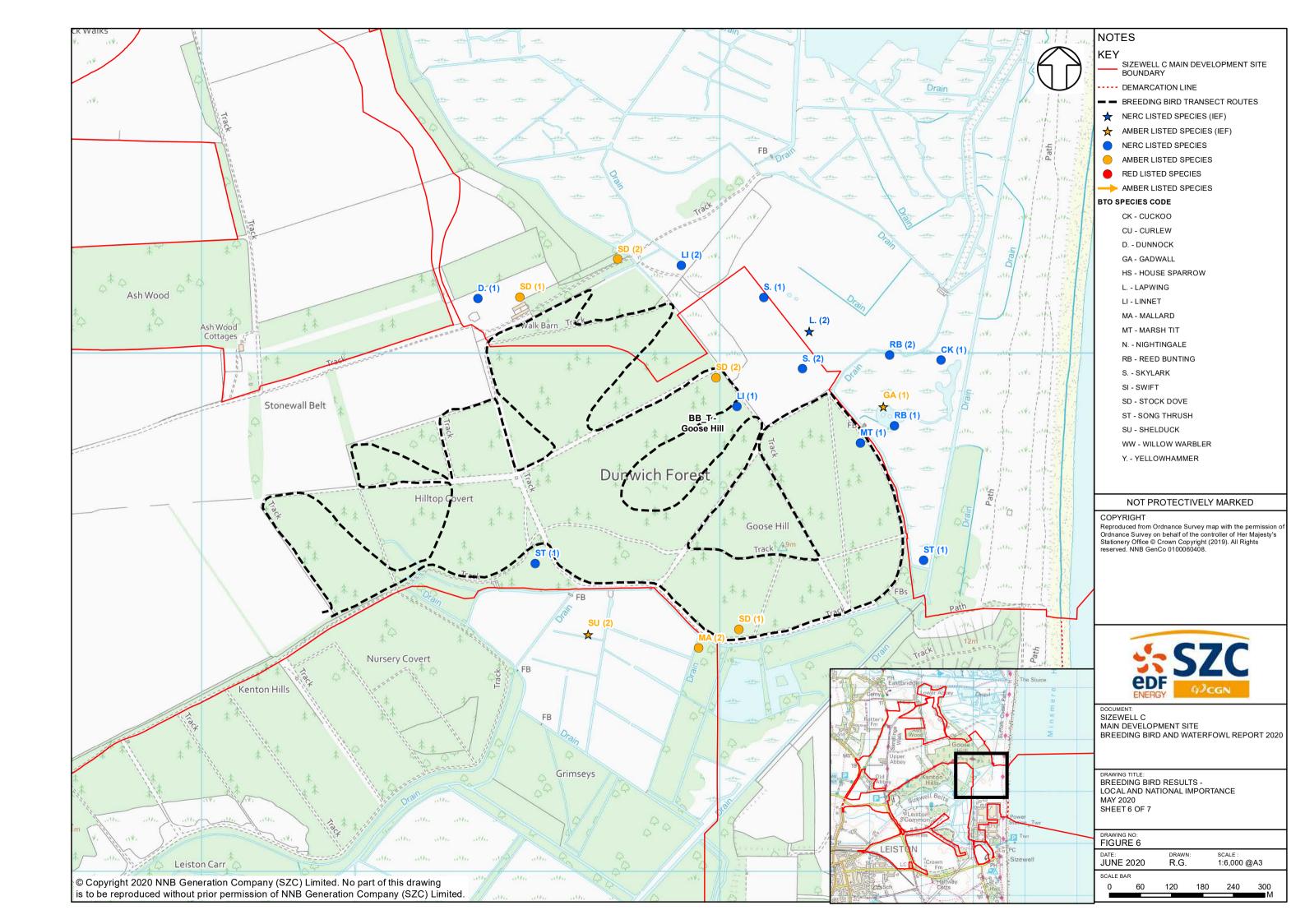


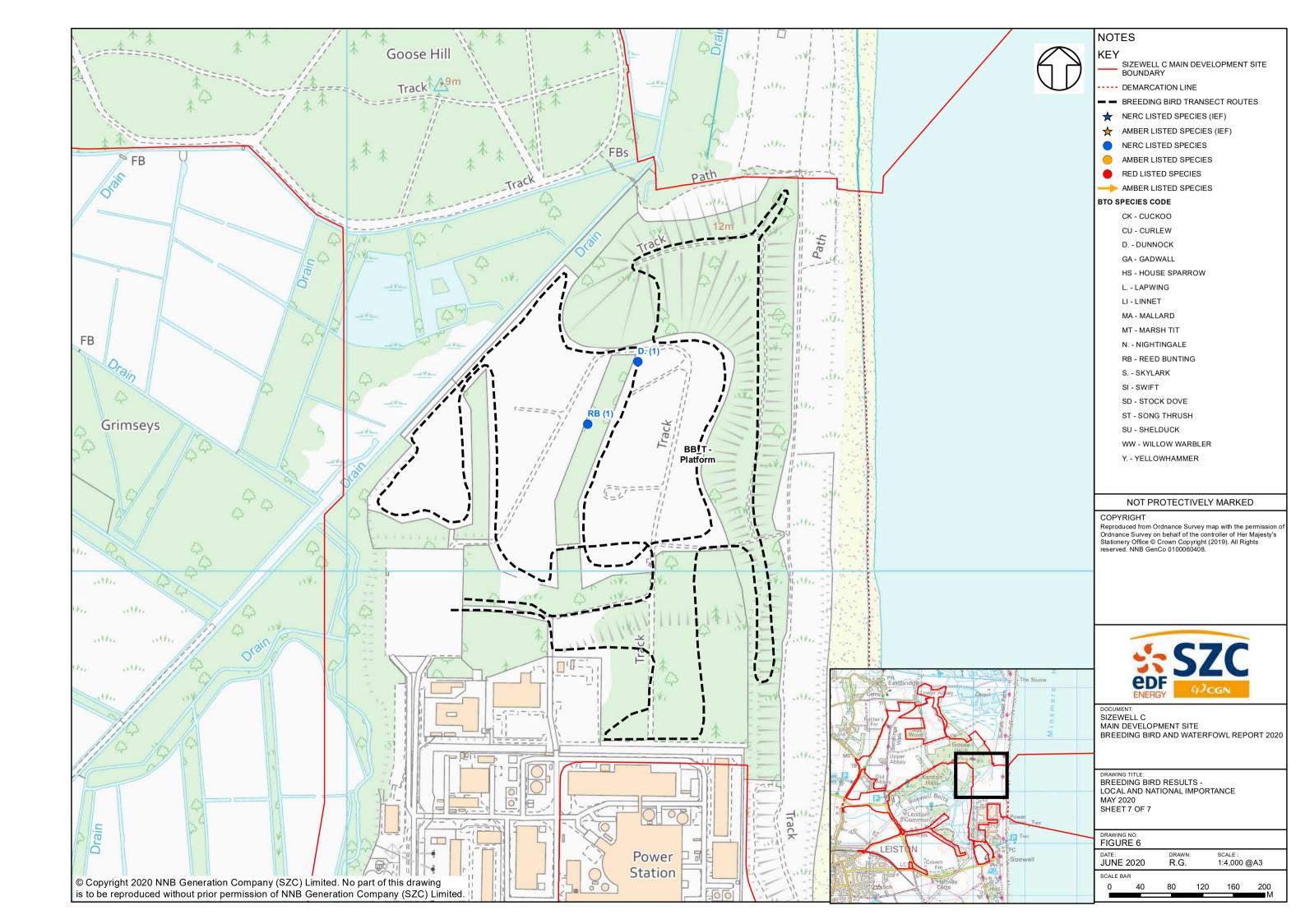


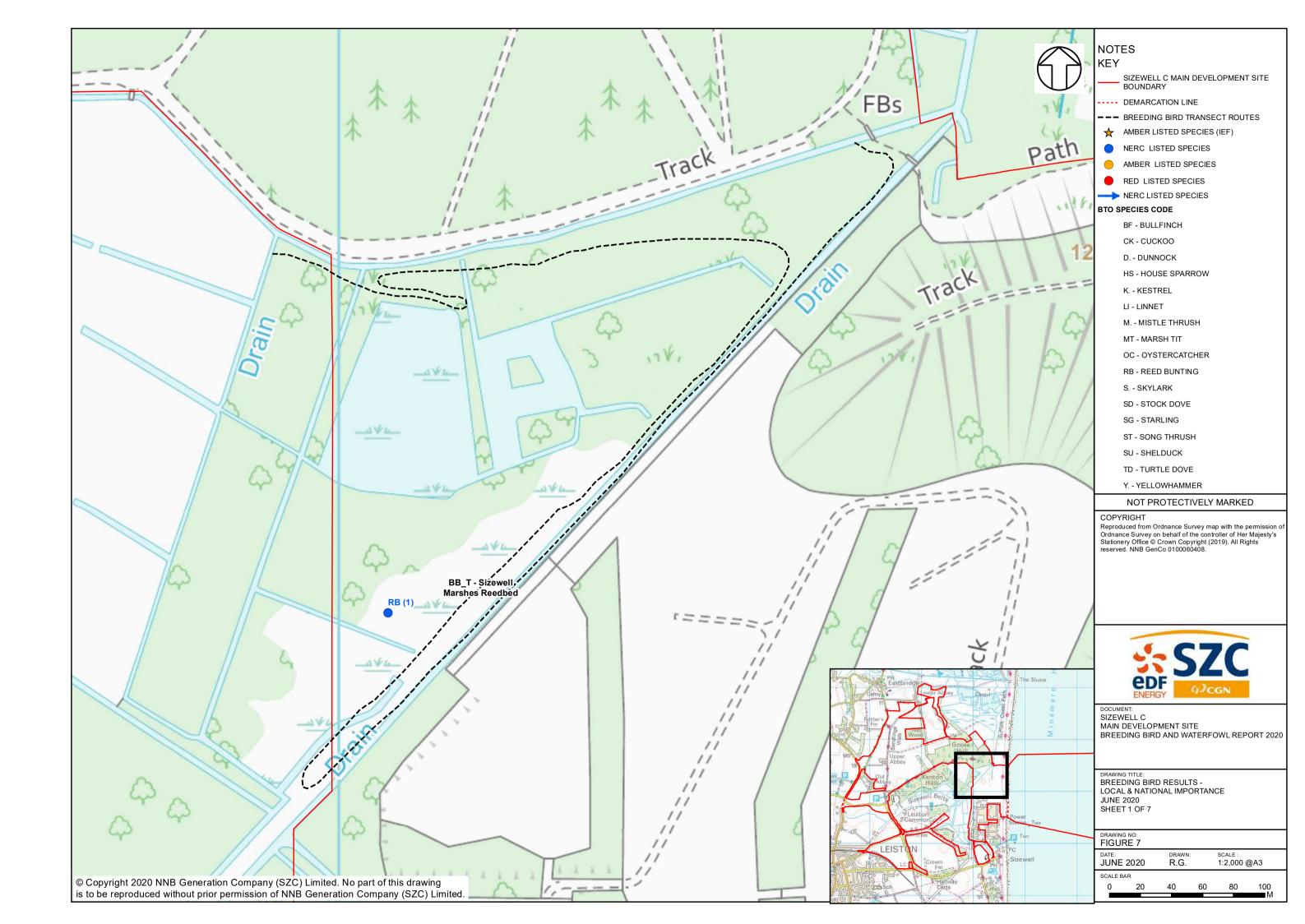


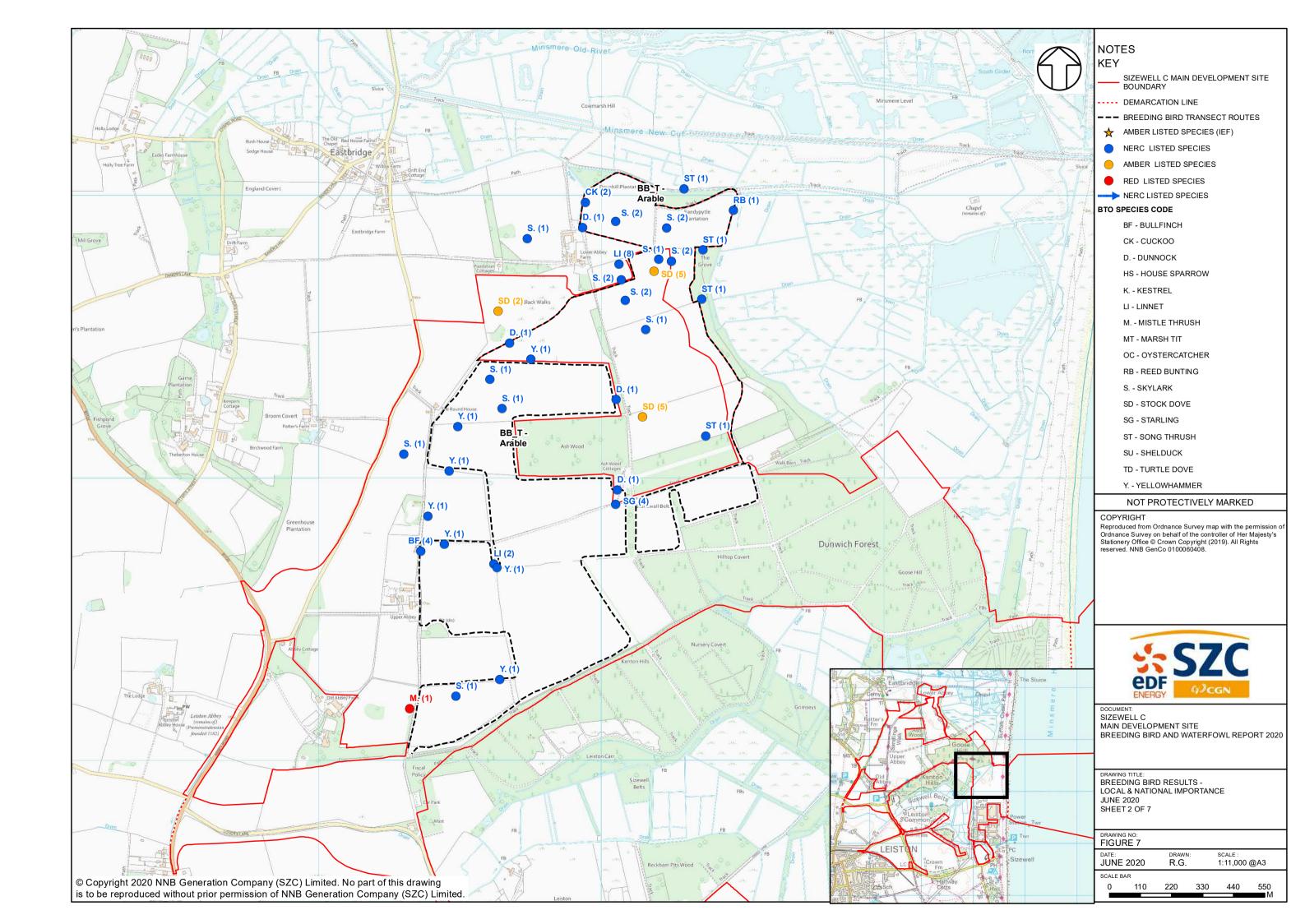


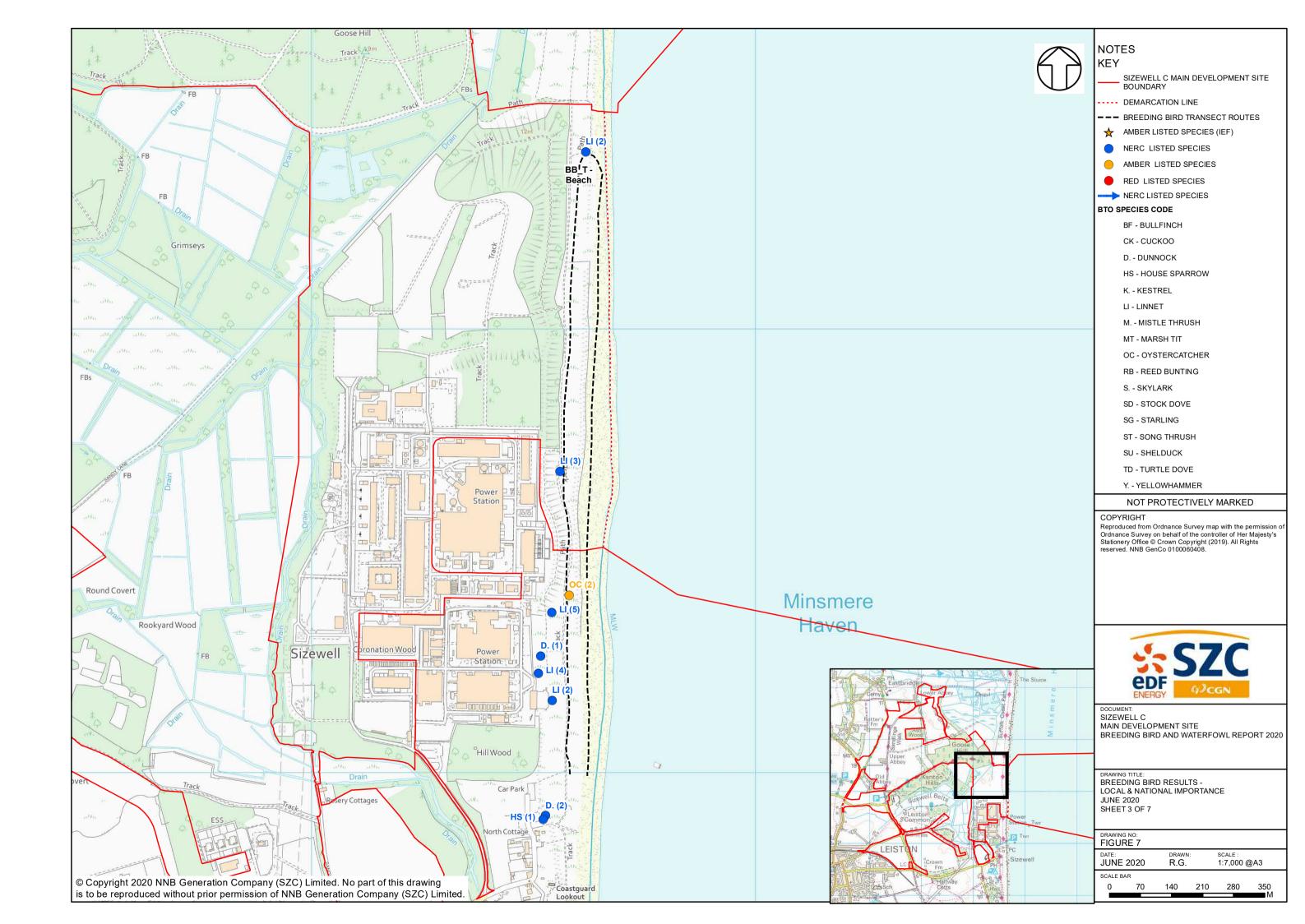


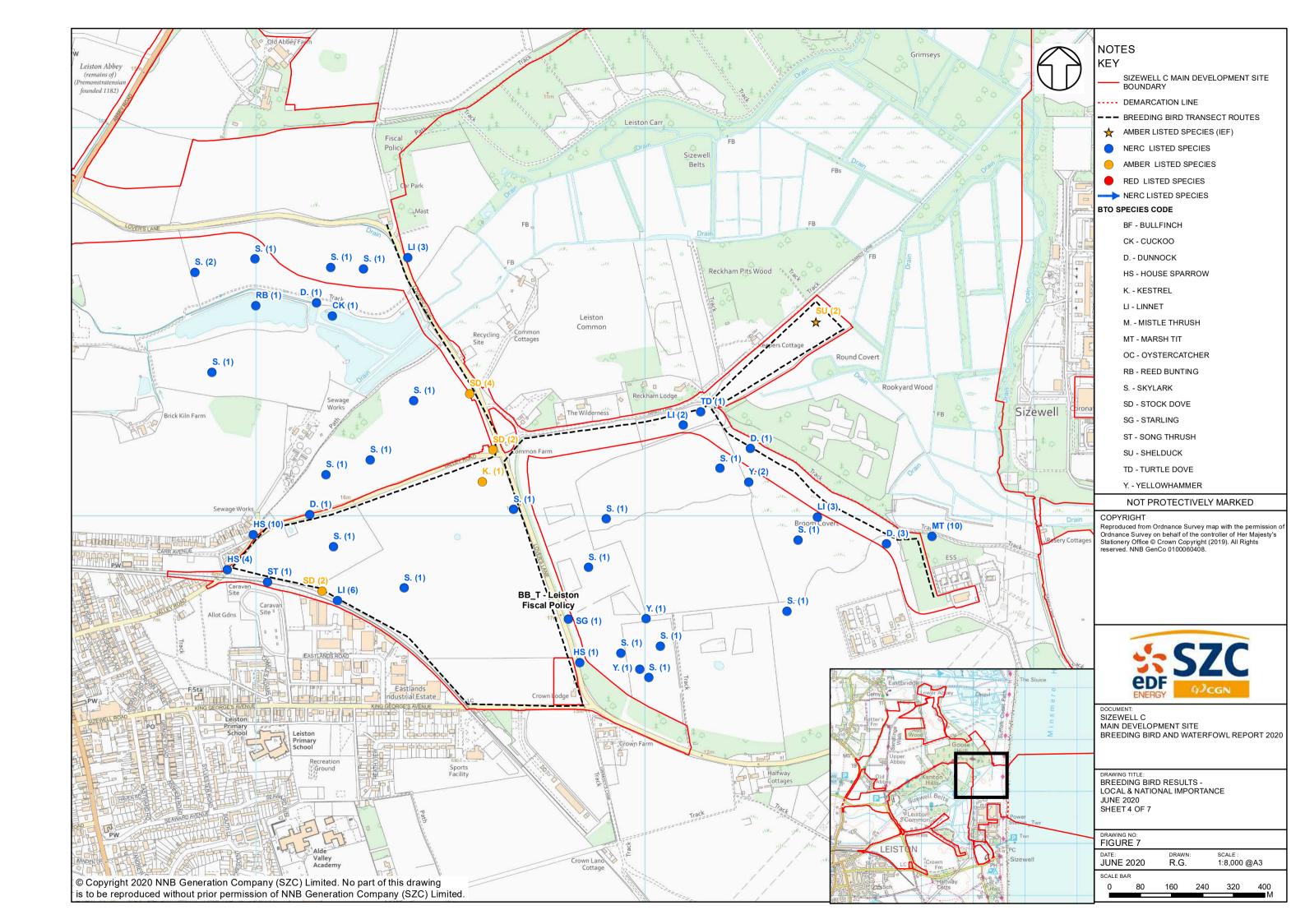


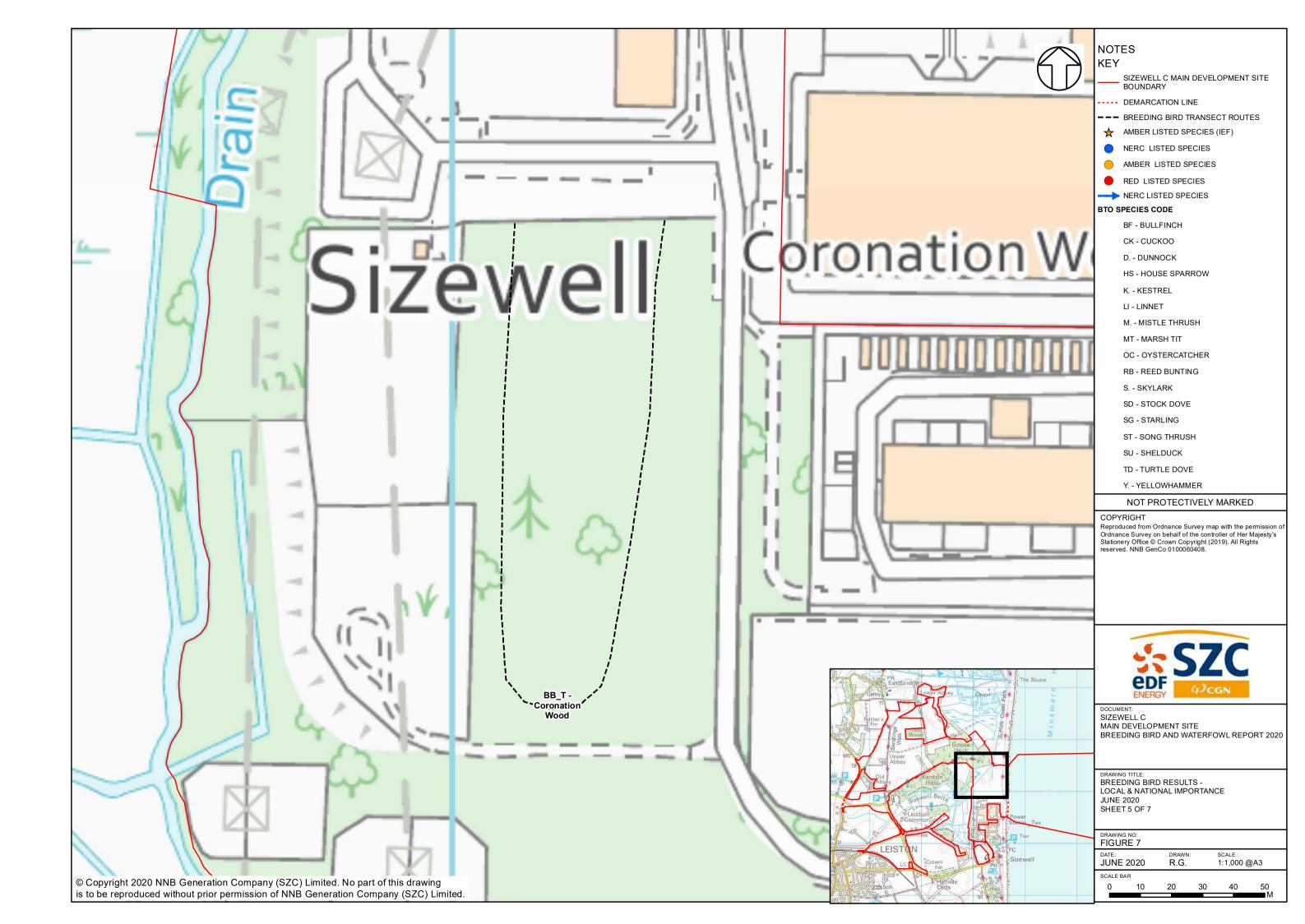


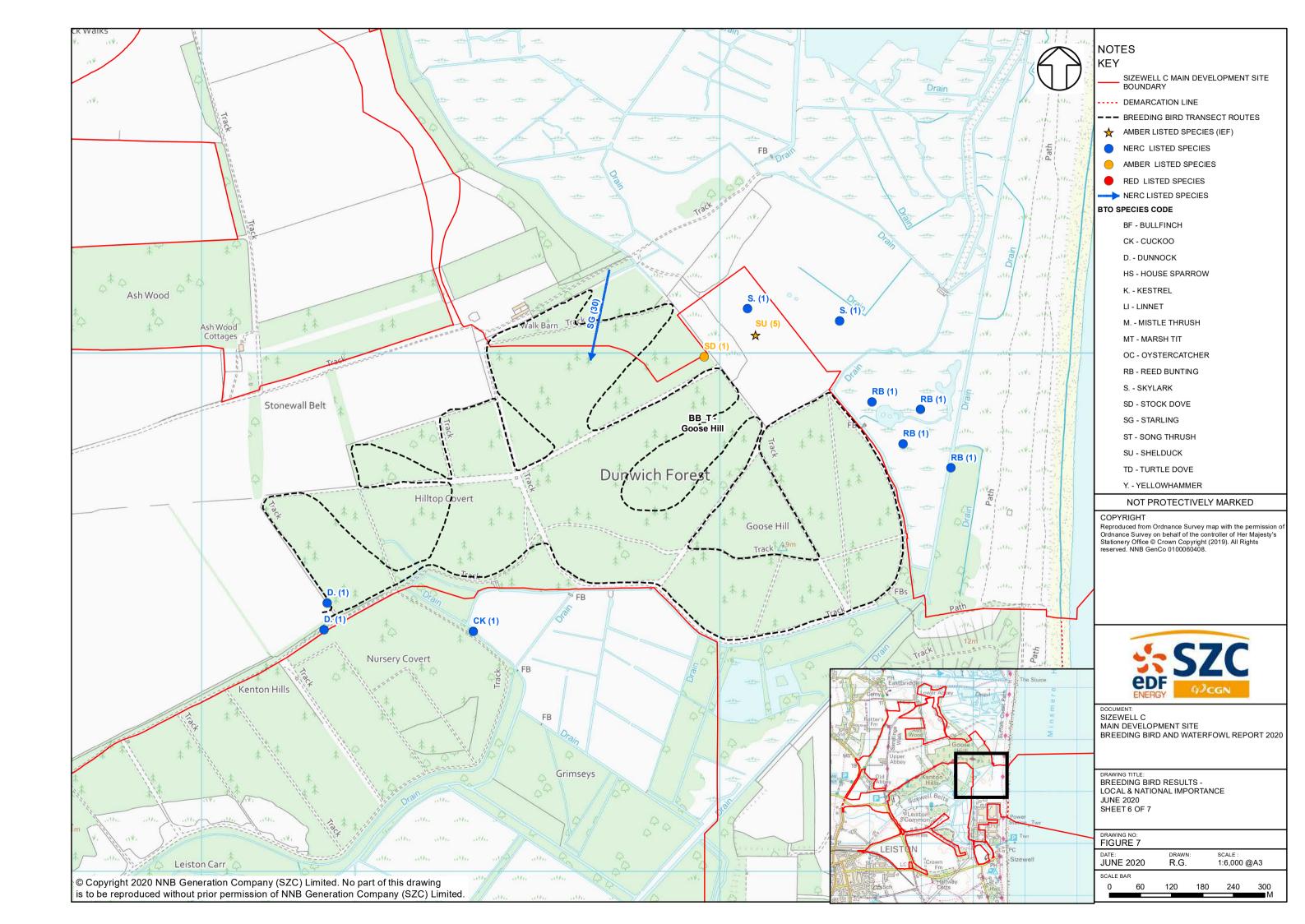


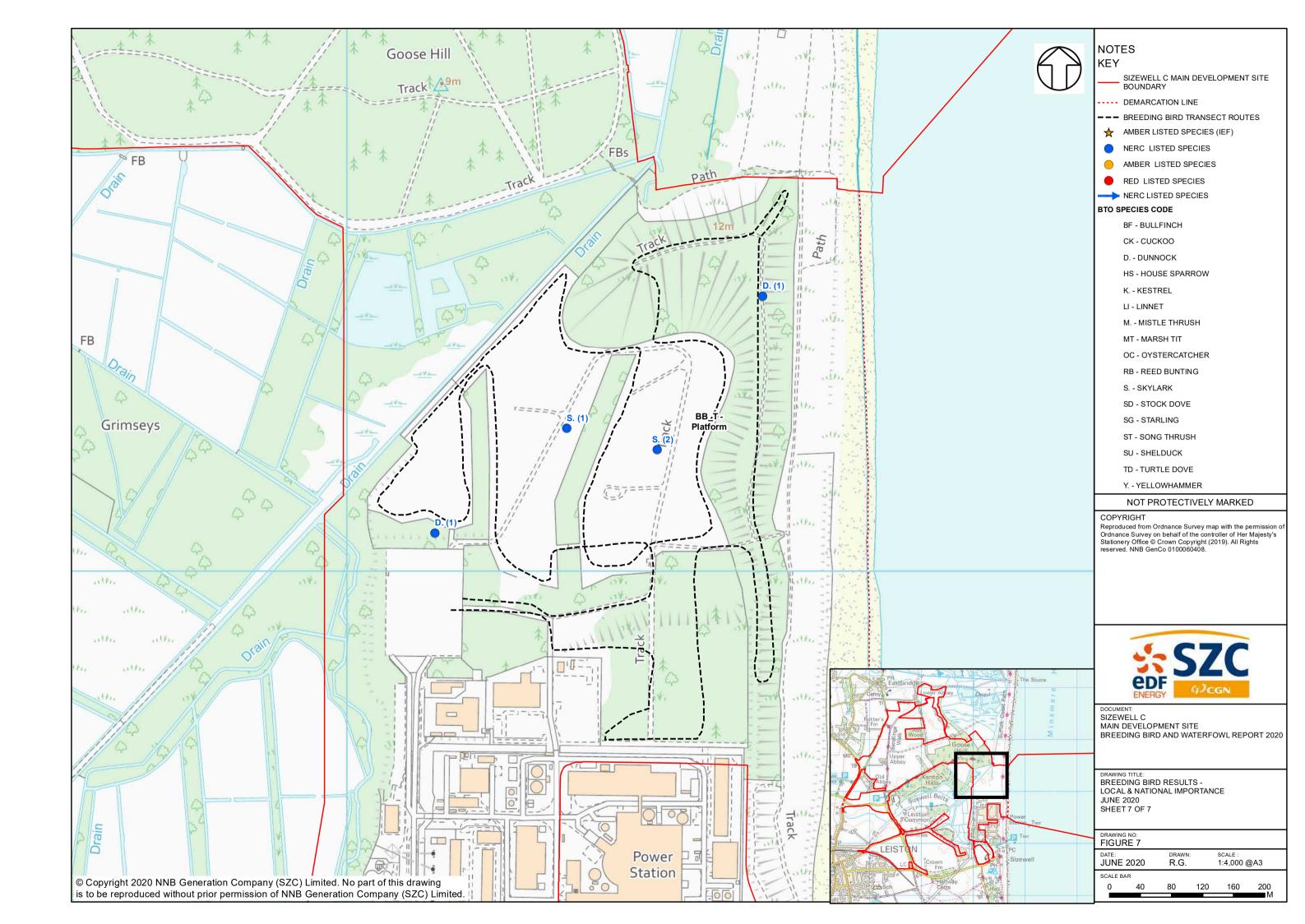


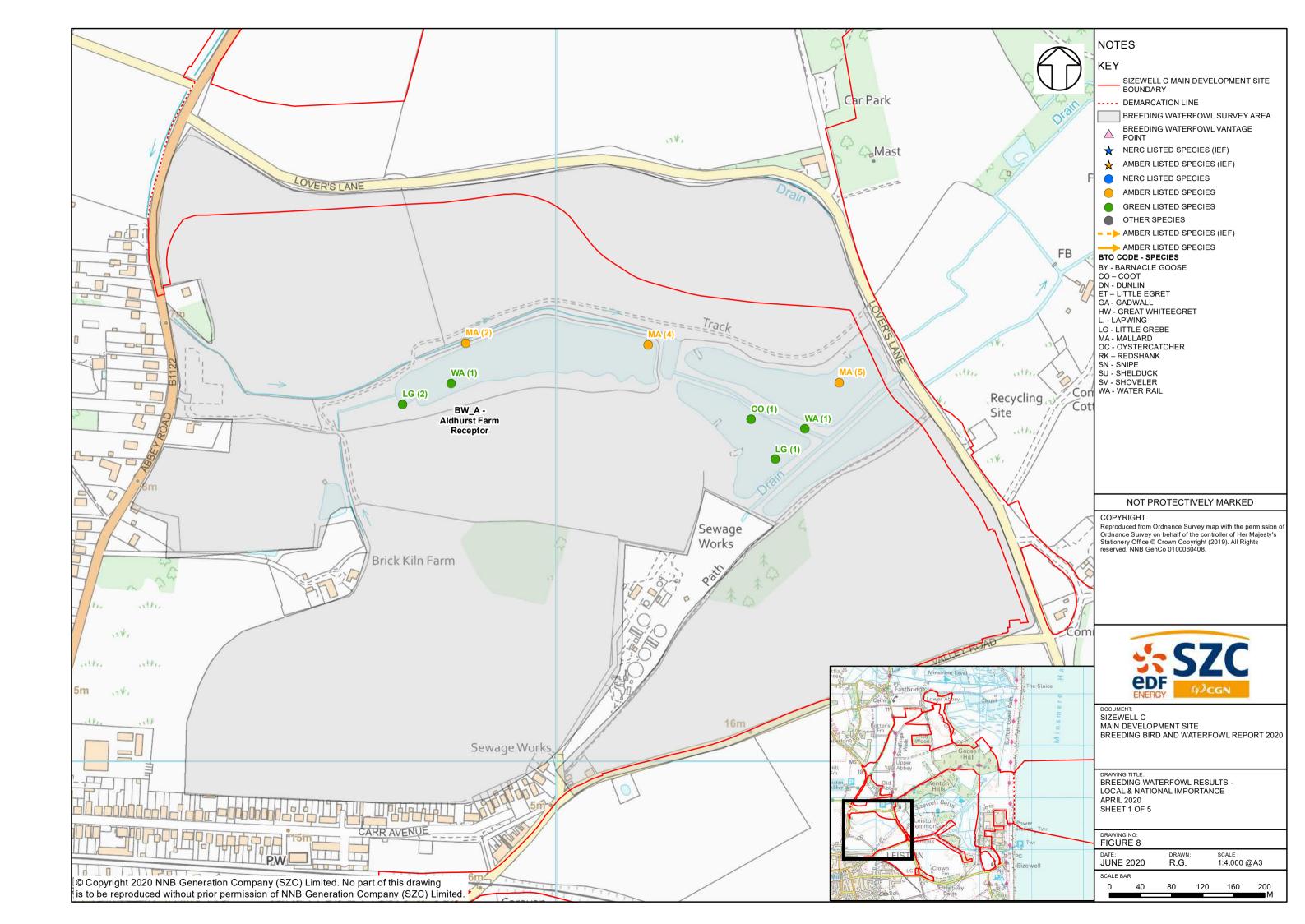


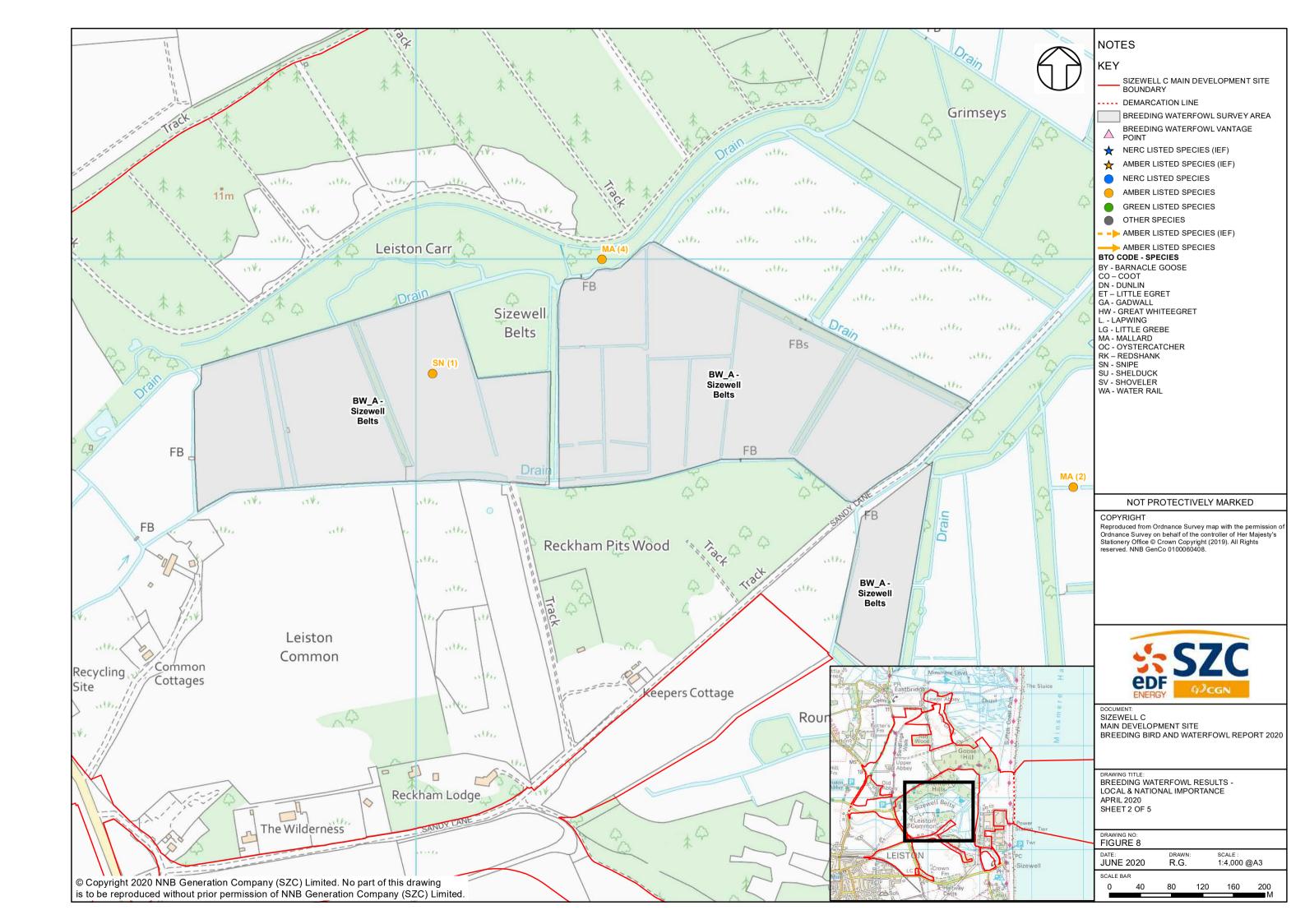


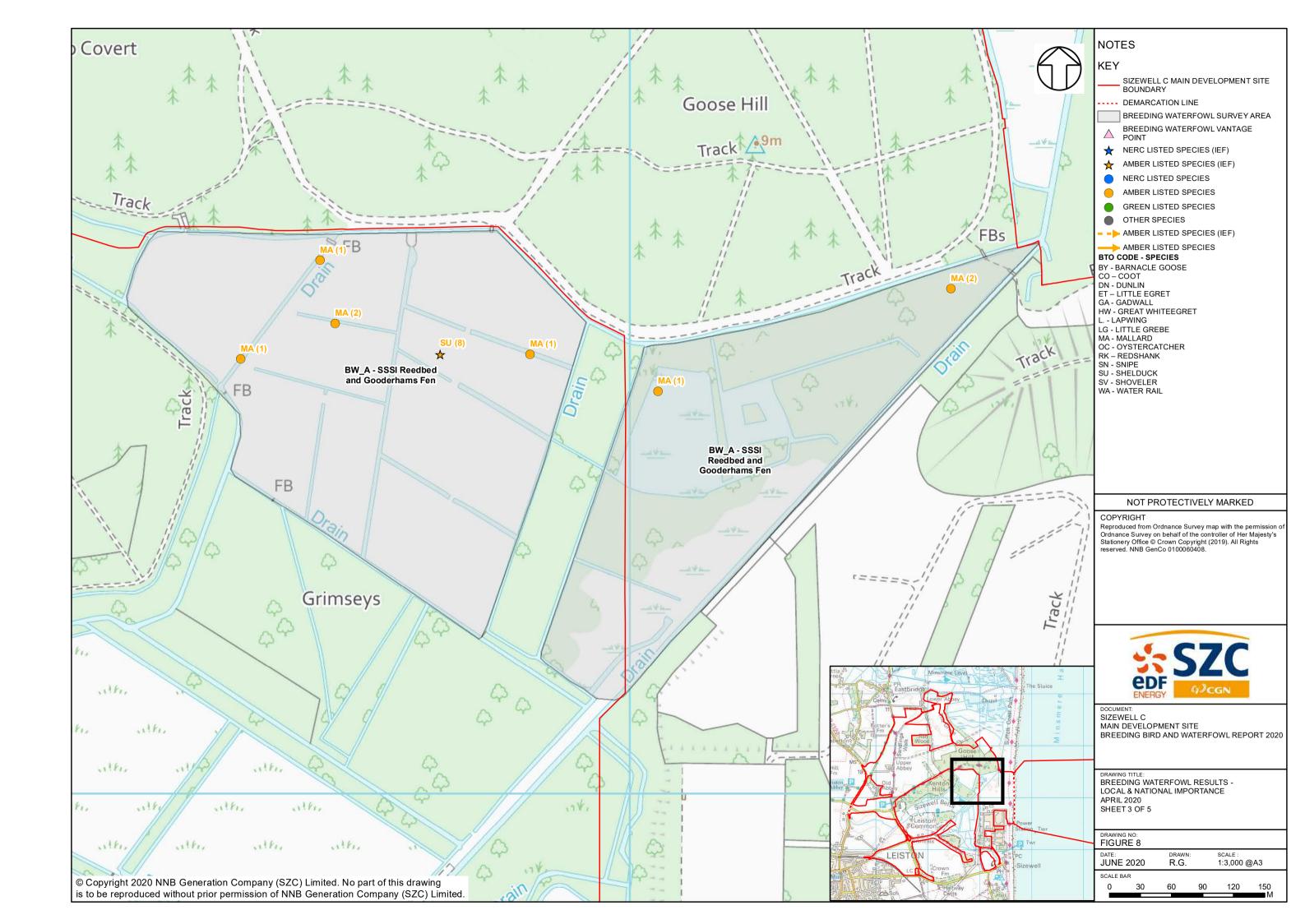


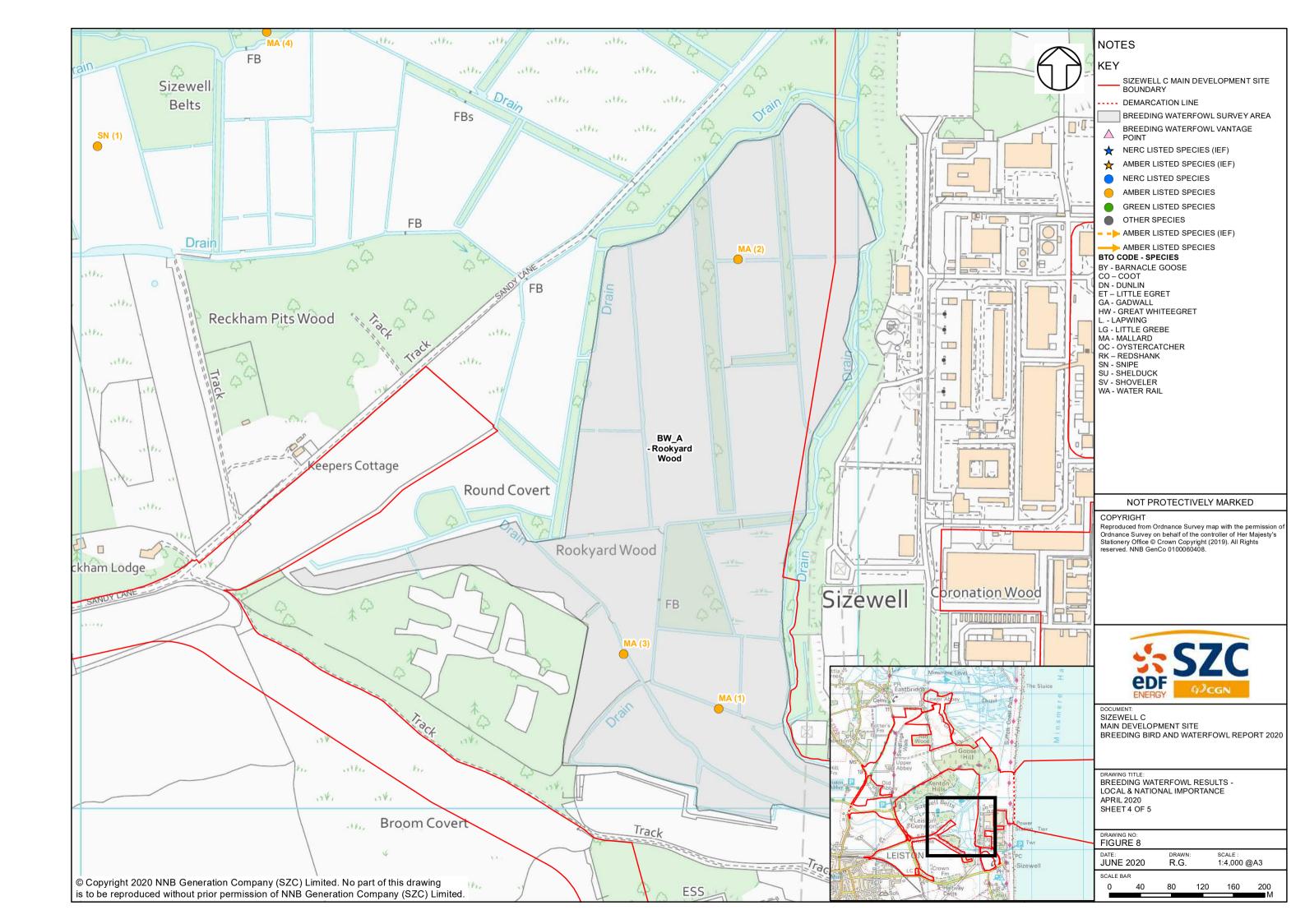


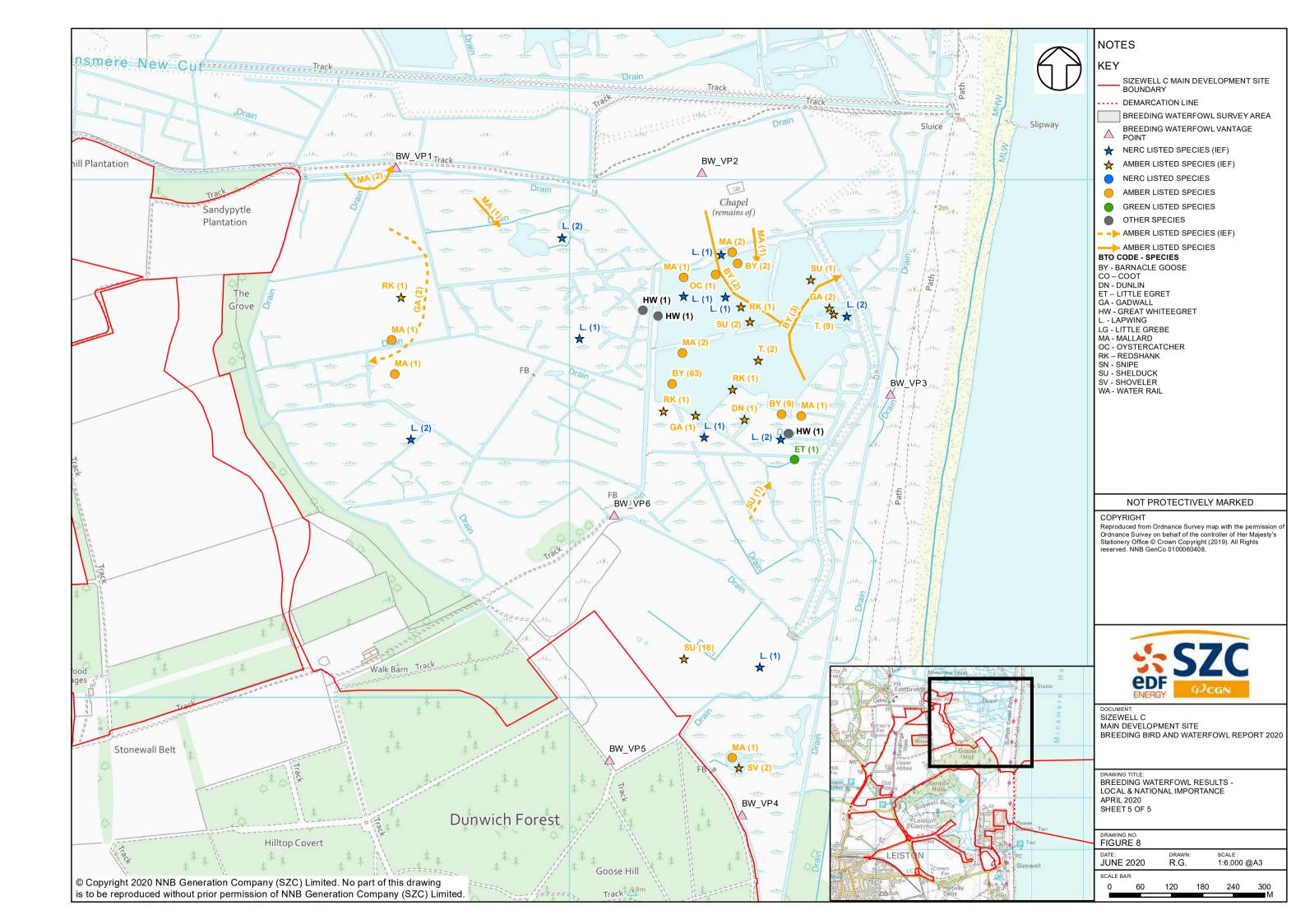


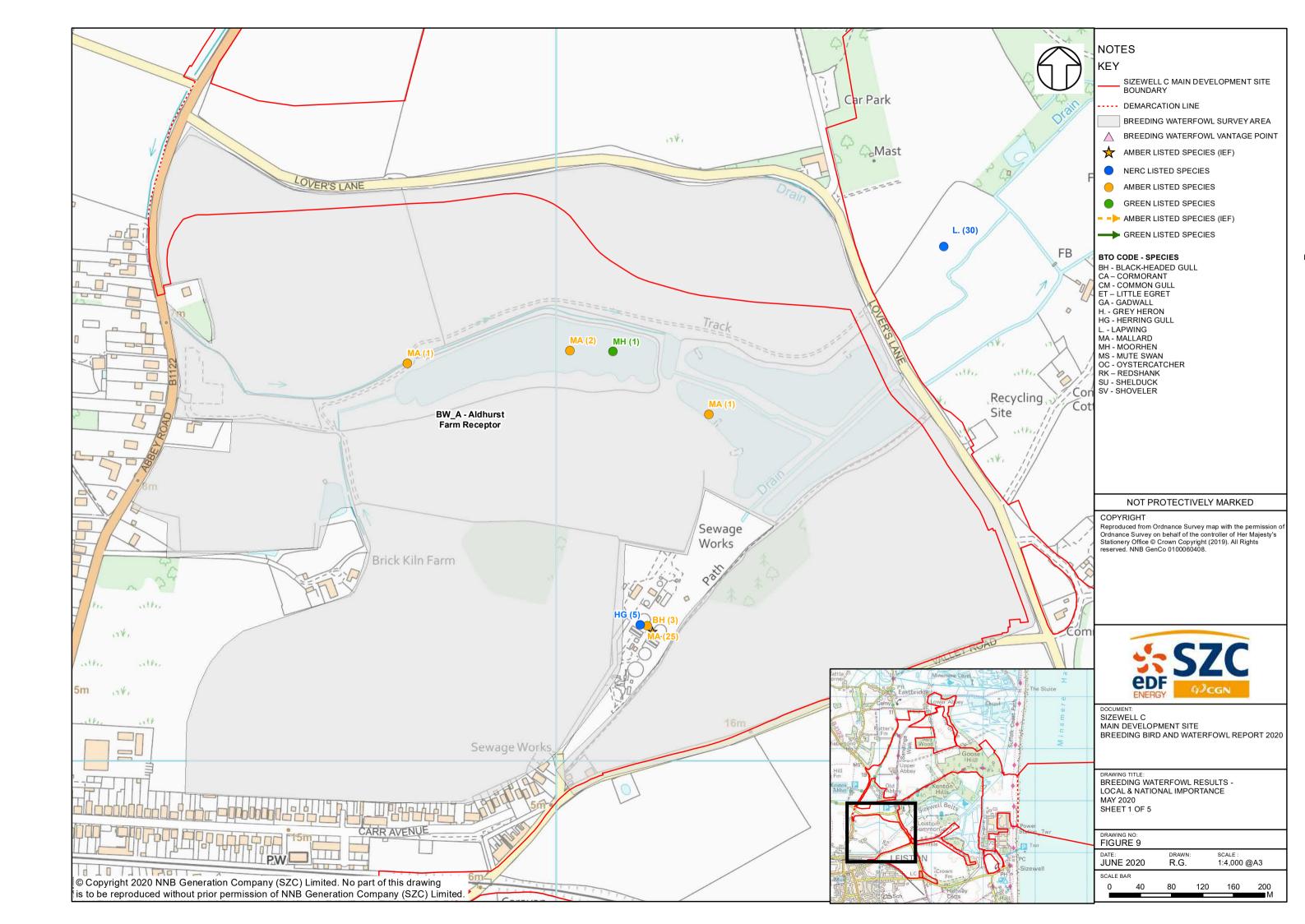


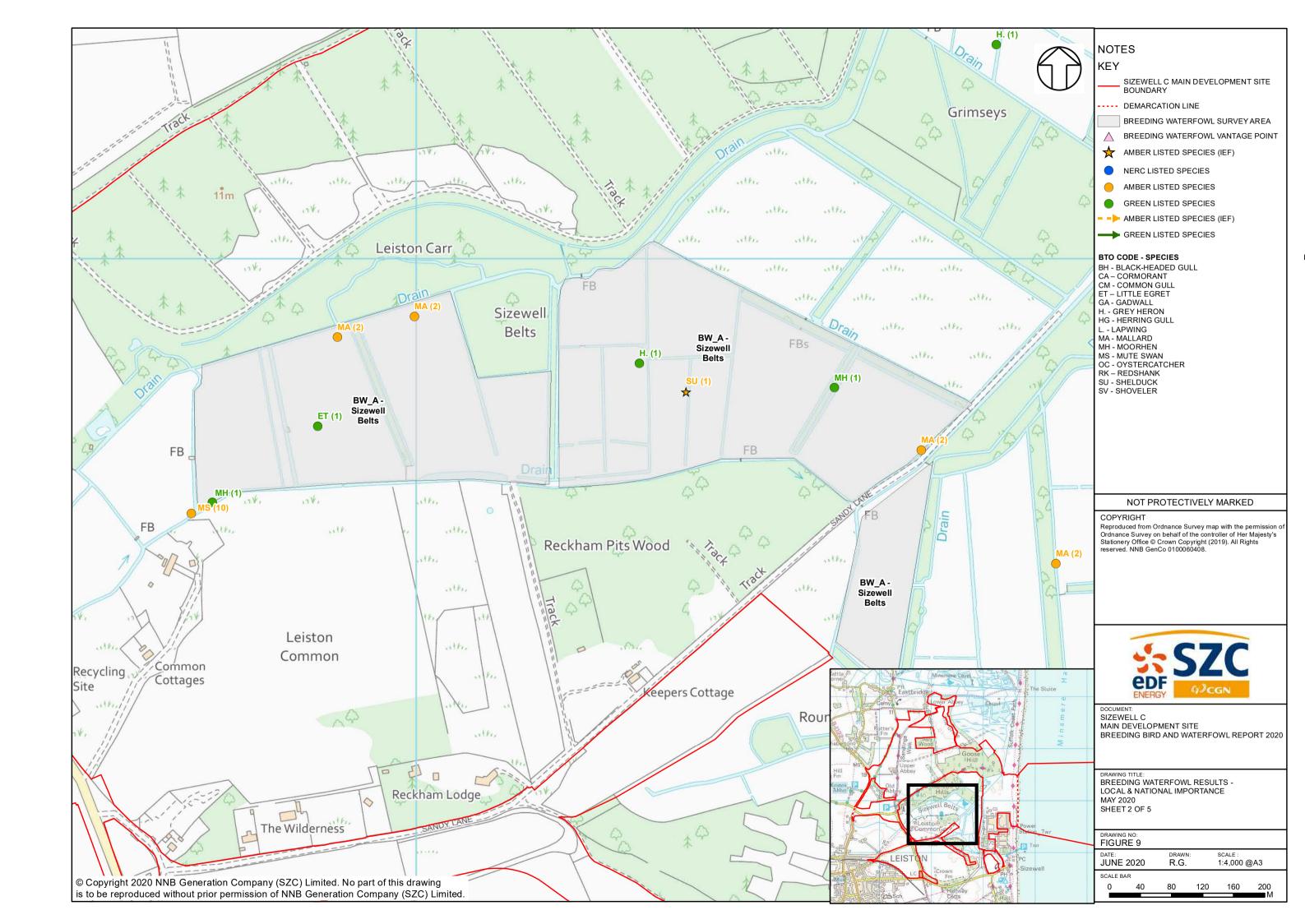


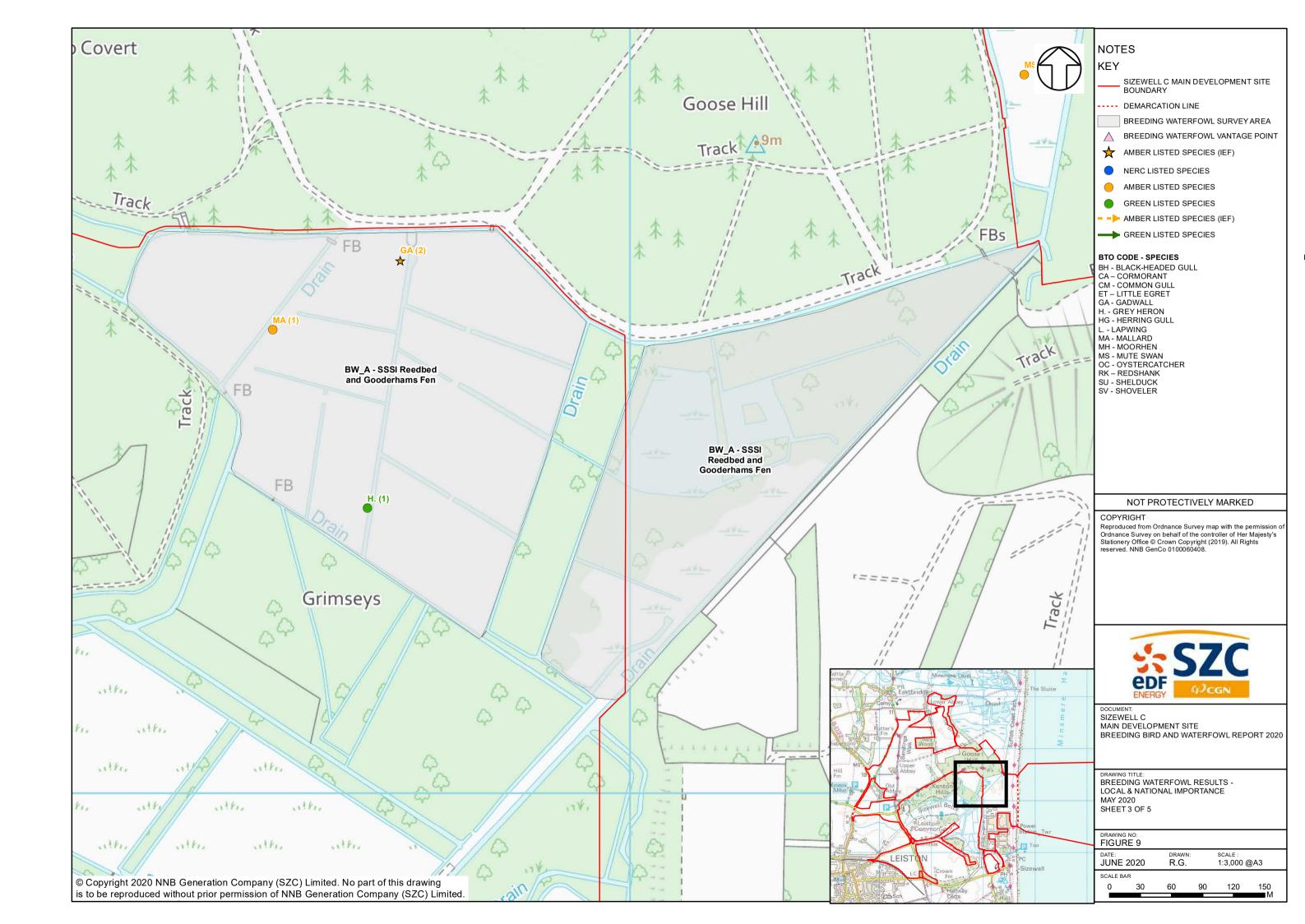


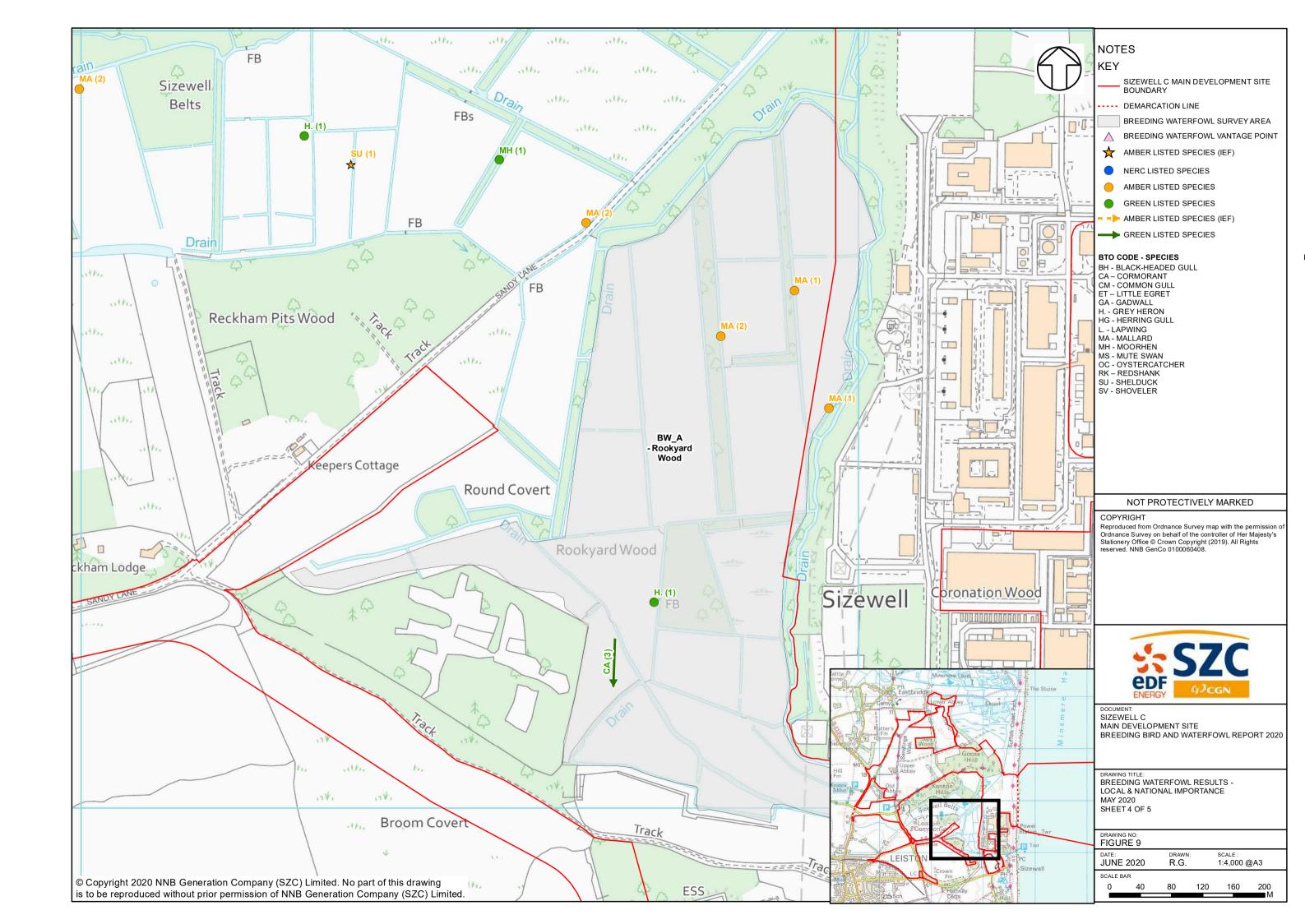


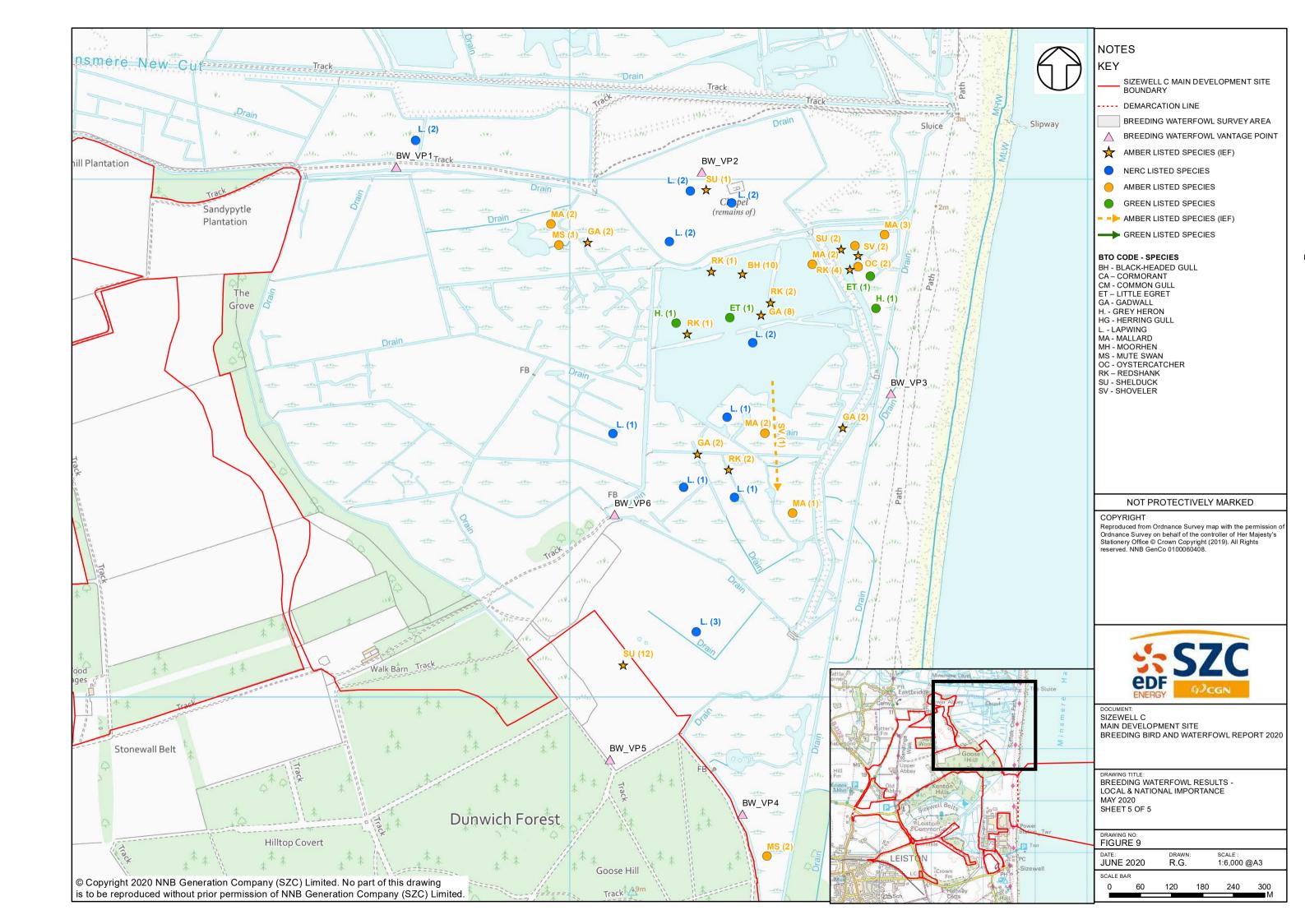


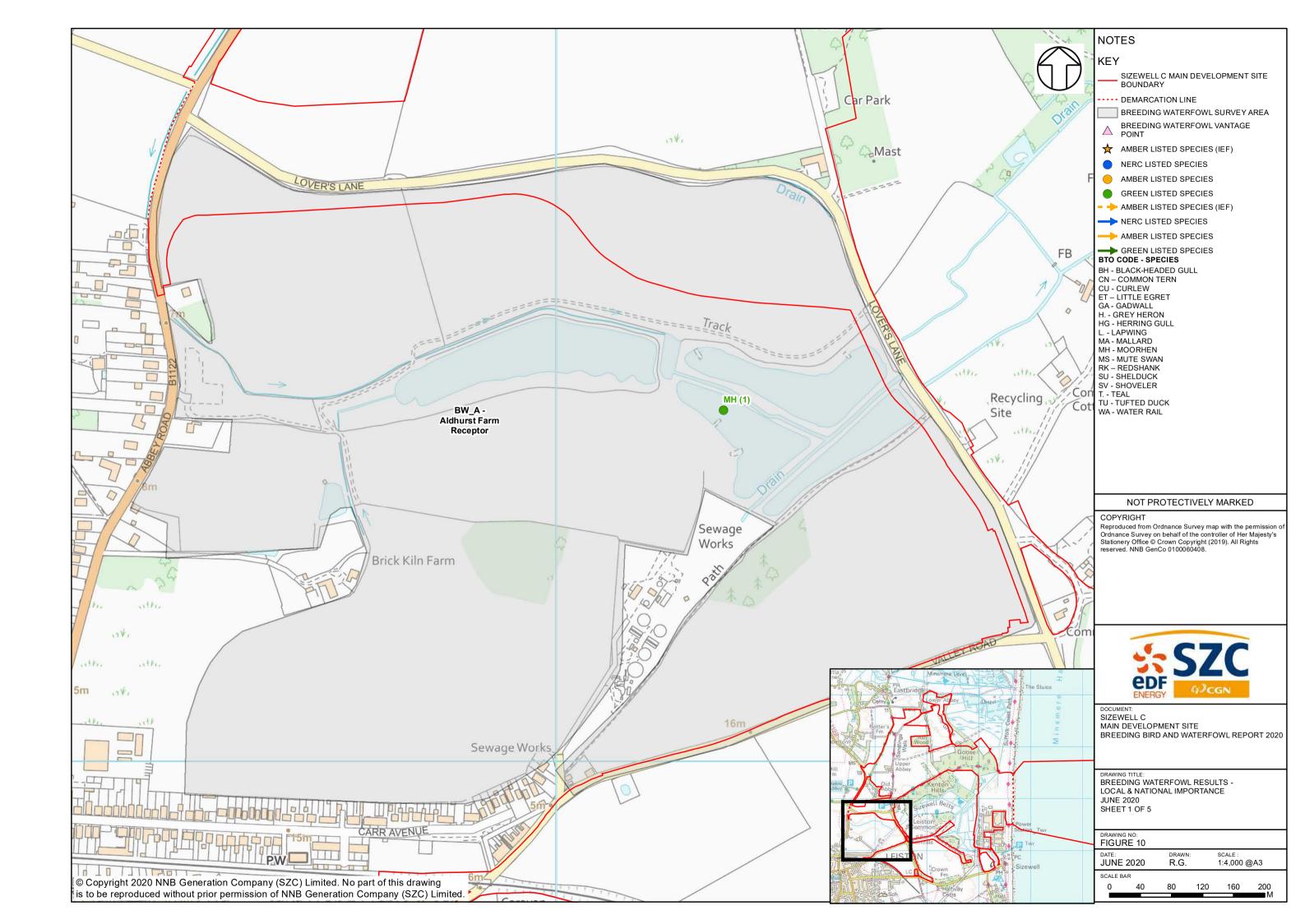


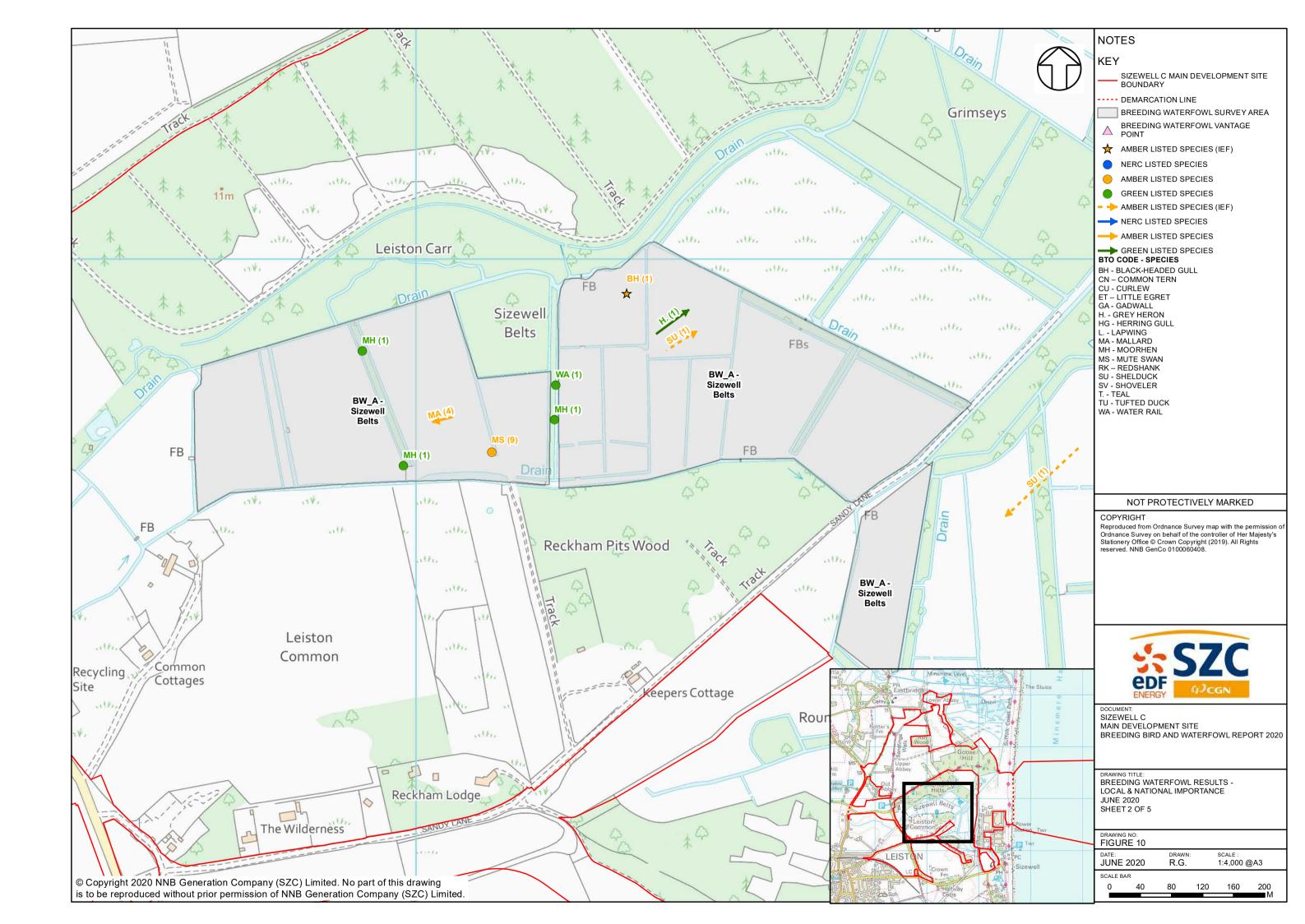


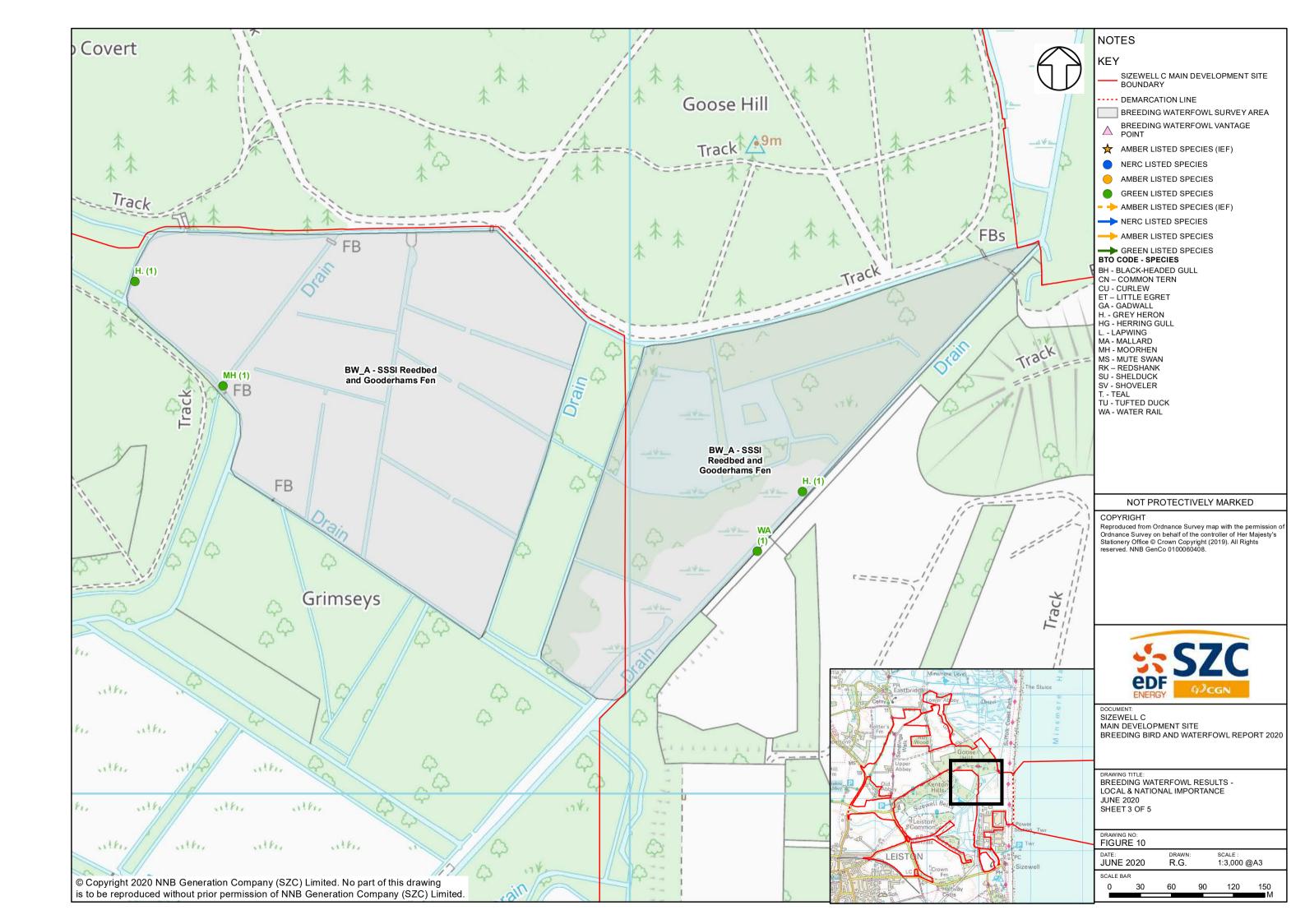


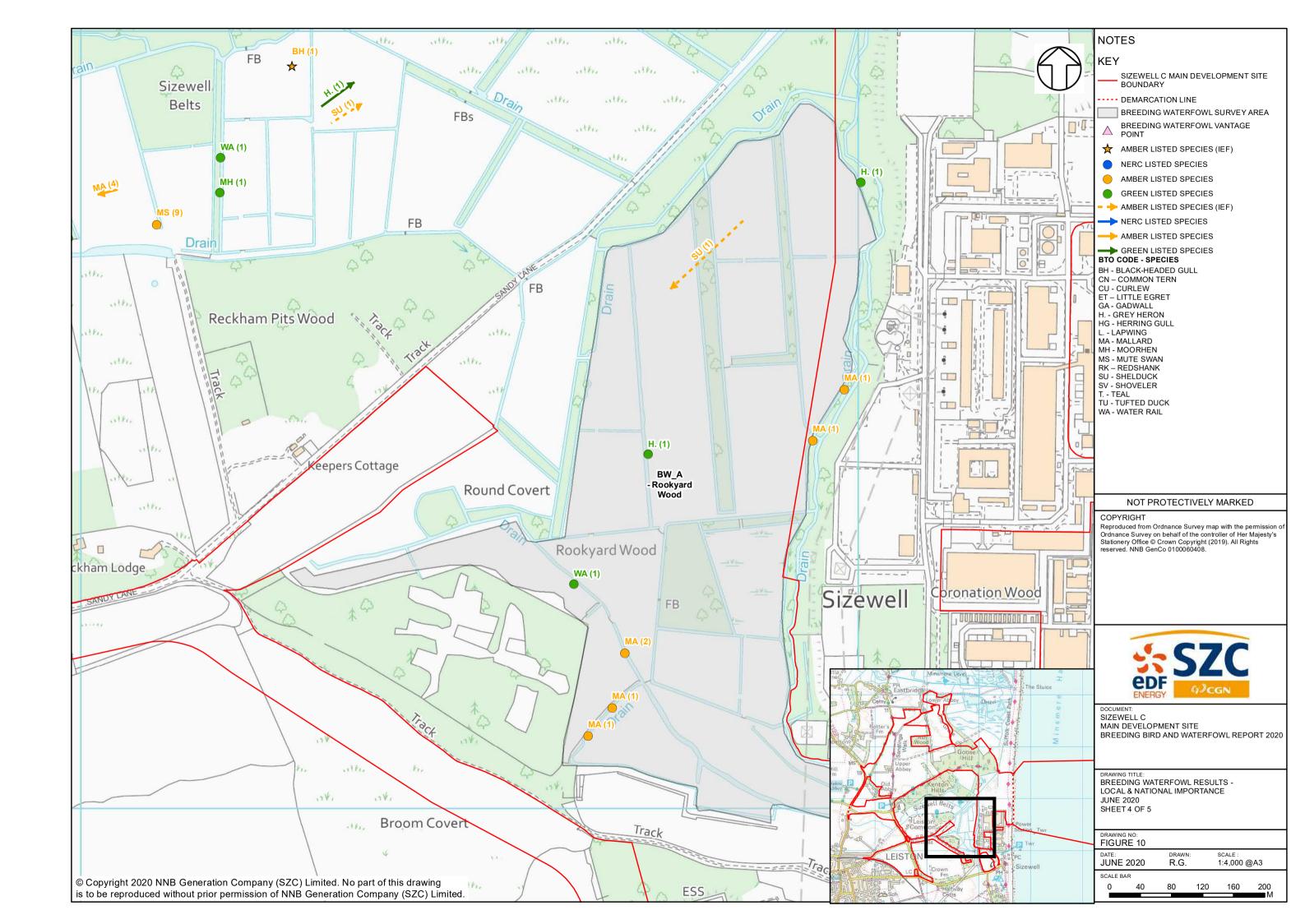


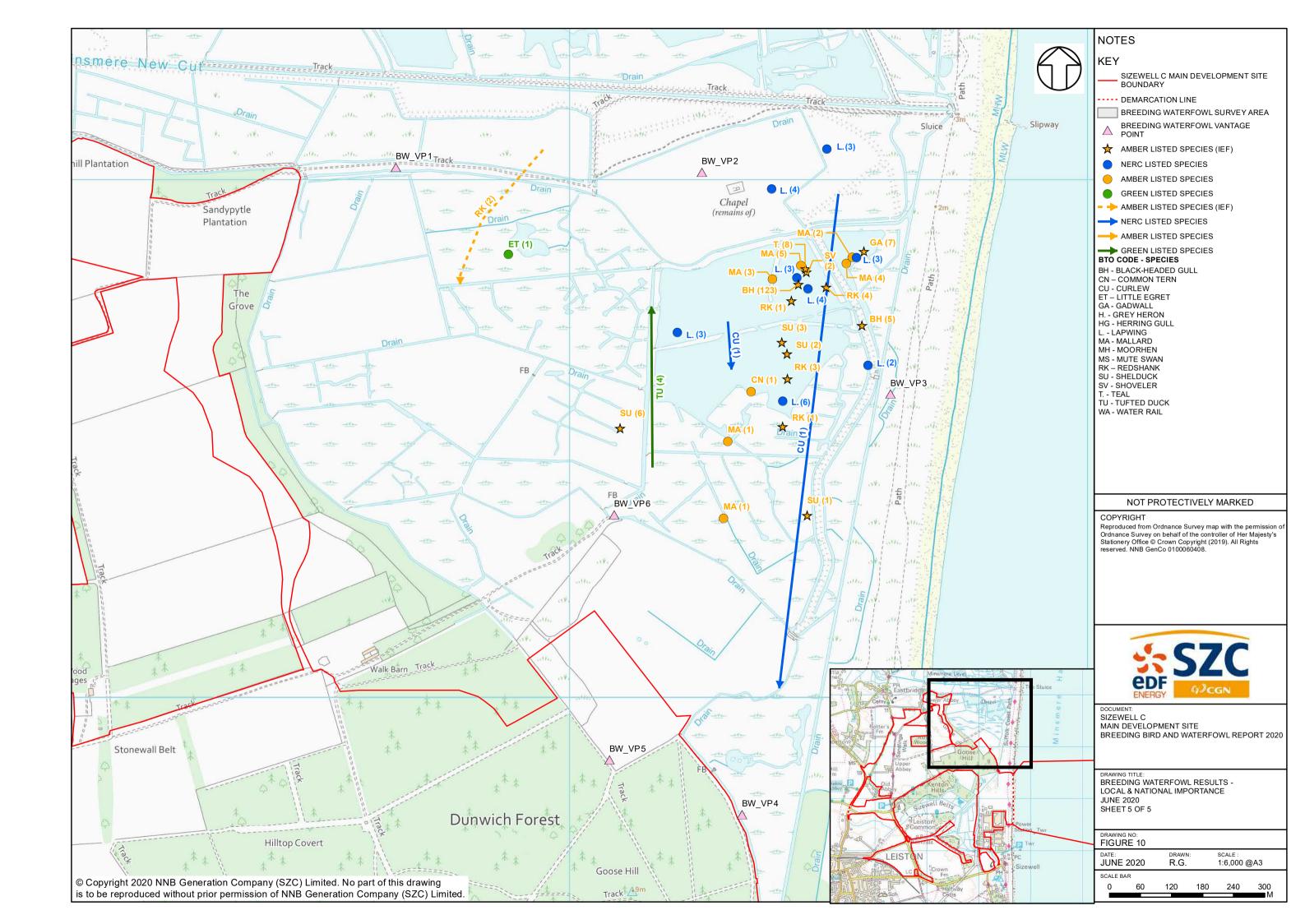


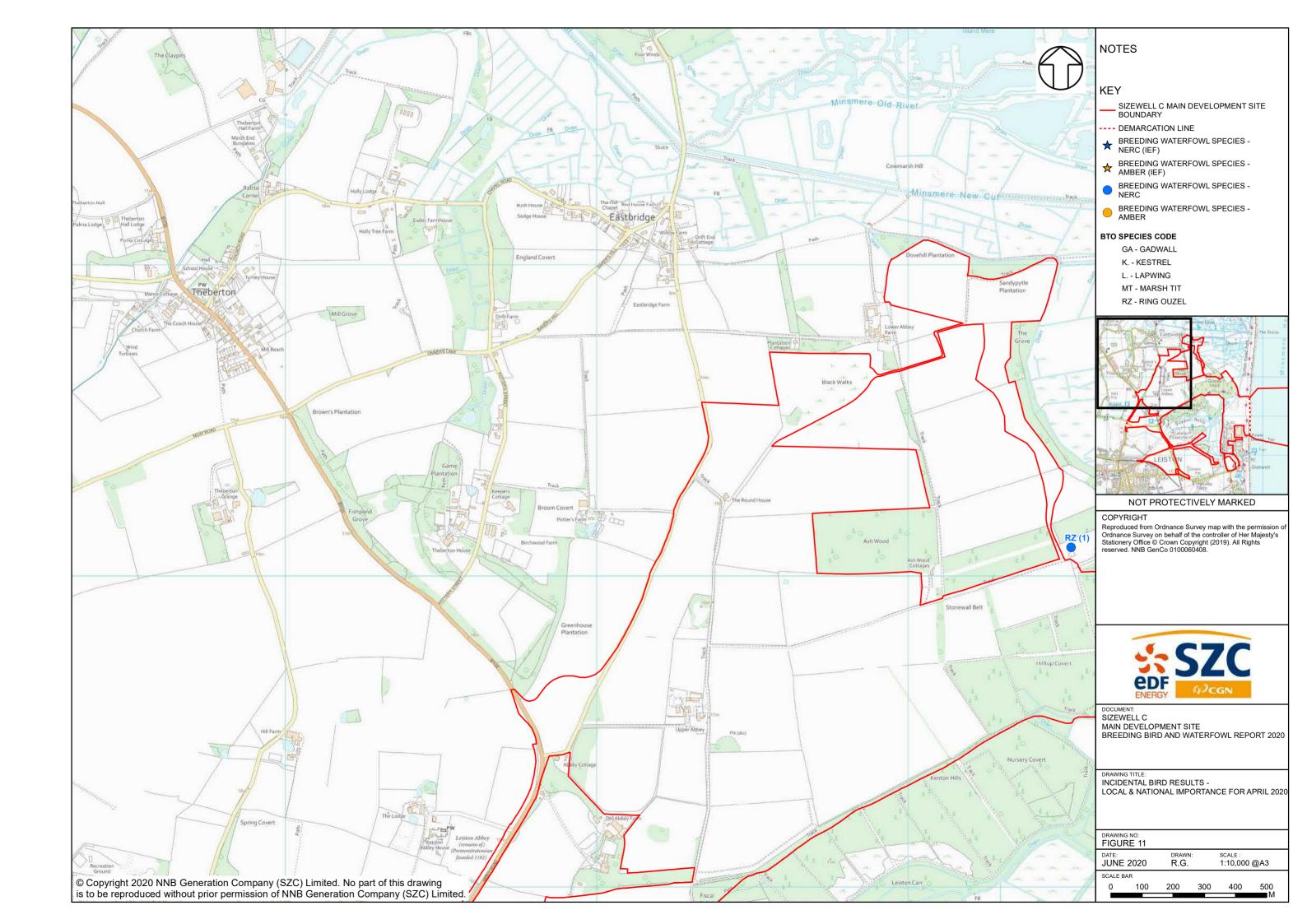


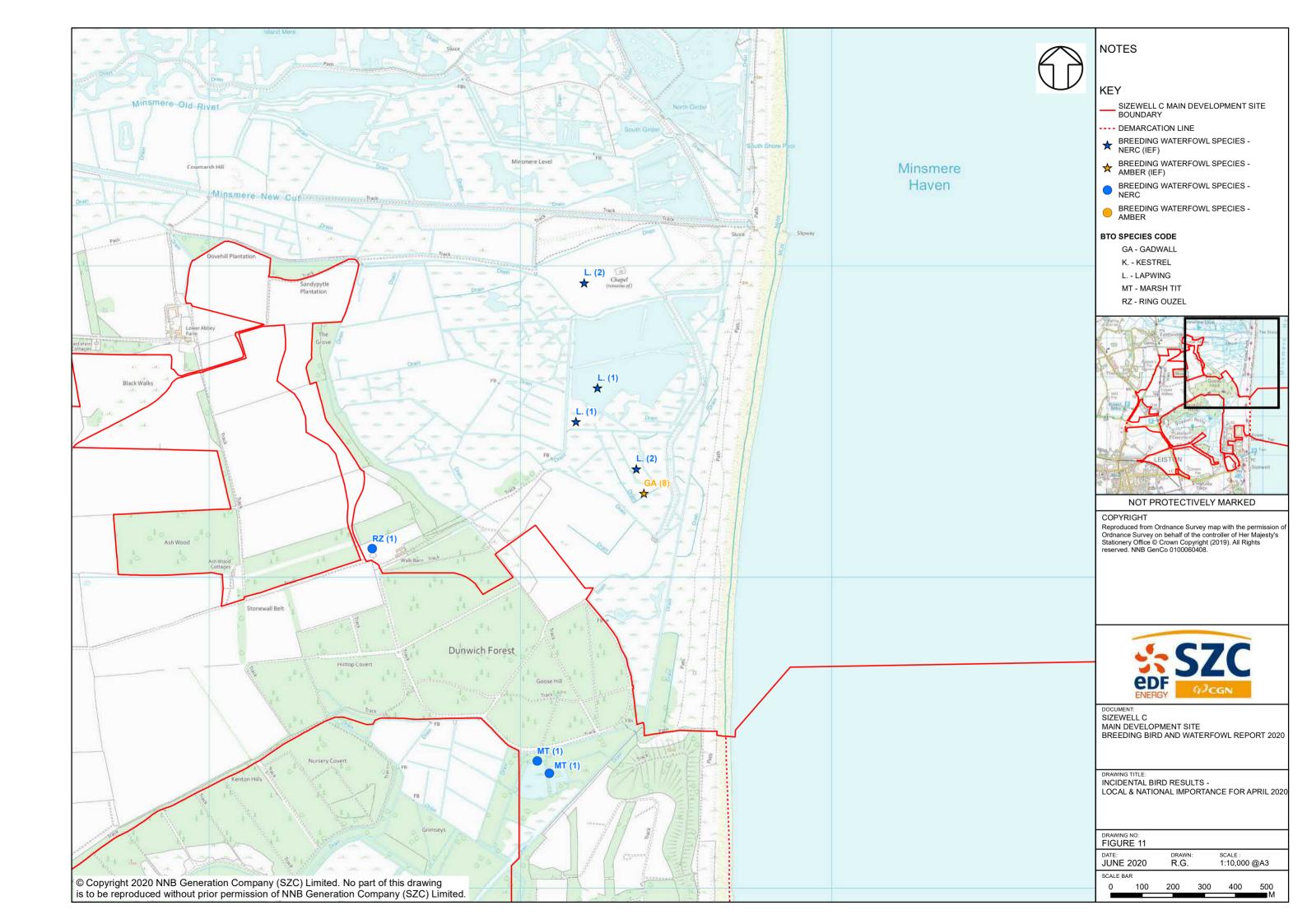


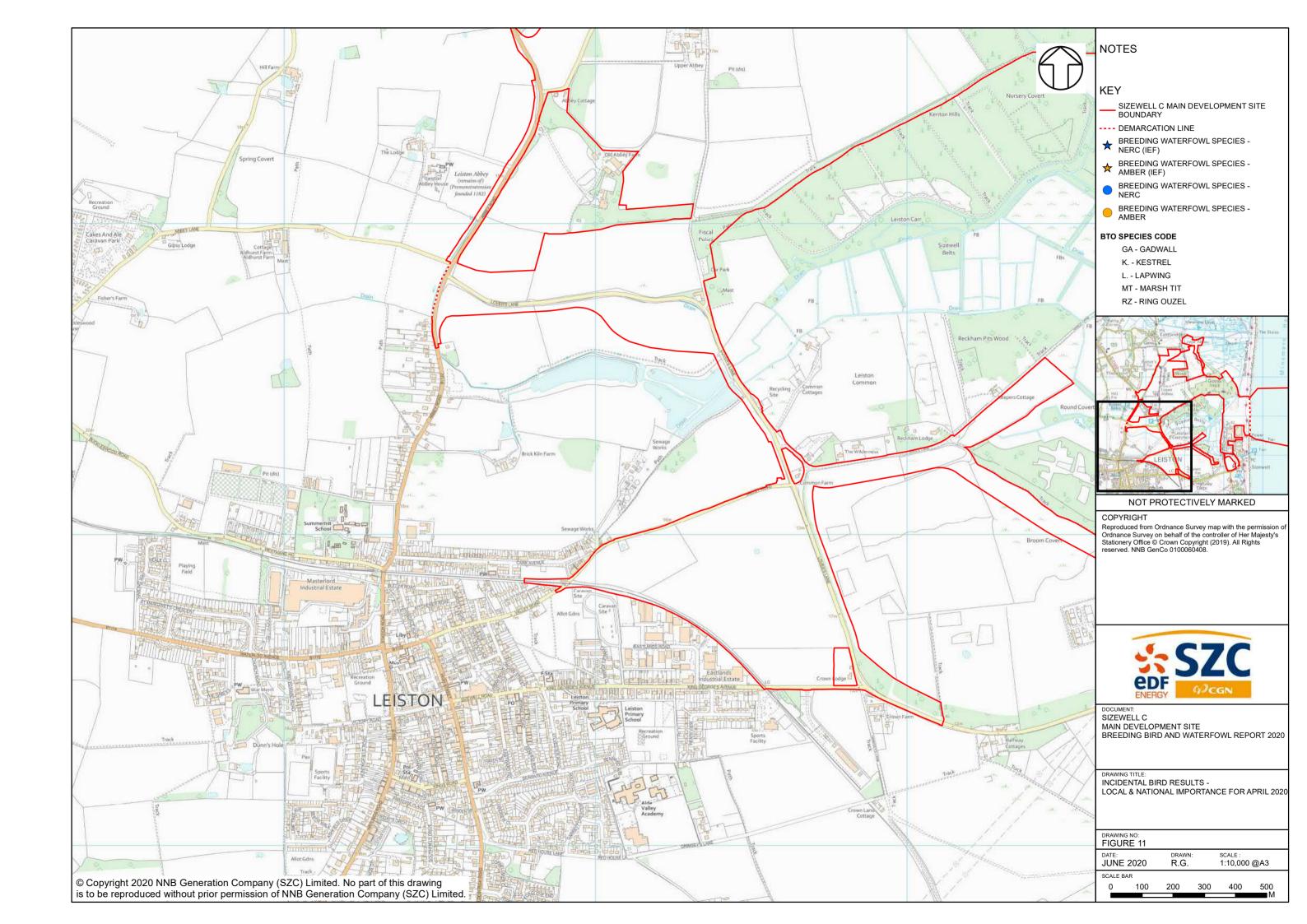




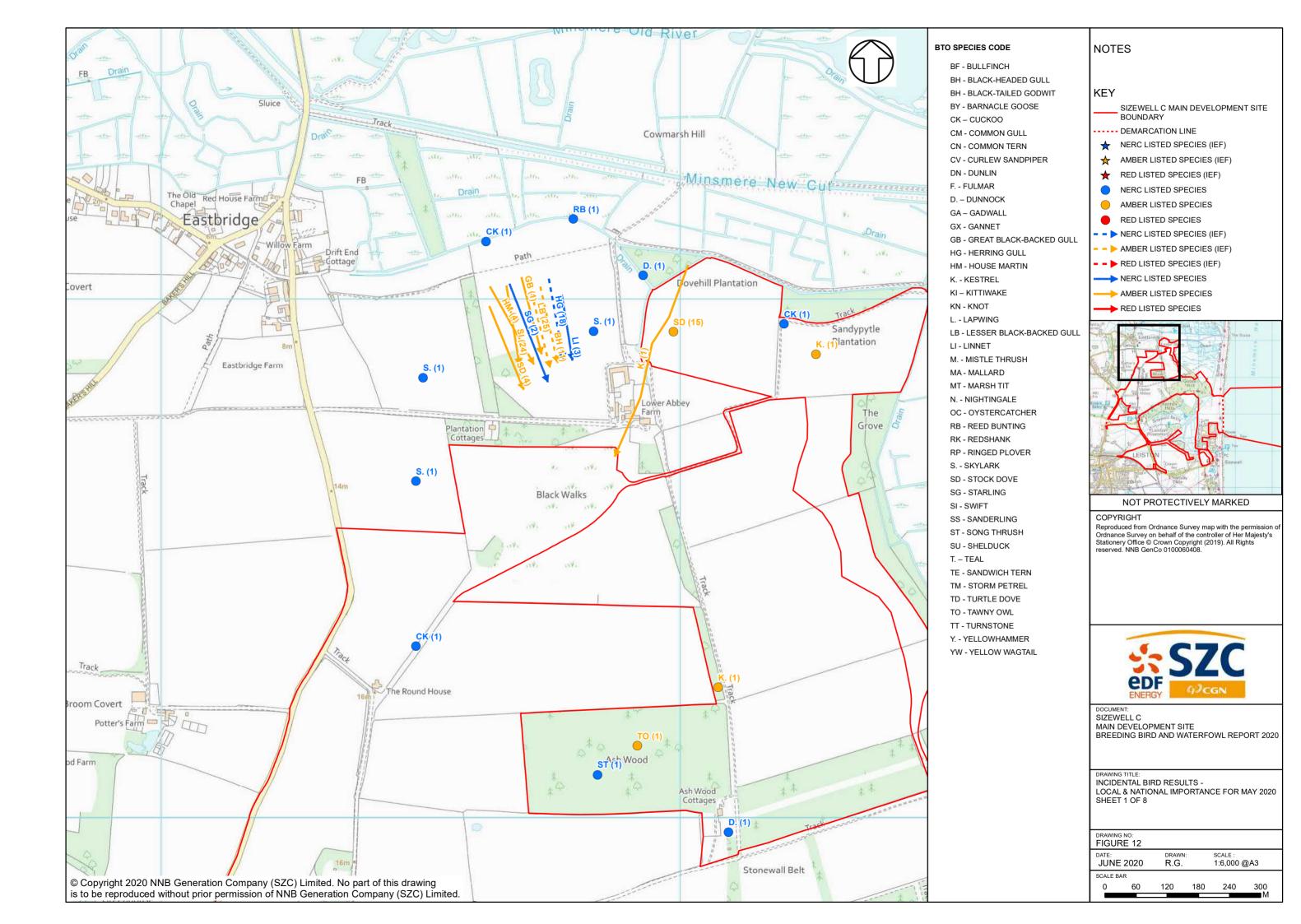


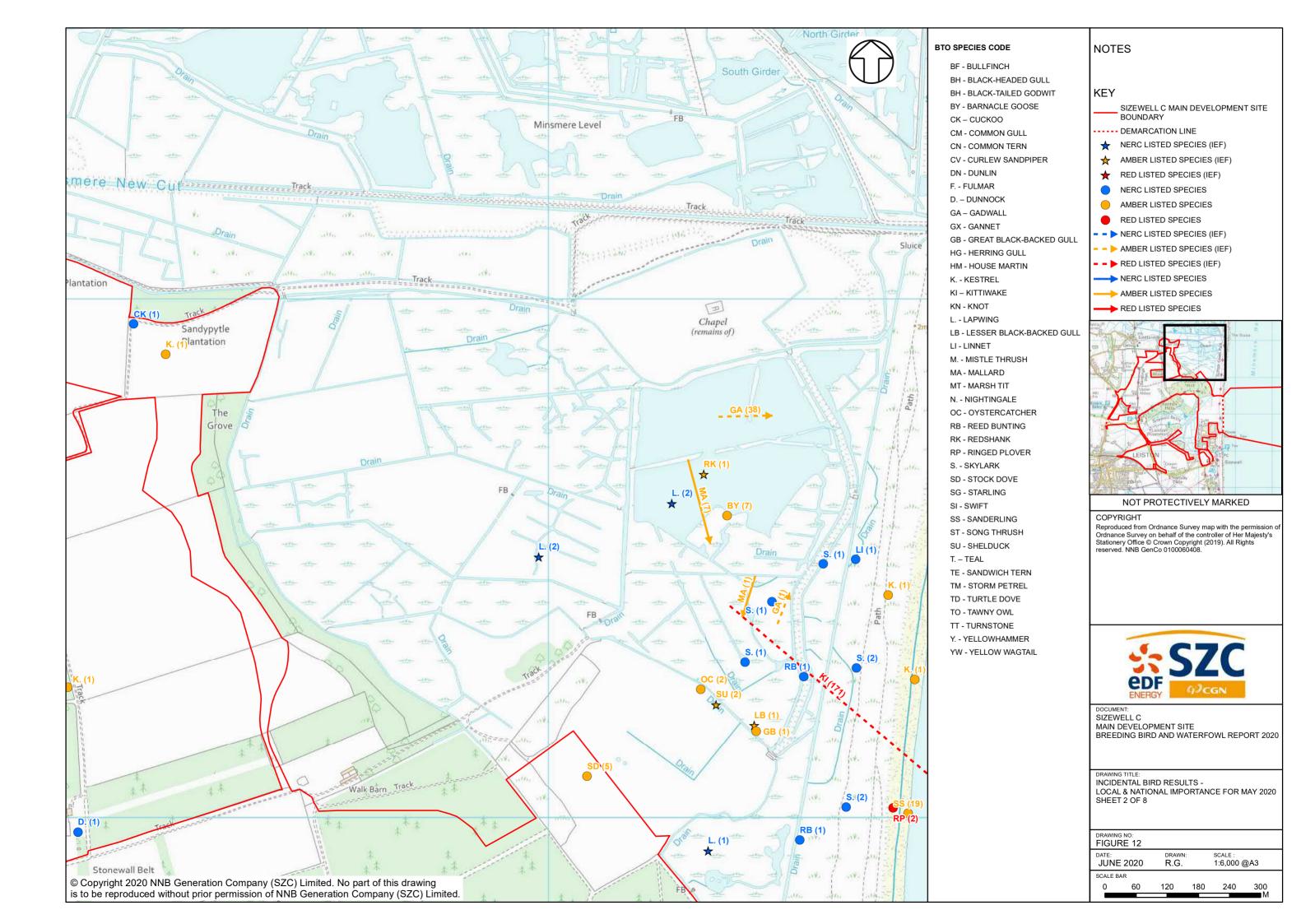


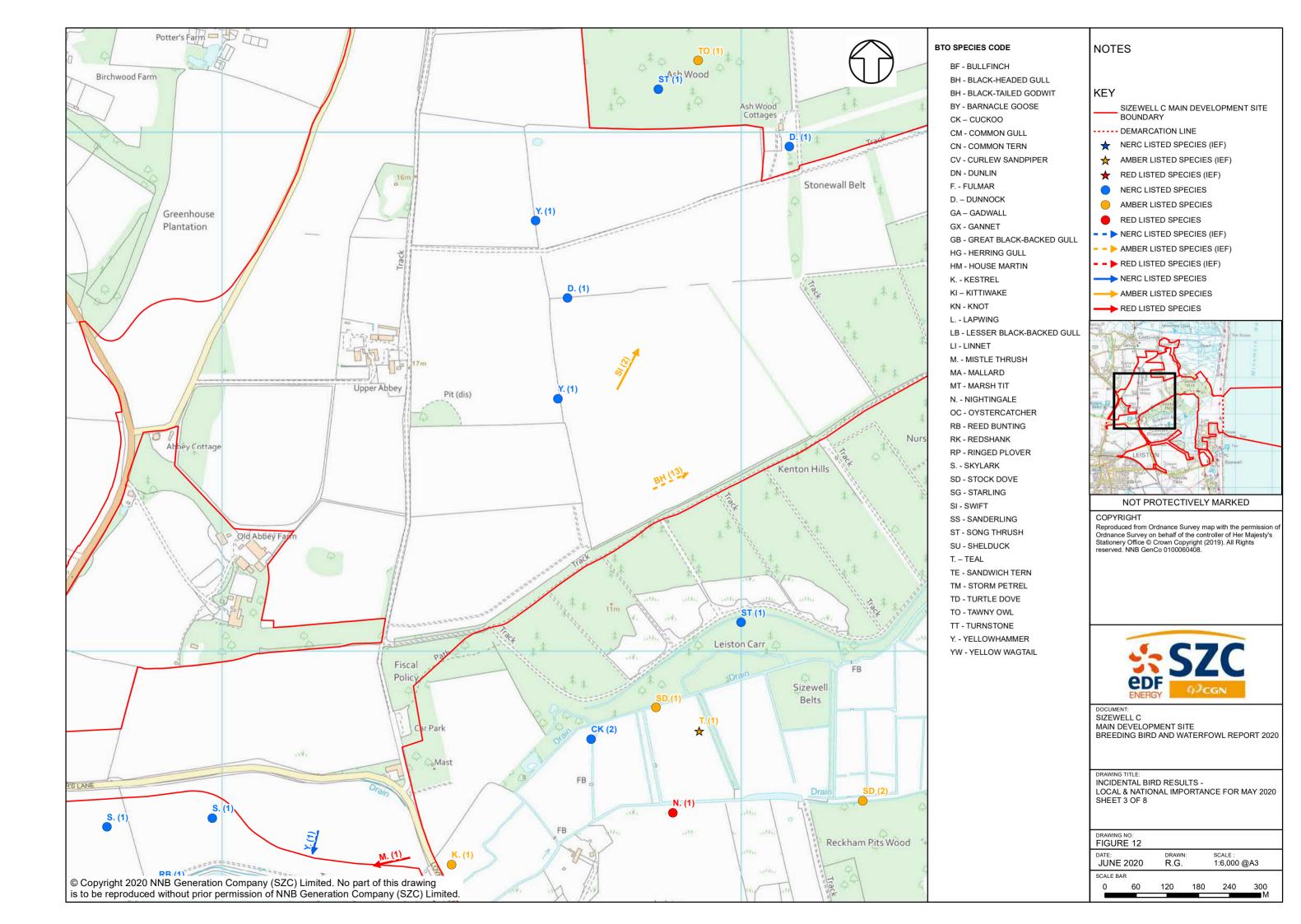


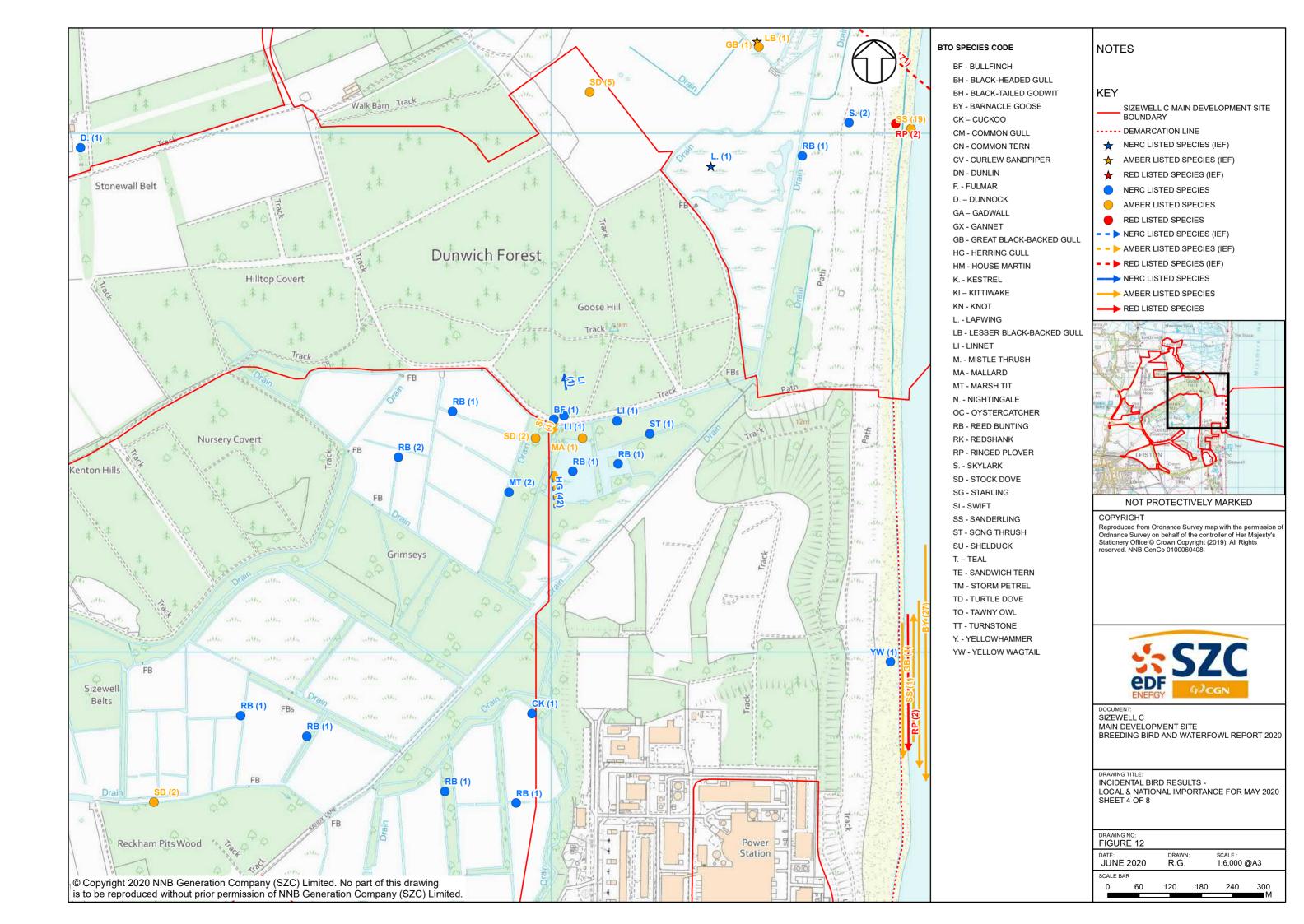


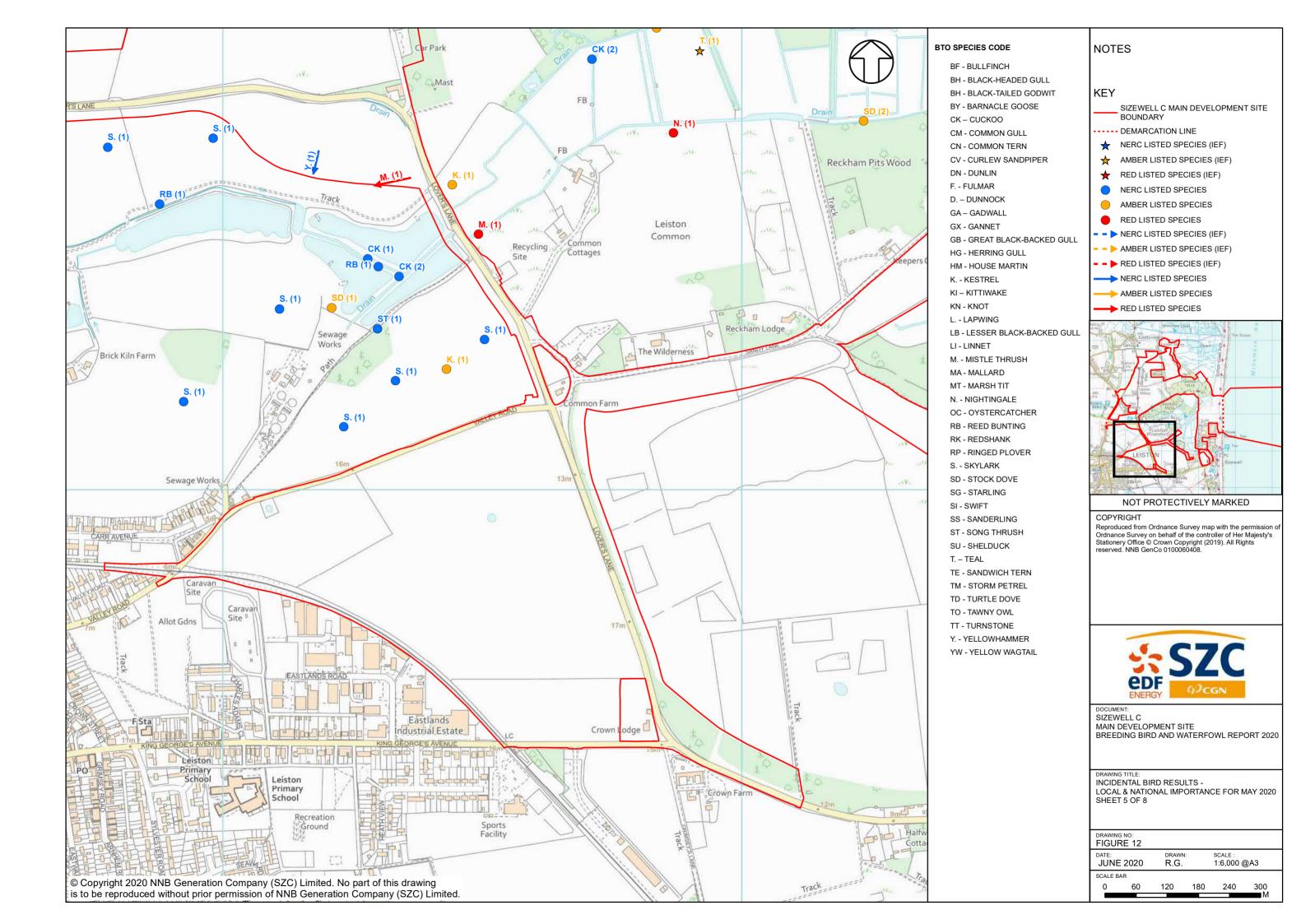


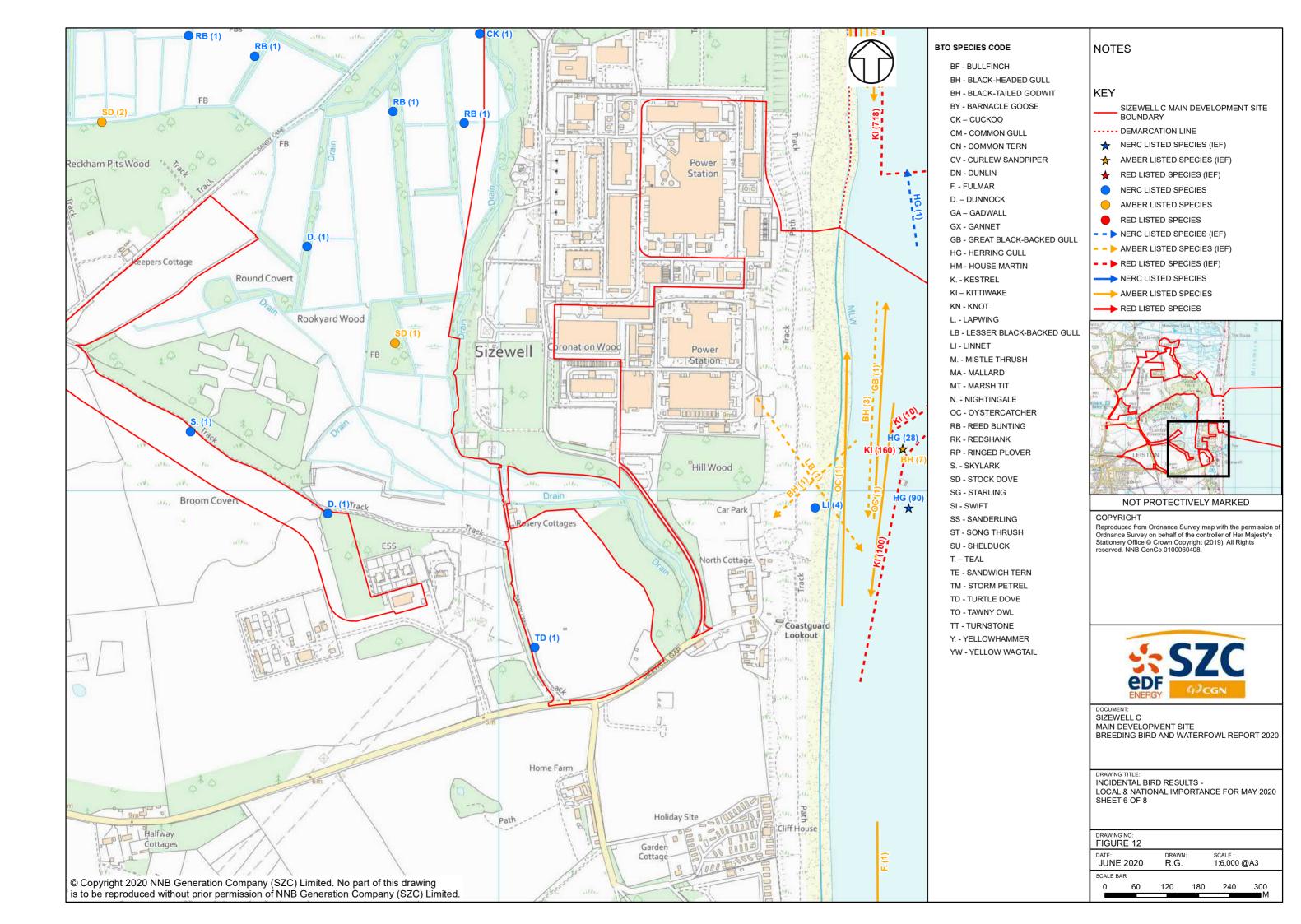


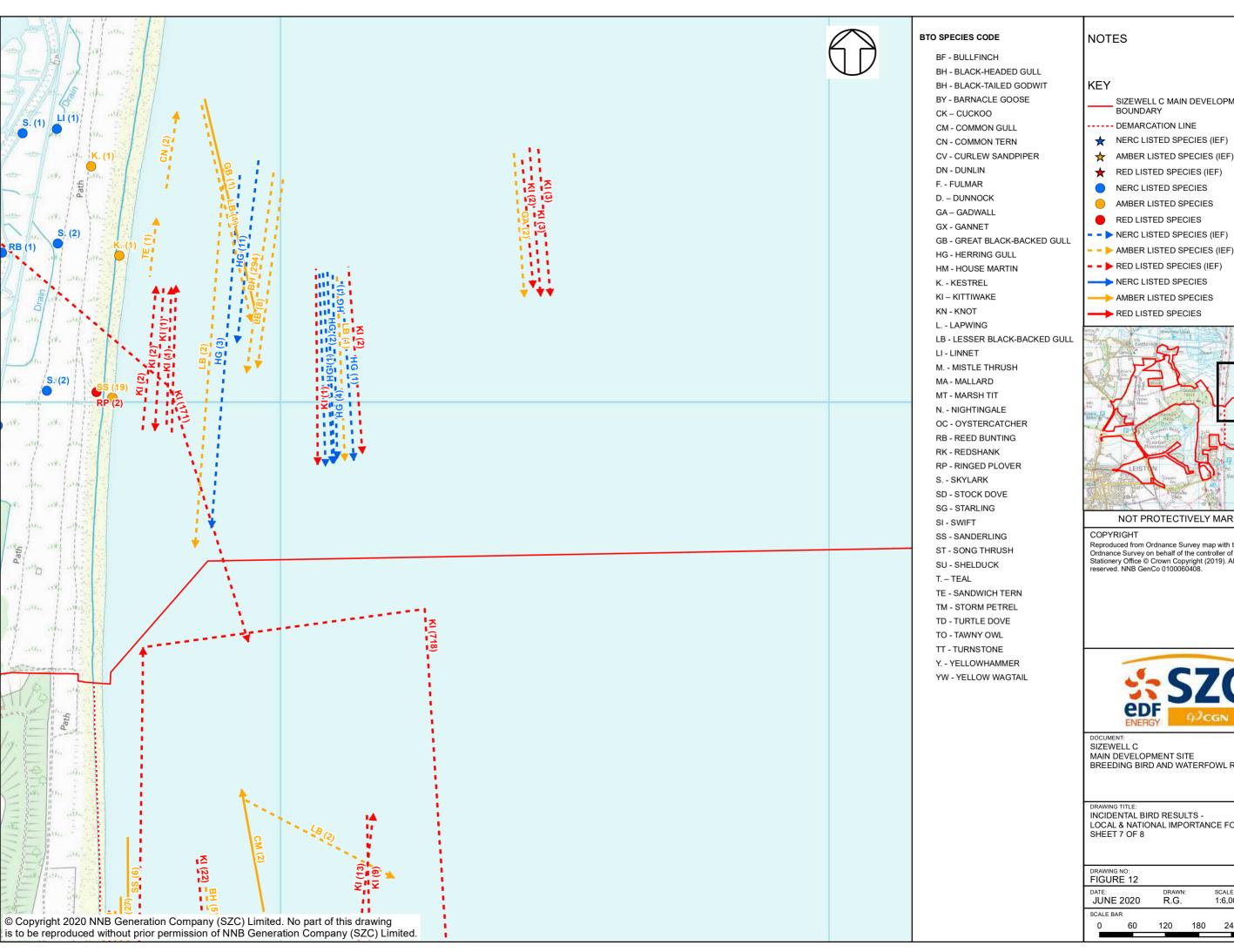












SIZEWELL C MAIN DEVELOPMENT SITE BOUNDARY

---- DEMARCATION LINE

NERC LISTED SPECIES (IEF)

AMBER LISTED SPECIES (IEF)

RED LISTED SPECIES (IEF)

NERC LISTED SPECIES

AMBER LISTED SPECIES

RED LISTED SPECIES

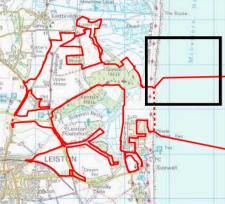
■ NERC LISTED SPECIES (IEF)

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→ AMBER LISTED SPECIES

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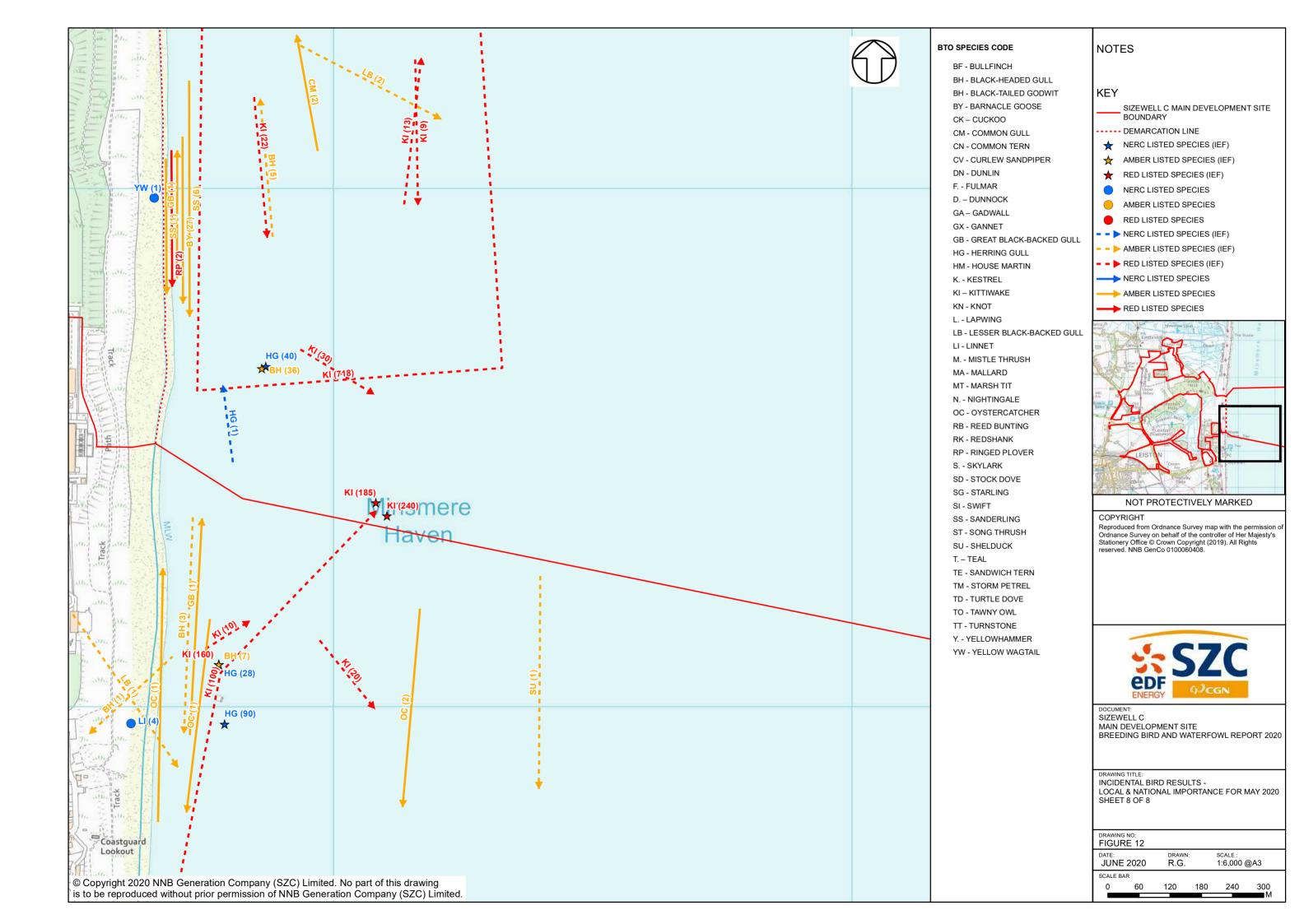


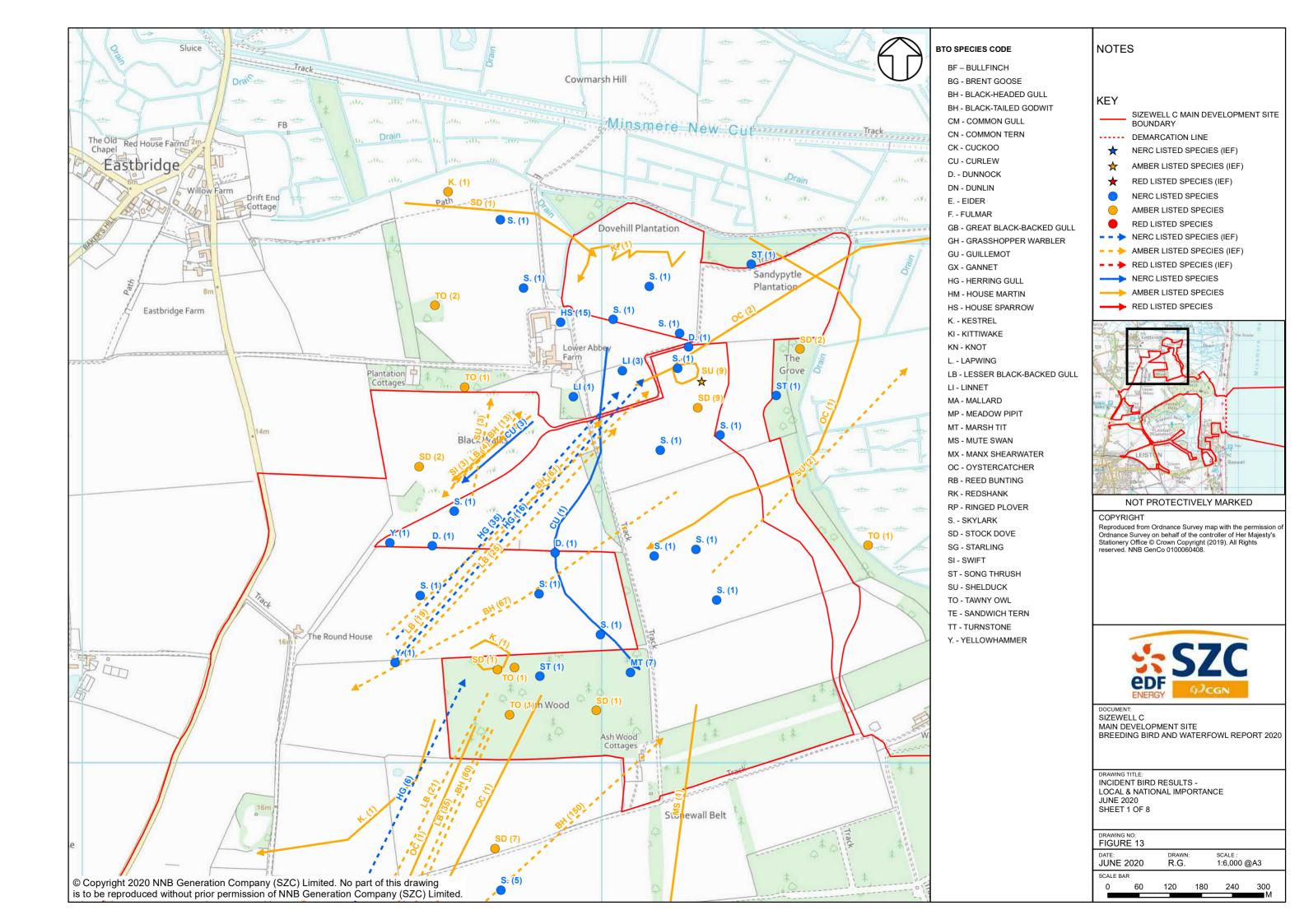
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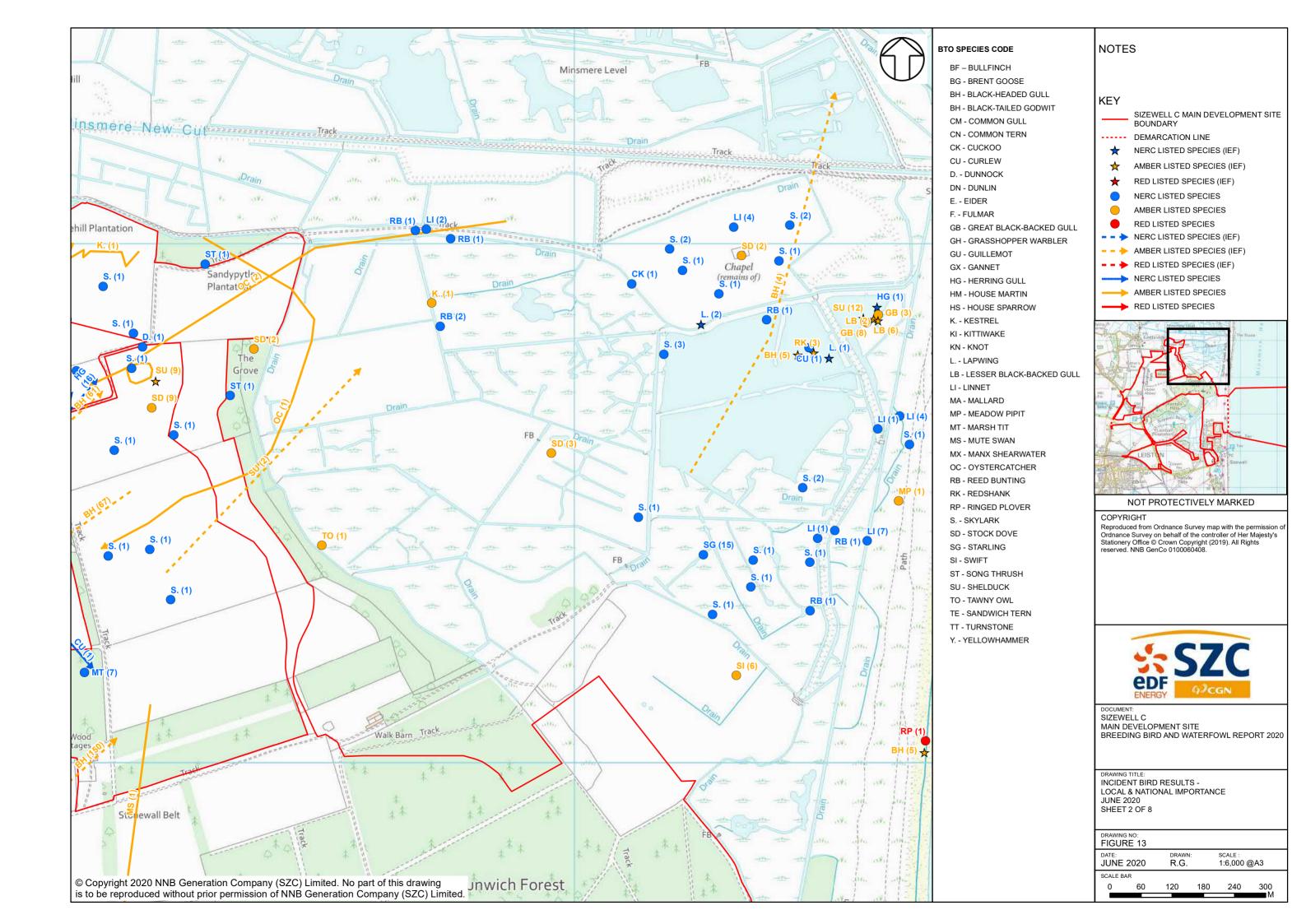
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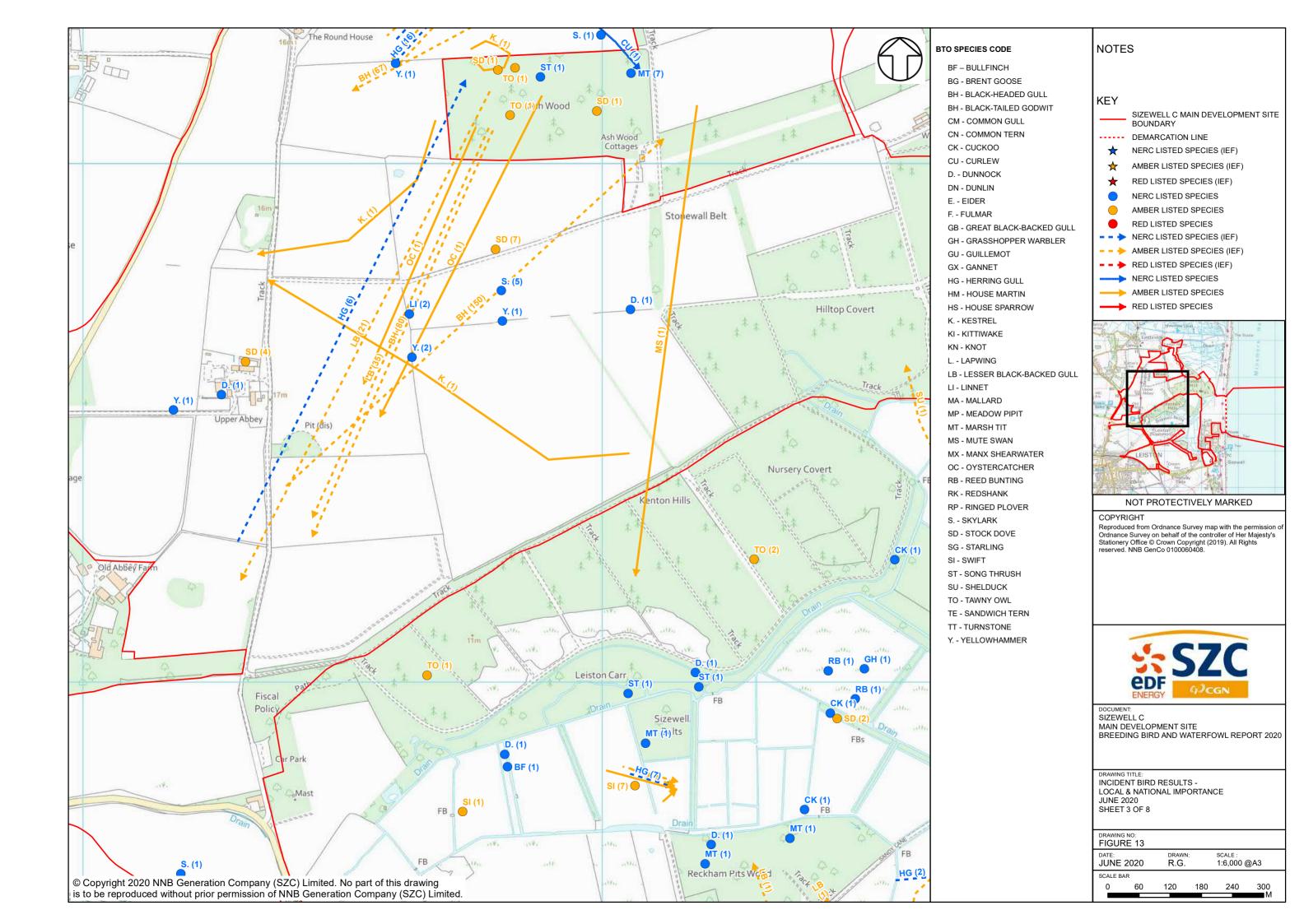
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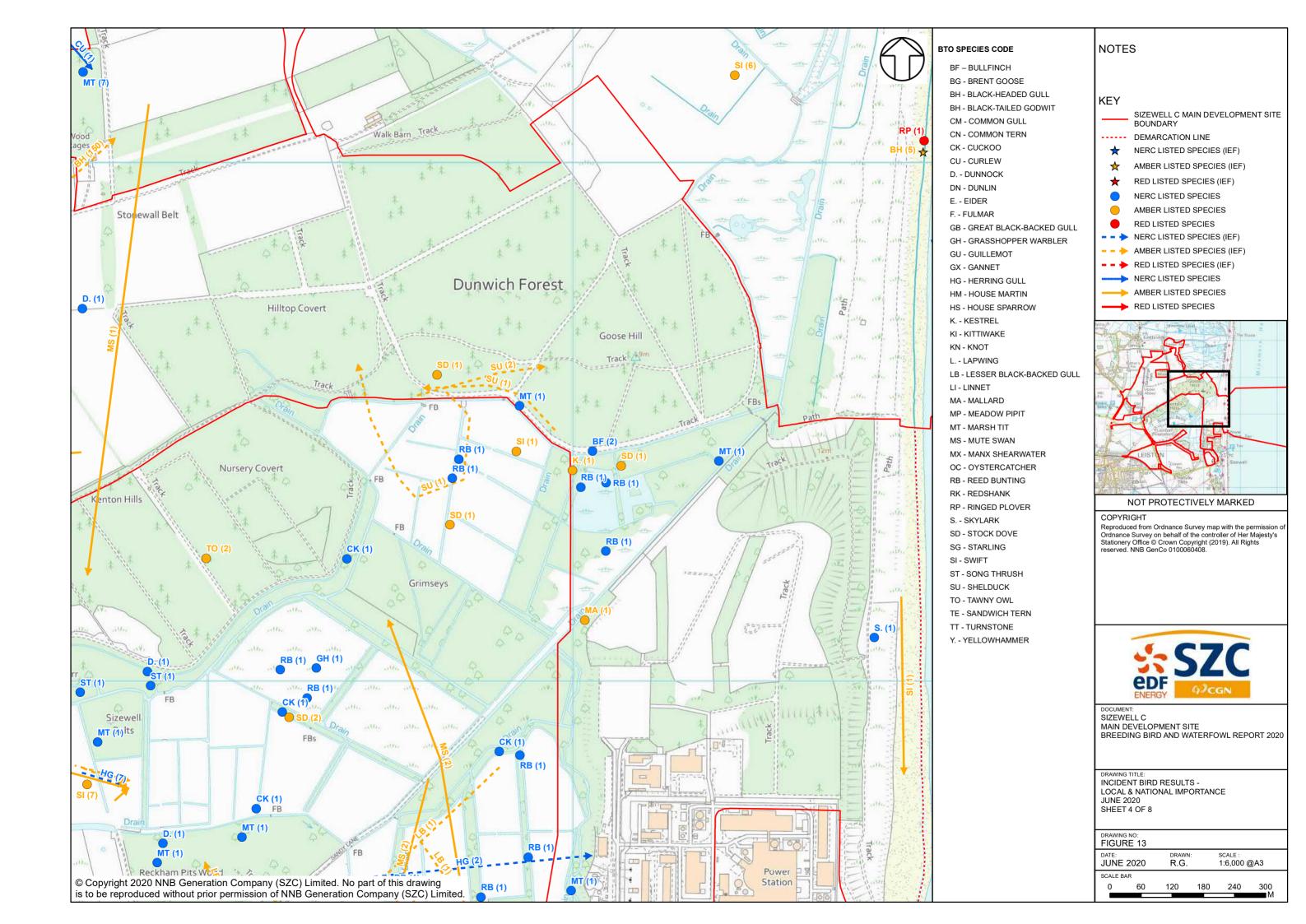
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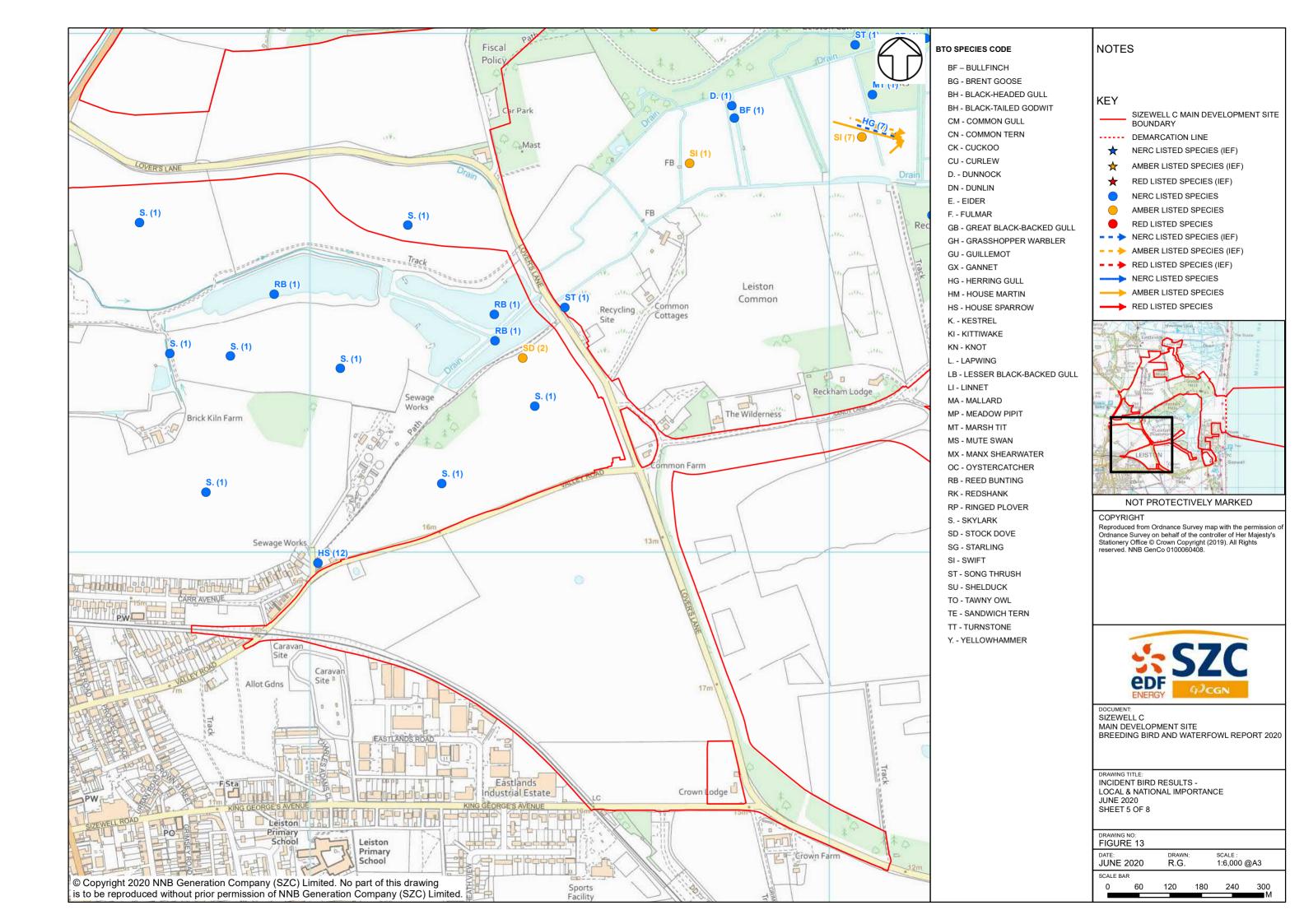


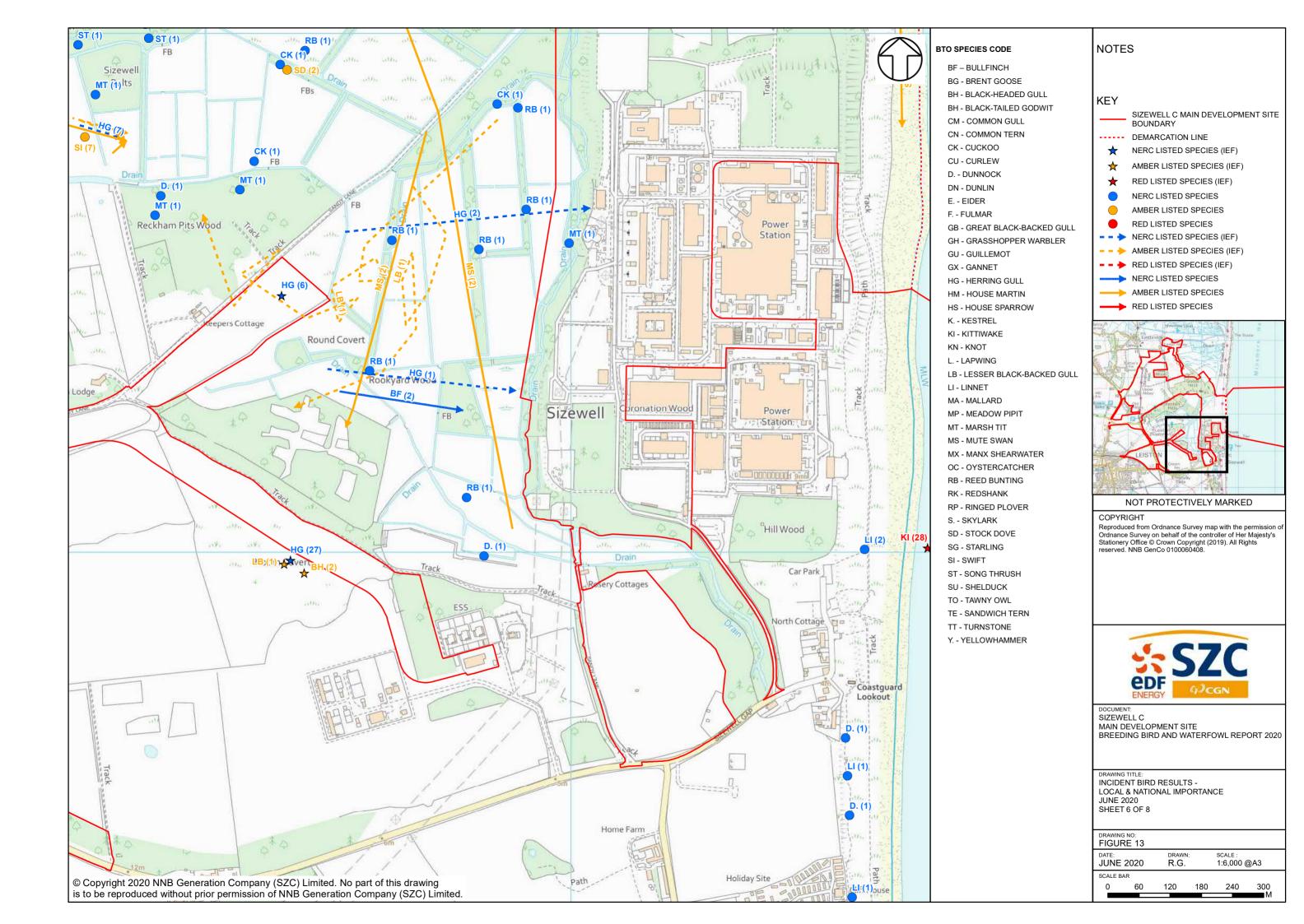


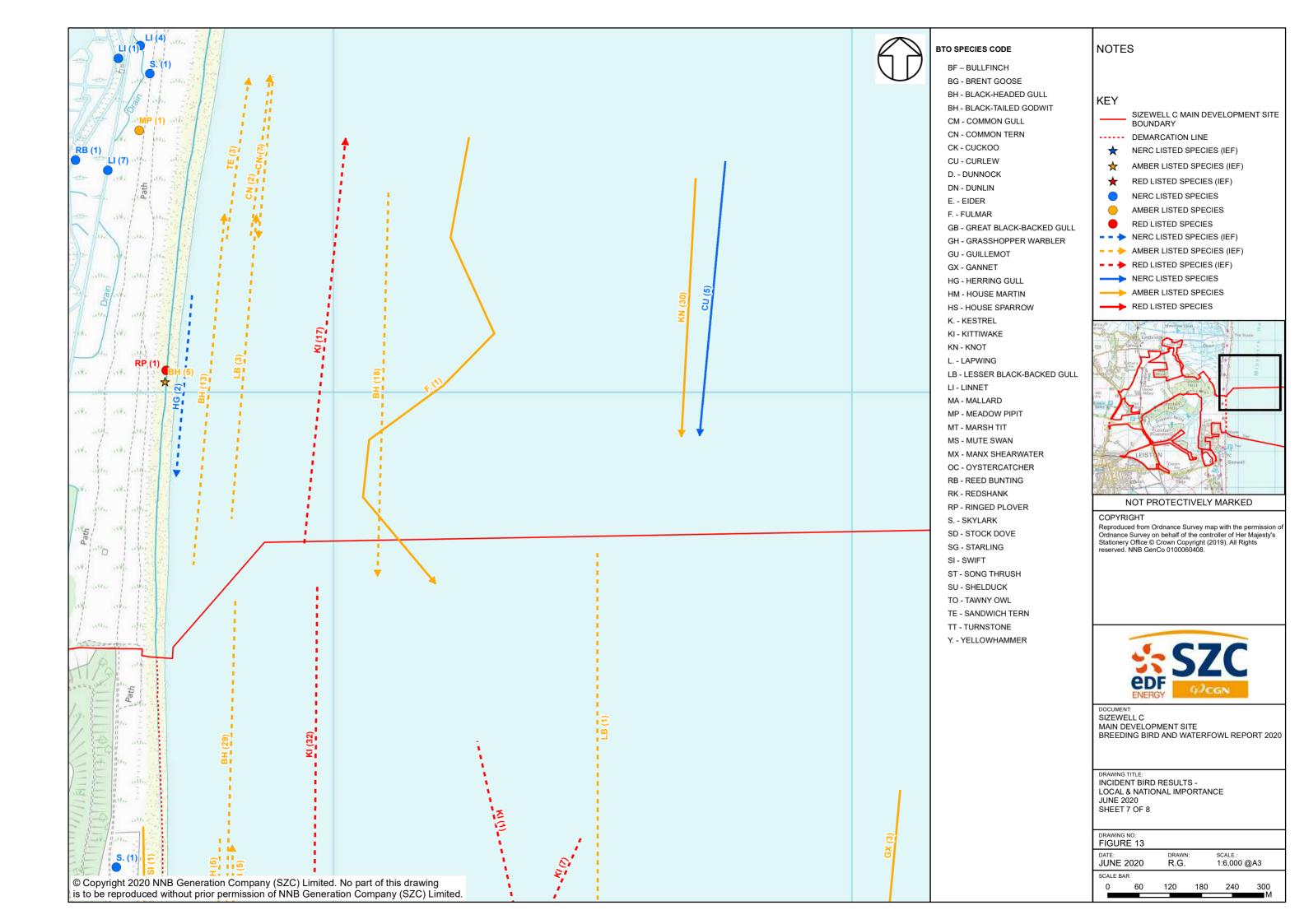


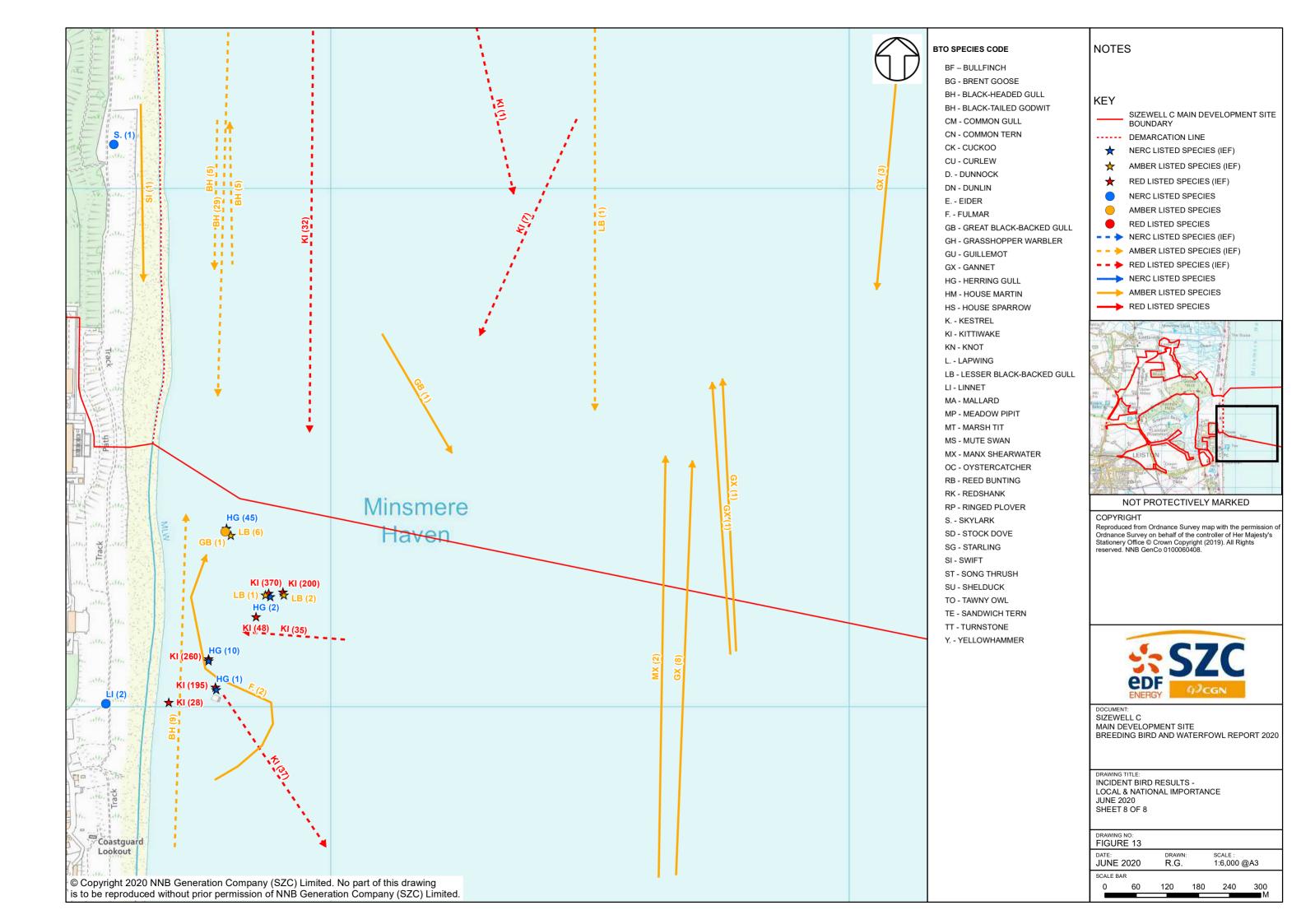














#### SIZEWELL C PROJECT - BREEDING BIRD & WATERFOWL **SURVEY REPORT 2020**

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## APPENDIX C: SPECIES LIST - BIRDS WITH NO SPECIAL **CONSERVATION CONCERN**

Table 4: Peak counts of other species recorded across the survey areas (species of no special conservation concern)

Species	Scientific Name	April	May	June
Blackbird	Turdus merula	12	3	3
Blackcap	Sylvia atricapilla	13	4	4
Blue tit	Cyanistes caeruleus	18	2	9
Buzzard	Buteo buteo	2	2	4
Canada goose	Branta canadensis	2	31	3
Carrion crow	Corvus corone	11	3	6
Chaffinch	Fringilla coelebs	29	4	3
Chiffchaff	Phylloscopus collybita	28	2	8
Coal tit	Periparus ater	2	1	3
Coot	Fulica atra	1	0	0
Cormorant	Phalacrocorax carbo	0	44	2
Feral pigeon	Columba livia	12	2	0
Garden warbler	Sylvia borin	4	1	3
Goldcrest	Regulus regulus	4	1	3
Goldfinch	Spinus tristis	12	1	3
Great spotted woodpecker	Dendrocopos major	2	2	4
Great tit	Parus major	7	1	9
Great white egret	Ardea alba	3	0	0
Green woodpecker	Picus viridis	0	2	2
Greenfinch	Carduelis chloris	3	1	4
Grey heron	Ardea cinerea	1	2	3
Jackdaw	Corvus monedula	17	15	15
Jay	Cyanocitta cristata	5	3	1
Lesser whitethroat	Sylvia curruca	2	1	1
Little egret	Egretta garzetta	1	3	2
Little grebe	Tachybaptus ruficollis	2	0	0



#### SIZEWELL C PROJECT - BREEDING BIRD & WATERFOWL **SURVEY REPORT 2020**

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Species	Scientific Name	April	May	June
Little gull	Hydrocoloeus minutus	0	0	2
Long-tailed tit	Aegithalos caudatus	6	2	10
Magpie	Pica pica	12	3	4
Moorhen	Gallinula chloropus	1	1	1
Pheasant	Phasianus colchicus	16	1	1
Pied wagtail	Motacilla alba	2	2	3
Red-legged partridge	Alectoris rufa	9	1	0
Robin	Erithacus rubecula	16	4	3
Rook	Corvus frugilegus	25	30	115
Sand martin	Riparia riparia	0	5	6
Sedge warbler	Acrocephalus schoenobaenus	2	2	2
Siskin	Carduelis spinus	3	1	7
Sparrowhawk	Accipiter nisus	1	0	0
Stonechat	Saxicola rubicola	3	2	2
Swallow	Hirundo rustica	4	39	0
Treecreeper	Certhia familiaris	2	1	3
Tufted duck	Aythya fuligula	0	1	4
Water rail	Rallus aquaticus	2	1	1
Whitethroat	Sylvia communis	12	2	4
Woodpigeon	Columba palumbus	75	4	65
Wren	Troglodytes troglodytes	29	3	10



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## **GREAT CRESTED NEWT SURVEY REPORT 2020**



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#### **FIGURES**

FIGURE 14A5.1: Amphibian Baseline Results From Desk Study, Wood Group Surveys And Arcadis Surveys For The Main Development Site

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### 1 SUMMARY

## 1.1 Receptor Status 2020 Summary Overview

- 1.1.1 This report presents the findings of the great crested newt (*Triturus cristatus*) Habitat Suitability Index (HSI) and environmental DNA (eDNA) surveys undertaken in June 2020 on the main development site of the proposed Sizewell C Nuclear Power Station project, and the wider area.
- 1.1.2 The surveys are part of on-going ecological monitoring of the main development site, following previous surveys undertaken on the site (Ref 1), to update the baseline and provide a baseline for future monitoring.
- 1.1.3 The 2020 surveys confirmed that great crested newt are absent from the main development site, which is consistent with the Development Consent Order (DCO) submission. Therefore, no European Protected Species (EPS) licence for great crested newt is required to support the development. However non-licensable precautionary working methods (PWM) are required for works occurring within 500m of six ponds located offsite which have confirmed or assumed great crested newt presence (Ponds 4, 6, 9, 17, 18 and 30). The draft great crested newt Method Statement (Ref 2) contains avoidance measures to ensure that there would be no direct mortality to animals in the unlikely event that a great crested newt were to be in the vicinity of the works.

## 2 OVERVIEW

### 2.1 The Aims of the 2020 Survey Updates

2.1.1 The aims of the great crested newt survey updates are to update the baseline and provide a baseline for future monitoring on the main development site. The 2020 data updates that submitted with the Sizewell C Project Environmental Statement (ES) (App-224) in 2020 (Ref. 1).

#### 2.2 Submitted Baseline

- 2.2.1 As detailed within the Sizewell C Project ES (App-224) (Ref. 1), previous great crested newt surveys were carried out between 2007 and 2010 by Wood Group and in 2014 and 2016 by Arcadis Consulting (UK). These surveys all recorded an absence of great crested newt within the main development site boundary.
- 2.2.2 The eDNA surveys carried out in 2014 by Arcadis confirmed that great crested newts were present within four offsite ponds within 500m of the



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boundary, located to the west (Ponds 2, 4, 5 and 30). Great crested newt presence was also recorded in Ponds 55 and 57, however these are located more than 500m from the main development site boundary. Ponds which were not surveyed in 2014, were subject to eDNA surveys in 2016, where all ponds returned negative eDNA results (see **Figure Ap14A5\_01** in **Appendix A**).

## 2.3 Update Surveys in 2020

- 2.3.1 Updated Habitat Suitability Index (HSI) assessments and eDNA surveys were undertaken by Arcadis in 2020. All waterbodies surveyed within the main development site boundary resulted in negative eDNA results, confirming that great crested newts were absent from these waterbodies. Ponds 7 and 8 were dry and therefore not surveyed in 2020.
- 2.3.2 Two ponds to the west of the main development site boundary returned positive eDNA results, confirming continued great crested newt presence in Pond 4 (340m west) and Pond 30 (475m west). Ponds 2 and 5 returned negative results in 2020 (located to the west of the site boundary).
- 2.3.3 Access was not granted for four waterbodies within 500m of the main development site boundary in 2020:
  - Pond 6, located approximately 20m east alongside Abbey Road.
  - Pond 9, located approximately 230m west.
  - Pond 17, located approximately 335m south.
  - Pond 18, located approximately 370m south.
- 2.3.4 The ponds listed above were not surveyed in 2020. Great crested newt presence is assumed as a precautionary measure, and precautionary working methods will be followed, as detailed within the dedicated method statement (App-252) (Ref. 2), which contains avoidance measures for works in these areas, in addition to Ponds 4 and 30.



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### 3 METHODS

### 3.1 Surveyors

3.1.1 Surveys were led by Duncan Sweeting (an experienced great crested newt licence holder: 2015-16722-CLS-CLS). Kevin Burgess assisted with the surveys.

## 3.2 Waterbody Selection

- 3.2.1 Forty-nine waterbodies within 500m of the initial site boundary were surveyed during baseline data collection for the Environment Statement between 2007 and 2016 (**Figure 14A5\_01**, **Appendix A**). Of these, 43 were selected for survey in 2020. The remaining six waterbodies (including waterbodies 55 and 57, which previously supported small great crested newt populations) are outside of the main development site 500m buffer and were therefore scoped out. Waterbodies 54-57 are within or adjacent to the Green Rail Route site boundary and are detailed and discussed in Volume 9 of the Sizewell C Project ES (App-556) (Ref. 3).
- 3.2.2 Of the 43 waterbodies selected for survey in 2020, one was scoped out due to lack of suitability and access was not granted for six ponds (including four ponds within 500m of the main development site boundary, Ponds 6, 9, 17 and 18). One waterbody, Pond 16 (the complex of four lagoons at Aldhurst farm), was subjected to eDNA surveys by Wild Frontier Ecology on 05/06/2020 and these data were shared so therefore not re-sampled by Arcadis. This resulted in 36 waterbodies subjected to field survey.

## 3.3 Habitat Suitability Index

- 3.3.1 A Habitat Suitability Index (HSI) assessment was undertaken on all 36 waterbodies, during June 2020, where access was permitted to assess the potential suitability of such sites to support breeding great crested newt. The methodology followed that outlined in the Amphibian and Reptile Groups of the UK (ARC UK) Advice Note great crested newt Habitat Suitability Index (Ref 4).
- 3.3.2 HSI assessments require scoring habitats based on ten suitability indices (i.e. water quality, fish presence and pond drying etc.) all of which are factors known to affect the species' prevalence. Numerical scores for these indices provide a suitability category for the habitat; Poor, Below Average, Average, Good or Excellent.



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### 3.4 eDNA survey

- 3.4.1 The eDNA analysis was undertaken, during June 2020, at 24 of the 36 waterbodies selected for survey, where water was present following the sampling methodologies detailed in Biggs et al. "Analytical and methodological development for improved surveillance of Great crested newt, Appendix 5, Technical advice note for field and laboratory sampling of great crested newt environmental DNA" (Ref. 5).
- 3.4.2 eDNA analysis is a method for monitoring species in waterbodies. It is used for the determination of great crested newt presence or likely absence by providing a rapid result from a water sample collected from the pond edge. The analysis identifies the presence of great crested newt DNA, which is released into water from skin, faeces, or when the animal dies (Ref. 6).

### 3.5 Rapid Risk Assessment (RRA)

- 3.5.1 Access was not granted for four waterbodies within 500m of the main development site boundary in 2020 (Ponds 6, 9, 17 and 18), therefore they were not surveyed. Ponds 6 and 9 have never been surveyed as part of the Sizewell C project due to access restrictions. Ponds 17 and 18 were surveyed in 2016, where the eDNA results were negative. All of these waterbodies are located towards the west and southwest of the main development site, the distance and direction of each pond in relation to the main development site boundary are as follows:
  - Pond 6, located approximately 20m east alongside Abbey Road.
  - Pond 9, located approximately 230m west.
  - Pond 17, located approximately 335m south.
  - Pond 18, located approximately 370m south.
- 3.5.2 These ponds were subject to a Rapid Risk Assessment to determine whether, should the Sizewell C project go ahead, as currently proposed, an offence is likely to occur in relation to these ponds, given a precautionary assumption that great crested newt are present.
- 3.5.3 Natural England (NE) acknowledge that, in recent years there has been an unfavourable trend towards increasingly precautionary great crested newt European Protected Species (EPS) licence applications, resulting from a risk-averse approach to mitigation. Newts tend to be present at increasingly low density the further one looks from ponds, and the task of detecting and capturing them becomes more problematic. Further from ponds, there is a



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corresponding reduction in the scale of impact on populations. Given that great crested newts can disperse over 1km from breeding ponds, the potential for offences may seem vast, yet the probability of an offence outside the core breeding and resting area is often rather small, and even if an offence takes place, the effect on the population may be negligible.

- 3.5.4 NE state that there is no legal need, and little benefit to great crested newt conservation, in undertaking mitigation where there are no offences through development. Even where there technically is an offence, such as the destruction of a small, distant area of resting place habitat, it is arguable that impacts beyond the core area often have little or no tangible impact on the viability of populations. Mitigation in such circumstances is of questionable value in conservation terms.
- The domestic legislation protecting great crested newt arises largely from the Habitats Directive (Ref. 7), which has a central aim to restore scheduled species to a favourable conservation status. A more proportionate approach to mitigation, addressing tangible impacts on populations whilst giving lower priority to negligible effects, is consistent with the aims of the Directive. To this end, NE have developed a simple risk assessment which can inform the decision as to whether to apply for a licence. The Rapid Risk Assessment (Ref 8) was undertaken for the site by completing a standard table which considers the impacts of the development without any licensed mitigation. The land categories refer to all land within defined distance thresholds (not just that used by great crested newt) and for the purposes of this report, it is assumed that the ponds with terrestrial connectivity with the site support great crested newt (Ponds 6, 9, 17 and 18).

### 3.6 Limitations

- 3.6.1 Surveys were not undertaken at 7 waterbodies, Ponds 6, 9, 17, 18, 32 and 96 due to land access restrictions. One other pond, 13, was not sampled as it was found to be unsuitable. However, this is not considered to be a significant limitation as Ponds 32 and 96 are just over 500m from the main development site boundary and Ponds 6, 9, 17 and 18 were subject to a Rapid Risk Assessment (see section 3.2), to determine the potential impact on great crested newt.
- 3.6.2 Where waterbodies were found to be dry during the survey season, these were considered to be unsuitable for breeding great crested newt and therefore great crested newt are considered absent from these waterbodies.
- 3.6.3 The HSI is a useful tool for assessing likely breeding suitability of a waterbody however has its limitations. It applies more effectively to ponds than it does



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ditches and drains, which are present within and adjacent to the main development site. HSI scores, especially those for ditches and drains, are considered indicative of suitability but not definitive.

## 4 RESULTS

## 4.1 Survey Results

- 4.1.1 The survey results are summarised below with detailed results included in Figure 1, Appendix A and Appendix B. The location and status of all waterbodies within the survey area, including the previous results are also presented within Appendix A (Figure 14A5\_01).
- 4.1.2 A total of 36 waterbodies were surveyed. Of these, 12 were dry at time of survey. HSI assessments were undertaken on all of the 36 waterbodies and they were categorised as the following suitability for supporting great crested newt:
  - 1 'Excellent'
  - 3 'Good'
  - 8 'Average'
  - 5 'Below Average'
  - 7 'Poor'
- 4.1.3 eDNA surveys were undertaken on these 24 waterbodies. Two of these, Ponds 4 and 30, returned a positive result. Both of these water bodies are to the west of the main development site boundary.
- 4.1.4 The eDNA survey undertaken by Wild Frontier Ecology at Aldhurst Farm (Pond 16) covered the 4 lagoons and returned a negative result.

## 4.2 Rapid Risk Assessment Results

- 4.2.1 The rapid risk assessment was applied to Ponds 6, 9, 17 and 18 and the calculation assumes that all of the waterbodies support breeding great crested newt, to ensure a 'worst case' assessment. The rapid risk assessment resulted in 'Amber: offence likely' regarding the risk of harming great crested newt during the proposed works and the same result was obtained when assessing Ponds 6 and 9 separately; 'Green: offence highly unlikely' was obtained for Ponds 17 and 18, when assessed separately.
- 4.2.2 "Green: offence highly unlikely" indicates that the development activities are of such a type, scale and location that it is highly unlikely any offence would



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be committed should the development proceed. Therefore, no great crested newt licence would be required.

- 4.2.3 "Amber: offence likely" indicates that the development activities are of such a type, scale and location that an offence is likely. In this case, the best option is to use non-licensed avoidance measures so that the effects on great crested newts are minimised. This is explained further within the great crested newt Method Statement (App-252) (Ref. 2).
- 4.2.4 Pond 6 is located approximately 20m from the main development site boundary alongside Abbey Road. A small strip of hedgerow/woodland is to be removed alongside Abbey Road which is situated approximately 65m north of the pond; however, proposed construction activities are situated over 140m from the pond and construction activities within 250m of the pond are limited to only approximately 2.5ha in total. Further, 2.12ha of this habitat comprised arable fields that lack resting places for great crested newts (the remaining 0.38ha is hedgerow/scrub habitats). Within 500m of the pond, approximately 24.5ha of land is located within the construction zone, mostly comprising arable fields with hedgerows along the boundaries.
- 4.2.5 Pond 9 is located 230m west of the main development site boundary, with no proposed construction works within 100m of the pond and a very small area within 250m (0.09ha which mostly covers the existing Abbey Road). Within 500m of the pond, approximately 16.7ha of land is located within the construction zone, mostly comprising arable fields with a small area of scrub.
- 4.2.6 Pond 17 and Pond 18 are situated approximately 335m and 370m south of the main development site boundary, respectively. Almost 3ha and 2ha, respectively of the construction zone is situated within 500m of these ponds. These habitats are predominantly arable with some hedgerows with trees and part of the railway line into Leiston.
- 4.3 Other Species Incidental Observations
- 4.3.1 During the great crested newt eDNA surveys, the following other amphibian species were observed:
  - Common frog (Rana temporaria) and common toad (Bufo bufo), recorded in 12 waterbodies.
  - Smooth newt (Lissotriton vulgaris) in two waterbodies.
  - Natterjack toad (Epidalea calamita) tadpoles in the natterjack toad pond, N1.



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## 5 DISCUSSION

- 5.1.1 No great crested newts were recorded within the main development site boundary on surveys undertaken between 2007 and 2016 (App-224) (Ref. 1). However during these previous surveys, great crested newt were recorded in six ponds (Ponds 2, 4, 5, 30, 55 and 57 Figure 14A5\_01, Appendix A) over 500m away from the west of the main development site boundary.
- The 2020 HSI and eDNA surveys confirmed that great crested newt remain absent from the main development site with no positive eDNA results from waterbodies sampled. The HSI calculations assessed several waterbodies within the EDF Energy estate as theoretically having 'Good' great crested newt habitat suitability, such as drainage ditches A7 and A10a. However, the surrounding terrestrial habitat for these waterbodies is permanently wet and unsuitable for great crested newt hibernation and so while these waterbodies produced a 'Good' HSI score this does not accurately reflect overall suitability within the landscape context.
- 5.1.3 Of the ponds to the west of the main development site boundary where great crested newts were previously recorded, waterbodies 2, 4, 5, 55 and 57 were considered to potentially support a medium sized metapopulation:
  - Waterbodies 55 and 57, which previously supported small populations, were not surveyed in 2020 as they are not within 500m of the main development site boundary and waterbody 5 was dry at time of survey.
  - eDNA survey in 2020 on Waterbody 2 returned a negative result with 60% of the pond perimeter sampled. Comparing the HSI results from 2014 and 2020, this waterbody has gone from 'Good' habitat suitability to 'Poor' habitat suitability, due to a reduction in pond permeance, an increase in fish and waterfowl presence and reduction in terrestrial habitat quality. Previous results from waterbody 2 show the presence of eggs but a max count of 1 adult. It is therefore likely that the small population this waterbody supported, may have gone elsewhere due to a fall in habitat suitability.
  - Waterbody 4 returned a positive result from the 2020 survey. Previous results from 2014 suggested that waterbody 4 had 'Good' habitat suitability and supported a medium population while HSI assessment, undertaken in 2020, recorded 'Excellent' habitat suitability. With a potential habitat suitability improvement, it is likely that waterbody 4 will still support a medium great crested newt population. However, due to changes in habitat suitability within pond 2 and 5, the potential metapopulation supported in this location may have decreased in size.



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- 5.1.4 Waterbody 30, which was previously considered to support a small population, returned positive results from the 2020 survey. Previous results suggested that waterbody 30 had 'Excellent' habitat suitability and supported a small population while HSI assessment, undertaken in 2020, recorded 'Good' habitat suitability. This potential change in habitat suitability is unlikely to influence the population size supported by this waterbody.
- 5.1.5 The only potentially suitable ponds within 500m of the main development site that were not surveyed due to access constraints were Ponds 6, 9, 17 and 18.
  - At Pond 6, the proposed construction works are located to the north and east of the pond, where there have also been no confirmed breeding great crested newt ponds during the surveys since 2007. Assuming great crested newt presence within Pond 6, there are no reasons to expect great crested newt movements towards the main development site from this pond (such as other ponds and optimal terrestrial habitats); it is considered likely that (if present) great crested newt movements would be in a westerly direction towards Pond 4, which is a confirmed breeding pond located 380m west of Pond 6. Additionally, there is mature woodland situated adjacent to the pond and between the pond and the construction area. Great crested newts are generally sedentary by nature and, if present, are unlikely to disperse beyond this woodland from the pond.
  - Pond 9 is located further from the main development site boundary (230m west), with main development site between 250-500m from the pond. As above, there are no reasons to expect great crested newt movements (if present) towards the main development site from this pond. The majority of the habitats within the main development site in this area comprise arable land, which is of little value for great crested newt, lacking resting places and there is alternative mature woodland situated in closer proximity to the pond the main development site boundary.
  - Given the distance from the main development site to ponds 6 and 9, and the suboptimal habitats present (predominantly arable) in the intervening area, there are no reasons to anticipate movements towards the main development site, assuming that great crested newts are present within both Ponds 6 and 9.
  - Ponds 17 and 18 are located to the south of the site, the main development site is situated over 350m away. As for ponds 6 and 9, given the distance from the main development site to these ponds, and the suboptimal habitats present (predominantly arable) in the intervening area, there are no reasons to anticipate movements



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towards the main development site, assuming that great crested newts are present within the ponds.

5.1.6 The great crested newt Method Statement for the main development site has been updated in accordance with the most recent data. (App-252) (Ref 2). No great crested newt licence is required for the enabling or construction of the development, however non-licensable precautionary working methods are recommended in construction areas within 500m of ponds where great crested newts are either confirmed or assumed present (i.e. Ponds 4, 6, 9, 17, 18 and 30).

## 6 CONCLUSION

- 6.1.1 Surveys undertaken previously between 2007 and 2016 confirmed great crested newt absence from waterbodies within the main development site red line boundary and 500m east of Abbey Road. The 2020 survey confirms this with negative eDNA results from these waterbodies, where access permitted survey. Great crested newts are therefore unlikely to be present terrestrially on the main development site.
- 6.1.2 Great crested newt were previously recorded within six waterbodies to the west of the main development site red line boundary. Survey results from 2020 suggest that while they are still present within this location two of the waterbodies no longer supported great crested newt, likely due to changes in habitat suitability.
- 6.1.3 No licence for great crested newt is required to support enabling or development works on the main development site.
- 6.1.4 Avoidance measures within 500m of ponds where great crested newts are either confirmed or assumed present are detailed within the great crested newt Method Statement (App-252) (Ref. 2).



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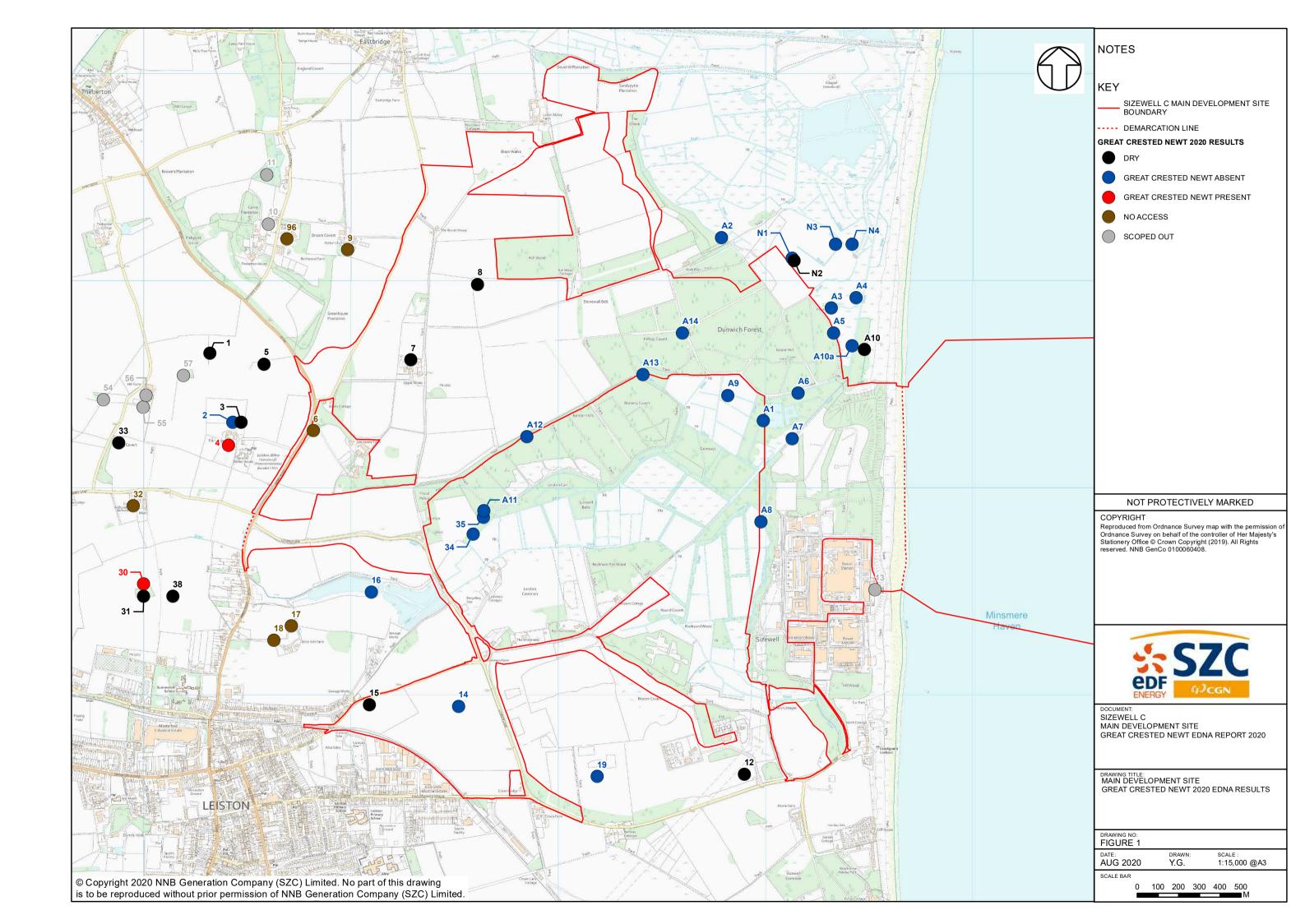
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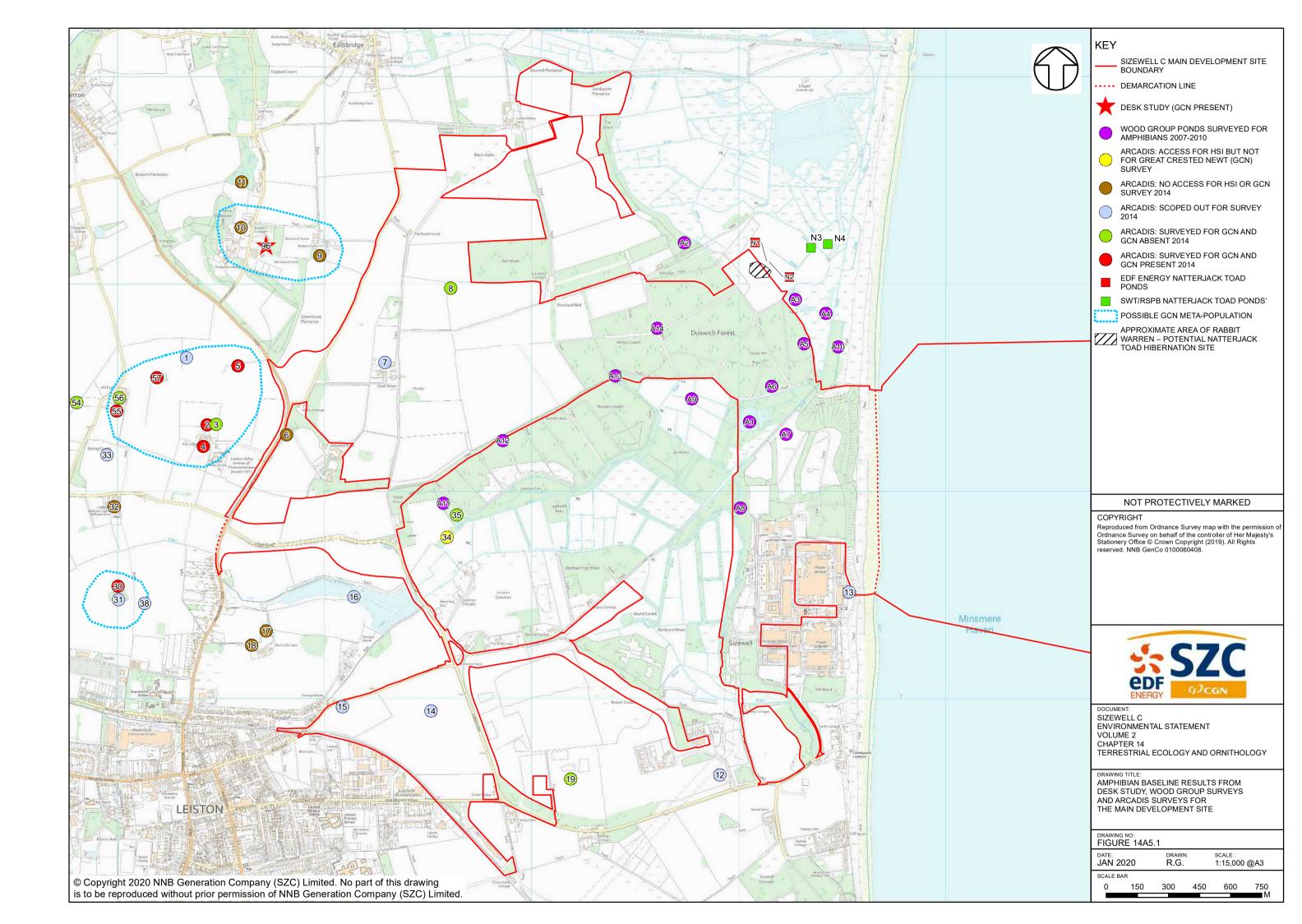


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APPENDIX A: Figures

- A.1. Figure 1: Great Crested Newt 2020 eDNA Survey Results
- A.2. Figure 14A5.1: Amphibian Baseline Results from Desk Study, Wood Group Surveys and Arcadis Surveys for the Main Development Site







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# APPENDIX B: 2020 Great Crested Newt Survey Results



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Table 1: 2020 Waterbody Habitat Suitability Index (HSI) assessment results – waterbodies with positive eDNA result highlighted in green

Pond ID	Geograp- hic Location	Area	Permanence	Water Quality	Shade	Waterfowl	Fish	Waterbody count	Terrestrial Habitat	Macrophytes	HSI Score	Suitability for Great Crested Newt breeding habitat
2	1	0.2	0.1	0.33	0.4	1	1	1	0.33	0.35	0.45	Poor
4	1	0.4	1	0.67	1	1	1	1	0.67	0.8	0.82	Excellent
14	1	0.3	1	0.33	1	0.67	1	0.7	0.33	1	0.66	Average
19	1	0.05	0.1	0.01	0.6	1	1	0.45	0.33	0.3	0.26	Poor
30	1	0.95	0.9	1	1	0.67	0.67	0.93	0.33	0.35	0.73	Good
34	1	0.98	0.9	1	0.6	0.67	0.67	0.8	0.33	0.4	0.69	Average
35	1	0.05	0.5	0.33	0.6	1	1	0.82	0.33	0.3	0.46	Poor
A1	1	0.1	0.9	0.67	0.7	1	0.67	1	0.67	0.5	0.63	Average
A2	1	0.6	0.5	0.33	0.3	1	1	1	0.67	0.35	0.61	Average
A3	1	0.82	0.9	0.67	1	0.01	1	1	0.33	0.85	0.52	Below Average
A4	1	0.84	0.9	0.67	1	0.01	1	1	0.33	1	0.53	Below Average
A5	1	0.8	0.9	0.67	0.4	0.67	0.33	1	0.33	0.4	0.60	Below Average
A6	1	0.7	0.9	1	0.4	0.67	0.33	1	0.33	0.6	0.64	Average
A7	1	1	0.9	1	0.9	0.67	0.33	1	0.33	0.6	0.72	Good
A8	1	1	0.9	1	1	0.67	0.33	0.96	0.33	0.35	0.68	Average
A9	1	1	0.9	1	1	0.67	0.33	1	0.33	0.35	0.69	Average
A10a	1	1	0.9	0.67	1	0.67	0.33	1	0.33	1	0.73	Good
A11	1	0.3	0.9	1	1	0.67	0.67	0.82	0.67	0.35	0.69	Average
A12	1	0.05	0.9	0.33	1	1	1	0.85	0.67	0.3	0.55	Below Average
A13	1	0.05	0.1	0.33	0.2	1	1	1	0.33	0.3	0.36	Poor
A14	1	0.05	0.9	0.33	1	1	1	1	0.33	0.3	0.52	Below Average



## **NOT PROTECTIVELY MARKED**

Pond ID	Geograp- hic Location	Area	Permanence	Water Quality	Shade	Waterfowl	Fish	Waterbody count	Terrestrial Habitat	Macrophytes	HSI Score	Suitability for Great Crested Newt breeding habitat
N1	1	0.05	0.1	0.33	1	1	1	1	0.33	0.3	0.42	Poor
N3	1	0.05	0.1	0.33	1	1	1	1	0.33	0.6	0.45	Poor
N4	1	0.89	0.1	0.33	1	0.01	1	1	0.33	0.35	0.36	Poor
Ponds	dry at tim	e of si	urvey									
1	1	0	0.1	N/A	1	1	1	1	0.33	N/A	0.25	Poor
3	1	0	0.1	N/A	1	1	1	1	0.33	N/A	0.25	Poor
5	1	0	0.1	N/A	0.2	1	1	1	0.33	N/A	0.21	Poor
7	1	0	0.1	N/A	0.3	1	1	1	0.33	N/A	0.22	Poor
8	1	0	0.1	N/A	1	1	1	1	0.33	N/A	0.25	Poor
12	1	0	0.1	N/A	1	1	1	0.65	0.33	N/A	0.24	Poor
15	1	0	0.1	N/A	1	1	1	1	0.33	N/A	0.25	Poor
31	1	0	0.1	N/A	0.2	1	1	0.93	0.33	N/A	0.21	Poor
33	1	0	0.1	N/A	1	1	1	1	0.33	N/A	0.25	Poor
38	1	0	0.1	N/A	1	1	1	0.93	0.33	N/A	0.25	Poor
N2	1	0	0.1	N/A	1	1	1	1	0.33	N/A	0.25	Poor
A10	1	0	0.1	N/A	0.2	1	1	1	0.33	N/A	0.21	Poor



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Table 2: 2020 Great Crested Newt eDNA survey result - positive results highlighted in green

Pond ID	eDNA result	Number of inflows	Percentage of pond sampled	Quality of sample	Sample Integrity Check <sup>1</sup>	Degradation Check <sup>2</sup>	Inhibition Check <sup>3</sup>
2	Negative	1	60	Good	Pass	Pass	Pass
4	Positive	0	5	Good	Pass	Pass	Pass
14	Negative	0	100	Low sediment	Pass	Pass	Pass
19	Negative	0	100	Poor	Pass	Pass	Pass
30	Positive	2	80	Good	Pass	Pass	Pass
34	Negative	0	100	Poor	Pass	Pass	Pass
35	Negative	0	100	Poor	Pass	Pass	Pass
A1	Negative	1	10	Moderate	Pass	Pass	Pass
A2	Negative	1	100	Good	Pass	Pass	Pass
А3	Negative	1	100	good	Pass	Pass	Pass
A4	Negative	1	100	Good	Pass	Pass	Pass
A5	Negative	1	100	Good	Pass	Pass	Pass
A6	Negative	1	55	Good	Pass	Pass	Pass
A7	Negative	1	70	Good	Pass	Pass	Pass
A8	Negative	3	100	Good	Pass	Pass	Pass
A9	Negative	3	100	Good	Pass	Pass	Pass
A10a	Negative	1	100	Good	Pass	Pass	Pass
A11	Negative	0	15	Moderate	Pass	Pass	Pass

<sup>&</sup>lt;sup>1</sup> When samples are received in the laboratory, they are inspected for any tube leakage, suitability of sample (not too much mud or weed) and absence of any factors that could potentially lead to inconclusive results.

<sup>&</sup>lt;sup>2</sup> Analysis of the spiked DNA marker to see if there has been degradation of the kit or sample between the date it was made to the date of analysis. Degradation fail may indicate false negative results.

<sup>&</sup>lt;sup>3</sup> The presence of inhibitors within a sample are assessed using a DNA marker. If inhibition is detected, samples are purified and re-analysed. Inhibitors cannot always be removed, if the inhibition check fails, the sample should be re-collected.





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Pond ID	eDNA result	Number of inflows	Percentage of pond sampled	Quality of sample	Sample Integrity Check <sup>1</sup>	Degradation Check <sup>2</sup>	Inhibition Check <sup>3</sup>
A12	Negative	0	100	Poor	Pass	Pass	Pass
A13	Negative	2	100	Poor	Pass	Pass	Pass
A14	Negative	0	100	Poor	Pass	Pass	Pass
N1	Negative	0	100	Good	Pass	Pass	Pass
N3	Negative	0	100	Good	Pass	Pass	Pass
N4	Negative	0	100	Good	Pass	Pass	Pass



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## **NATIONAL VEGETATION CLASSIFICATION SURVEYS 2020**



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## 1 SUMMARY

## 1.1 Receptor Status Submitted Baseline Summary Overview

- 1.1.1 Sizewell C Project Environment Statement (ES): Volume 2, Chapter 14: Appendix 14A3 Plants and Habitats (App-229) (Ref. 1) identified the following habitats within and adjacent to the main development site that were taken forward for detailed botanical assessment: wet woodland, reed-bed and fen meadow associated with Sizewell Marshes Site of Special Scientific Interest (SSSI); reed-bed, dune grassland and coastal vegetation associated with Minsmere to Walberswick Heaths and Marshes Special Area of Conservation (SAC)/SSSI; coastal vegetation associated with Suffolk Shingle Beaches County Wildlife Site (CWS), which includes Deptford Pink (Dianthus armeria); and broad-leaved woodland in non-designated areas.
- 1.1.2 National Vegetation Classification (NVC) surveys were undertaken by Wood Group in 2007 and 2008 within Sizewell Marshes SSSI. In 2014, Arcadis undertook NVC surveys within sections of Sizewell Marshes SSSI, Minsmere to Walberswick Heaths and Marshes SAC and Suffolk Shingle Beaches CWS.
- 1.1.3 Sizewell C Project ES: Volume 2, Chapter 14 Ecology and Ornithology (<a href="App-224"><u>App-224</u></a>) (Ref. 2) assessed the potential impacts on these habitats and outlines the requirements for mitigation and the residual effects. Further mitigation documents produced were Appendix 14C4 Fen Meadow Phase 2 Report (<a href="App-258"><u>App-258</u></a>) (Ref. 3) highlighting offsite opportunities for fen meadow creation, and Appendix 14C11 Deptford Pink Draft Licence (<a href="App-252"><u>App-252</u></a>) (Ref. 4), outlining the key approaches to mitigating potential impacts to the Deptford Pink populations present, within or adjacent to the construction site.

# 1.2 Receptor Status 2020 Summary Overview

- 1.2.1 Updated habitat surveys were undertaken in 2020 by Arcadis across the main development site, although detailed surveys focused on six locations within the main development site that have the potential to be affected by the proposals at Sizewell C, either directly or indirectly. The surveys included a detailed botanical walkover across the site to confirm the National Vegetation Classification (NVC) status and detailed NVC surveys were undertaken in habitats that were potentially subject to change to update the current baseline.
- 1.2.2 The plant communities and sub-communities recorded during the 2020 survey were similar in extent and composition to those recorded in these locations during previous surveys with a few exceptions:



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- Minor successional habitat changes in the north east section of Sizewell Marshes SSSI namely increased dry reed-bed, changes in the classification of wet woodland NVC community in small areas and a slight increase in the extent of wet woodland.
- Prolonged flooding in the Sizewell Marshes SSSI fen meadow, over several winters, is the likely reason for the previously recorded M22 Juncus subnodulosus Cirsium palustre mire community to have moved towards the M22d Iris pseudocorus sub-community with lower plant diversity in 2020. Changes in the water table or increases in the extent and duration of standing water may have also resulted in the spread of Blunt-flowered Rush (Juncus subnodulosus) into fields where it was previously recorded absent.
- 1.2.3 The results of the 2020 NVC update surveys supports the Development Consent Order (DCO) assessment based on the previous baseline survey data submitted in the Sizewell C Project ES (App-224) (Ref. 2).

## 2 OVERVIEW

- 2.1 The Aims of the 2020 Survey Updates
- 2.1.1 The aim of the 2020 survey was to update the NVC baseline in areas that could be affected by the proposed development and provide a baseline for future monitoring.
- 2.2 Submitted Baseline
- 2.2.1 NVC surveys were undertaken within and surrounding the main development site boundary, in 2007-2008 by Wood Group and in 2014 by Arcadis, within Sizewell Marshes SSSI and adjacent areas, Minsmere to Walberswick Heaths SAC/SSSI and Sizewell Beaches CWS. **Table 1** shows the survey area, the NVC communities recorded and their assessment in the Environment Statement.
- In addition, the Sizewell C Project ES (App-224) (Ref. 2) desk-study identified a record for Deptford Pink growing within the site. Deptford Pink is a nationally scarce plant which receives full protection under Schedule 8 of the Wildlife and Countryside Act 1981 (as amended) (Ref. 5) although it may not be of native occurrence in this location. This species is considered by the Sizewell C Project ES (Ref. 2) to be an Important Ecological Feature (IEF) at the county level under Chartered Institute of Ecology and Environmental Management (CIEEM) guidelines and of medium importance under the Environmental Impact Assessment (EIA) specific methodology.



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Table 1. Submitted baseline NVC communities by receptor

Receptor	NVC Communities recorded	Environment Statement Assessment	
	S26 Phragmites australis – Urtica dioica tall herb fen	An IEF at the national level under	
	S4 Phragmites australis swamp and reedbed	CIEEM guidelines and of high	
	S4a Phragmites australis - Peucedanum palustris tall- herb fen Carex paniculata sub-community	importance under the EIA-specific methodology.	
	OV25 Urtica dioica - Cirsium arvense	Not considered an IEF and subsequently, not individually assessed.	
Sizewell Marshes SSSI	M22 Juncus subnodulosus - Cirsium palustre fen meadow		
	M22b Juncus subnodulosus - Cirsium palustre fen meadow, Briza media - Trifolium sp. sub-community	An IEF at the national level under CIEEM guidelines and of high	
	M22d Juncus subnodulosus - Cirsium palustre fen meadow, Iris pseudacorus sub-community	importance under the EIA-specific methodology.	
	M23 Juncus effusus/acutiflorus - Galium palustre rush pasture		
	MG10a - Holcus lanatus - Juncus effusus rush- pasture, Typical sub-community	Not considered an IEF and subsequently, not individually assessed.	

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Receptor	NVC Communities recorded	Environment Statement Assessment		
	W5 Alnus glutinosa – Carex paniculata woodland	An IEF at the national level under		
	W5a Alnus glutinosa – Carex paniculata woodland, Phragmites australis sub-community	CIEEM guidelines and of high importance under the EIA-specific methodology.		
	W6a Alnus glutinosa – Urtica dioica woodland			
Minsmere to Walberswick	S26 Phragmites australis – Urtica dioica tall herb fen	An IEF at the national level under CIEEM guidelines and of high importance under the EIA-specific methodology.		
Heaths SAC/SSSI	SD12 Carex arenaria – Festuca ovina – Agrostis capillaris dune grassland	An IEF at the international level under CIEEM guidelines and of high importance under the EIA-specific methodology.		
	SD1a Rumex crispus - Glaucium flavum shingle community, Lathyrus japonicus sub-community	An IEF at the county level under		
Sizewell Beaches CWS	SD7 A <i>mmophilia arenaria</i> – <i>Festuca rubra</i> semi-fixed dune community	the CIEEM guidelines and of medium importance under the EIA-specific methodology.		
	SD8 Festuca rubra - Galium verum fixed dune grassland	Specific Methodology.		

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Receptor	NVC Communities recorded	Environment Statement Assessment	
Site wide broad-leaved and	W5a Alnus glutinosa – Carex paniculata woodland, Phragmites australis sub-community	An IEF at the county level under the CIEEM guidelines and of medium importance under the EIA-specific methodology.	
mixed woodland (outside of designated sites)	W10d Quercus robur - Pteridium aquilinum - Rubus fruticosus woodland, Holcus lanatus sub-community.		



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- 2.2.3 The proposed mitigation for each habitat and the residual effects are summarised in Sizewell C Project ES: Volume 2, Chapter 14: Terrestrial Ecology and Ornithology, Table 14.12 (App-224) (Ref. 2).
- 2.2.4 A study into the provision of compensatory fen meadow habitat, particularly M22 Juncus subnodulosus Cirsium palustre fen meadow is detailed in Sizewell C Project ES: Volume 2, Chapter 14: Appendix 14C4 Fen Meadow Phase 2 Report (App-258) (Ref. 3)
- 2.2.5 The key approaches to mitigating potential impacts to the Deptford Pink populations present, within or adjacent to the construction site is detailed in Sizewell C Project ES: Volume 2, Chapter 14: Appendix 14C11 Deptford Pink Draft Licence (App-252) (Ref. 4).
- 2.3 Update surveys
- 2.3.1 Update surveys were taken across the main development site in July and August 2020 and included a detailed walkover to verify habitats previously recorded and NVC surveys where further detail was necessary.



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## 3 METHODS

- 3.1.1 The updated 2020 NVC survey was undertaken by Arcadis in July and August 2020 by Guy Stone (Associate Technical Director, MCIEEM) and Maico Weites (Graduate Ecologist, Qualifying CIEEM), both experienced botanists and assisted by Melissa Sullivan (Graduate Ecologist, ACIEEM). NVC plant community boundaries were mapped in the field using both the results of the field surveys and up-to-date aerial imagery.
- 3.1.2 All habitats within the main development site boundary were subjected to a Phase 1 habitat update survey, presented in Standalone Report Phase 1 Habitat Survey 2020. During this survey, six areas (**Plate 1**) that may be directly or indirectly impacted by construction, within or adjacent to the Sizewell C Main Development Site, were chosen for detailed assessment due to the sensitive nature of the communities and their conservation value.



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Area 3

Area 4

Area 6

Area 4

Plate 1: Overview of the ES NVC map, highlighting the six areas that were subject to more detailed survey in 2020

3.1.3 The dates of the surveys are provided in **Table 2**.

**Table 2: Survey visit dates** 

<b>Survey Dates</b>	Surveyors	Survey Areas
22.07.2020	Guy Stone (GS)	Detailed walkover of Area 2
23.07.2020	GS	Surveyed NVC quadrats in Area 2 and 4
24.07.2020	GS	Detailed walkover of Area 4 and 6



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<b>Survey Dates</b>	Surveyors	Survey Areas
18.08.2020	Maico Weites (MW) and Melissa Sullivan (MS)	Surveyed NVC quadrats in Area 4
19.08.2020	MW and MS	Surveyed NVC quadrats in Area 4
20.08.2020	MW and MS	Surveyed NVC quadrats in Area 4 and 2. Surveyed Area 5.
26.08.2020	MW	Visited Area 4 and listed additional species and took additional photos
27.08.2020	MW	Visited Area 1 and listed additional species and took additional photos

- 3.1.4 A detailed walkover was undertaken of the whole site, which identified the need for NVC surveys in six areas. In each of these Survey Areas, a further walkover was undertaken to determine the homogenous sample site for the NVC survey.
- 3.1.5 NVC surveys were carried out in accordance with the NVC Users Handbook (Ref. 6). Stands of vegetation were sampled using a standard 2m x 2m square quadrat, except woodland canopy which was sampled using 50m x 50m square quadrats).
- The percentage cover of each plant species rooted within each quadrat was recorded using the standard Domin logarithmic scale, as defined in **Table 3**. Due to the nature of layered vegetation, the percentage cover of different species within a quadrat can exceed 100%. Pictures of quadrat locations, where taken, are provided in **APPENDIX B**:

**Table 3: Domin values** 

Cover value	Domin Value
91-100%	10
76-90%	9
51-75%	8
34-50%	7
26-33%	6



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Cover value	Domin Value
11-25%	5
4-11%	4
<4% (many individuals)	3
<4% (several individuals)	2
<4% (few individuals)	1

3.1.7 The quadrat results were compared against the habitat keys and floristic tables in the relevant NVC handbooks (Volumes 1 to 5) to confirm the identification of the vegetation communities present (Ref. 7-11).

## 3.2 Limitations

- 3.2.1 The surveys were undertaken during the optimal season for the majority of habitats (July and August) when many plant species were in flower or had set seed, making identification to species straightforward. Some grass and sedge species, however, were not flowering during the survey and had no identifiable seeds left. These were recorded to genus-level where possible. Early flowering plants, if present, may have been missed. Despite this, the majority of plants indicative of the NVC communities present on site were visible at the time of survey, including uncommon and scarce species, therefore data are considered robust.
- 3.2.2 Access to the woodland strip west of Sizewell B could only be surveyed from the western edge. Quadrats were not recorded, although visibility was sufficient to attribute an NVC community type to the area.



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## 4 RESULTS

- 4.1.1 Full NVC quadrat results are found in **APPENDIX C:** . Photographs of Survey Areas and quadrats are found in **APPENDIX B:** . Locations of survey areas and NVC communities is shown on **Figure 1 (APPENDIX A: )**.
- 4.2 Area 1 SSSI Triangle

### Wet Woodland

- 4.2.2 The wet woodland in Area 1 had a closed canopy of young Alder (*Alnus glutinosa*) and Ash (*Fraxinus excelsior*) trees. Many Ash trees showed signs of Ash Dieback disease (*Hymenoscyphus fraxineus*). The ground was slightly drier on the western edge, where Ash was dominant in the canopy. A mixture of shrub species, predominantly comprising Red Currant (*Ribes rubrum*) and Bramble (*Rubus fruticosus* agg.), were recorded beneath the main canopy. Plant species characteristic of wetland were recorded in the ground flora, the most abundant species being Rough Meadow-grass (*Poa trivialis*), Bittersweet (*Solanum dulcamara*), Cyperus Sedge (*Carex pseudocyperus*) and Water Mint (*Mentha aquatica*). Other woodland ground flora species were widely distributed throughout the woodland, including Common Nettle (*Urtica dioica*) in slightly drier areas.
- 4.2.3 Quadrats were taken and found this woodland to be attributable to the W5 Alnus glutinosa Carex paniculata woodland community and was considered to correspond most closely to the W5a Phragmites australis sub-community, which is less diverse than the other W5 subcommunities. This classification was due the scarcity of the ground flora, the frequency of Bittersweet and the dominance of Common Reed (Phragmites australis) elsewhere within the SSSI Triangle and the low frequency of Greater Tussock-sedge (Carex paniculata). W5 is a widely distributed wet woodland community throughout the English lowlands, and W5a is the most common and widely distributed of the W5 sub-communities.
- 4.2.4 The northern edge of Area 1 was drier and the canopy, which contained many gaps, was mainly comprised of Downy Birch (*Betula pubescens*). Several Pedunculate Oak (*Quercus robur*) and Black Poplar (*Populus nigra*) trees were also present. The most northern part of this section had a ground layer dominated by Yorkshire-fog (*Holcus lanatus*), gradually becoming more dominated by Water-pepper (*Perscaria hydropiper*) and Common Reed in wetter areas. This section was assigned W2– *Salix cinerea Betula pubescens Phragmites australis* woodland and corresponded most closely to the W2a *Alnus glutinosa Filipendula ulmaria* subcommunity due to the



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abundance of Common Reed and the absence of Peat-mosses (*Sphagnum* spp.) that are typical for the other W2 subcommunity.

## Swamp and reed-bed

4.2.5 A wet reedbed of approximately 0.75 hectares was located within the central part of Area 1 in Goodrums Fen. The reedbed was species-poor and located on a wet substrate. Dense Common Reed dominated the vegetation (over 90%) restricting the growth of other plant species. Five plant species were recorded in the quadrat (Q19) taken in 2020, detailed in **Table 7** in **APPENDIX C:** . Species growing amongst the Common Reed included Hedge Bindweed (*Calystegia sepium*) and Water Dock (*Rumex hydrolapathum*). The wet reedbed is attributable to S4a, the typical subcommunity of the NVC community S4 *Phragmites australis* swamp and reed-beds. As with W5a, S4a is a plant community that is widely distributed across the British lowlands.

## Tall-herb fen

- 4.2.6 Species recorded in the 2020 quadrats (Q17-18 and Q20) within this area included Common Reed, Common Nettle, Water Mint, Gypsywort (*Lycopus europaeus*), Water-pepper and Marsh Thistle (*Cirsium palustre*). The drier reedbed areas are attributable to the NVC community S26 *Phragmites australis Urtica dioica* tall-herb fen due to co-dominance of Common Reed and Common Nettle. This is a vegetation community that is widely distributed in lowland Britain, particularly East Anglia.
- 4.3 Area 2 Minsmere-Walsberwick Heaths and Marshes SSSI
- 4.3.1 Area 2 comprised pastures and is located north of the SSSI Triangle, within the Minsmere-Walsberswick Heaths and Marshes SSSI. Ten quadrats were taken (Q1-Q10).

#### **Pastures**

- 4.3.2 The area comprised pastures with Creeping Bent (*Agrostis stolonifera*), Yorkshire-fog, Soft-rush (*Juncus effusus*) and Sharp-flowered Rush (*Juncus acutiflorus*) being the dominant species, with presence in 8/10, 7/10, 5/10 and 5/10 quadrats respectively. Other species include Marsh Foxtail (*Alopecurus geniculatus*), Greater Bird's-foot-trefoil (*Lotus pedunculatus*) and Sea Club-rush (*Bolboschoenus maritimus*).
- 4.3.3 The habitat is most attributable to M23 Juncus effuses/acutiflorus Galium palustre rush-pasture, most closely resembling the M23b Juncus effusus subcommunity due to the dominance of Soft-rush and the absence of herb



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species associated with other subcommunities. M23b is mostly associated with the southwest peninsula but can be found throughout England. The area is not of significant botanical interest and comprises mainly common species. Several lower lying patches within the area support a more diverse seasonally wet vegetation but these areas were too small to assign a separate NVC type.

- 4.4 Area 3 Minsmere to Walberswick Heaths and Marshes SAC/ Ramsar
- 4.4.1 Area 3 is located to the north of the Sizewell C platform and at the southern end of Minsmere to Walberswick SAC/Ramsar site.
- 4.4.2 The area includes numerous habitat typologies towards the east coast. Moving eastward, adjacent to the drainage ditch, is a linear reedbed, approximately 30m to 40m in width. To the east of this is a strip of windswept and stunted scrub between 10 and 30m in width, which grades into a flat area of dune grassland that is approximately 100m wide. This culminates in a low (1m high) dune ridge overlooking shingle and the high tide mark (which was the eroded face of the low sand dune).
- 4.4.3 Four quadrats were taken, two within the dune grassland and two within the sand dune habitat.
- 4.4.4 The belt of scrub was not sampled as it is not one the qualifying interest features of either the SAC or Ramsar site. It constituted a wide belt of trees and scrub comprising Silver Birch (*Betula pendula*), Pedunculate Oak and willow (*Salix* sp.), with a ground flora supporting False Oat-Grass (*Arrhenatherum elatius*), Common Reed and Broad Buckler-fern (*Dryopteris dilatata*). Area 3 is presented in **Plate 2**: Area 3 Overview while the individual areas are described below.

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Reedbed

Scrub

Dune
Grassland

Plate 2: Area 3 Overview

## Reedbed adjacent to the Leiston Drain

4.4.5 During the 2020 survey it was determined that the reedbed directly east of the Leiston drain was attributed to the S26 *Phragmites australis – Urtica dioica* tall-herb fen NVC community.

## Dune grassland

4.4.6 The dune grassland forms a level area between the reedbed/scrub woodland and a low dune on the seaward edge. The area consisted of a dense cover of Sand Sedge (*Carex arenaria*) and Sheep's-fescue (*Festuca ovina*) with clumps of Heather (*Calluna vulgaris*) and Bell Heather (*Erica cineria*) as well as discrete mats of Sheep's Sorrel (*Rumex acetosella*) and Cladonia lichen (*Cladonia* sp.).

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Low sand dune ridge



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- 4.4.7 Two quadrats (Q12 and Q13) were taken and twelve plant species were recorded, including Sand sedge, Sheep's Sorrel and Smooth Cat's-ear (*Hypochaeris glabra*), a species that prefers sandy acidic soils and that has its UK stronghold in East Anglia.
- 4.4.8 The dune grassland habitat was attributed to SD12 Carex arenaria Rumex acetosella Festuca ovina Agrostis capillaris dune grassland community.

## Sand dune

- 4.4.9 The sand dune comprised a low (1m high) ridge on the seaward side of the dune grassland. The dune was observed to be actively eroding and was less consolidated than the dune grassland described above.
- 4.4.10 Two quadrats (Q11 and Q14) were taken and nine plant species were recorded, with the most abundant species comprising Sand sedge and Sheep's Sorrel. Other species recorded included Marram Grass (*Ammophila arenaria*) and some Bramble.
- 4.4.11 The sand dune habitat was attributed to SD12 Carex arenaria Rumex acetosella Festuca ovina Agrostis capillaris dune grassland community.
- 4.5 Area 4 Sizewell Marshes SSSI fen-meadows
- 4.5.1 This survey area comprised five fen-meadows, separated by ditches, in the east of Sizewell Marshes SSSI, located to the west of the proposed C Station platform and Sizewell B power station. The field were labelled A-E as shown in **Plate 3**.



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Plate 3: Surveyed fen-meadows within Sizewell Marshes SSSI

- 4.5.2 During the 2020 surveys a total of 23 quadrats (Q21-43) were taken. Eight quadrats were taken from fields A and C combined. This included extra quadrats in field A to gain enough information to classify the (sub)communities present (Q41-43) as the vegetation in this field was significantly more variable compared to the other fields.
- 4.5.3 Five quadrats were taken from field B, which was entirely waterlogged with up to approximately 25cm of standing water at the time of survey. Ten



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quadrats were taken from Fields D and E, with five taken from wetter areas and 5 taken from drier areas around the edges of the field to assess the differences in vegetation. **Table 4** shows the number of quadrats per field.

Table 4: NVC quadrats per field

Field	Quadrats taken
А	6 – Q21-23; Q41-43
В	5 – Q36-40
С	2 – Q24-25
D	5 – Q28-30; Q34-35
Е	5 – Q26-27; Q31-33

- 4.5.4 The most dominant species recorded across Area 4 include Common Bent (Agrostis capillaris) (present in all quadrats) and Blunt-flowered Rush (Juncus subnodulosus) (present in 17 of the 23 quadrats). There were clear differences between the fields. Field A and B to the north of the area showed on average lower diversity than fields C-E, with field A having 4-12 species per quadrat and field B having 4-9 species per quadrat. Fields D and E had higher diversity with 13-15 and 13-19 species per quadrat respectively.
- 4.5.5 All quadrats in Field A, B and C contained Common Reed and other species tolerant of flooding were recorded such as Water Horsetail (*Equisetum fluviatile*) and Marsh-marigold (*Caltha palustris*). None of the quadrats in fields D and E contained Common Reed and or species that do not tolerate prolonged flooding, with Red Clover (*Trifolium pratense*) and White Clover (*Trifolium repens*) commonly recorded. Fields D and E both contained patches along the edges that were dominated by Soft-rush and Hard Rush (*Juncus inflexus*).
- All fields within Area 4 generally fit the M22 Juncus subnodulosus Cirsium palustre fen-meadow NVC community although Cirsium palustre is generally scarce. The vegetation in the water-logged field B corresponded most closely to the M22d Iris pseudocorus sub-community due to the dominance of flood-tolerant species. The other fields did not neatly fit any sub-community and were thus not identified to sub-community level. Some of the drier patches in fields D and E are however better described as M23b Juncus effusus/acutiflorus Galium palustre rush pasture, Juncus effusus sub-community due to the dominance of Soft-rush and other species associated this sub-community.



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- 4.5.7 Localised areas containing species indicative of a saline influence, particularly surrounding borehole heads, were present such as Sea Clubrush, Saltmarsh Rush (*Juncus gerardii*), Sea Arrowgrass (*Triglochin maritima*) and Parsley Water-dropwort (*Oenanthe lachenalii*).
- 4.5.8 The most notable species that was recorded in the area, albeit not within one of the quadrats, was Flat-sedge (*Blysmus compressus*), a rare species listed as Vulnerable on the English Red List (Ref 12). Another notable species, Slender club rush (*Isolepis cernua*), was recorded south of Area 4 in an adjacent field compartment. This species is considered of Least Concern but is only found within this location in Suffolk.
- 4.5.9 Small strips of woodland surrounded the fields and comprised predominantly Alder and Willow. These areas corresponded most closely to the W5a *Alnus glutinosa Carex paniculata* woodland community, *Phragmites australis* subcommunity.
- 4.6 Area 5 Woodland west of Sizewell B power station
- Area 5 comprised a wooded strip between the power station and the fenmeadows of Area 4. Alder was the dominant canopy species with Ash being scattered throughout the woodland with the occasional Sycamore (*Acer pseudoplatanus*) and Grey Willow (*Salix cinerea*). The canopy contained many gaps and Ash trees contained many dead branches, likely caused by Ash dieback disease. The shrub layer contained species such as Hawthorn (*Crataegus monogyna*) and Red Currant. The ground layer comprised predominantly Common Reed and tall herbs such as Hemp-agrimony (*Eupatorium cannabinum*), Branched Bur-reed (*Sparganium erectum*) and sedges such as Cyperus Sedge; Bracken (*Pteridium aquilinum*) was present in drier areas. Greater Tussock-sedge was present at relatively low frequency. The woodland assessment was made from the western edge and provisionally attributed to W5 *Alnus glutinosa Carex paniculata* woodland.

# 4.7 Area 6 – Coastal strip

4.7.1 The walkover survey in 2020 confirmed the presence of a wide level strip of dune grassland, attributed to the SD8 Festuca rubra – Galium verum fixed dune grassland, culminating in a low (2m to 3m high) sand dune, attributed to the SD7 Ammophilia arenaria – Festuca rubra semi-fixed dune community. An area of vegetated shingle, attributed to the SD1a Rumex crispus - Glaucium flavum shingle community - Lathyrus japonicus sub-community, was also confirmed seaward of the dune which graded into bare shingle to the high-tide mark.



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- 4.7.2 Deptford Pink was not recorded during the 2020 surveys although was recorded in June 2020 by another recorder (C Cuthbert *pers. comm.*).
- 5 DISCUSSION
- **Table 5** presents a summary of the overall results and provides a comparison with previous results.
- 5.2 Area 1 SSSI Triangle
- 5.2.1 The locations and extent of habitats within Area 1 were determined to be slightly different to those previously mapped. This is likely to be due primarily to vegetation succession.

#### Wet Woodland

5.2.2 Surveys in 2007-2008 and subsequently in 2014 attributed the woodland within Area 1 to W5a Alnus glutinosa - Carex paniculata woodland community, Phragmites australis sub-community. The 2020 survey results presented above suggest that the majority of the woodland remains classified within this NVC community with the exception of a section in the north of Area 1. This section is now considered to be attributed to the W2– Salix cinerea – Betula pubescens – Phragmites australis woodland and corresponded most closely to the W2a Alnus glutinosa – Filipendula ulmaria sub-community. This community is drier than the adjacent areas of W5a woodland which is thought to be due to accumulated leaf litter.

#### Swamp and reed-bed

5.2.3 The 2020 survey detected a few changes compared to the 2007-2008 and 2014 surveys. The main reedbed itself does not appear to have significantly changed in the composition of the S4a *Phragmites australis* swamp and reed-bed typical sub-community or its extent since the previous surveys were undertaken, although some the other smaller areas of S4a previously mapped appeared to have dried up and are now best attributed to the S26 *Phragmites australis – Urtica dioica* community.

#### Tall-herb fen

5.2.4 Previous surveys undertaken found the drier reedbed comprised Common Reed (90% cover in the quadrats in 2014) and Common Nettle (over 50% cover in the quadrats in 2014). The drier reedbed areas were moderately diverse, supporting 16 plant species indicative of wetland habitat in 2014. This was attributed to S26 *Phragmites australis – Urtica dioica* NVC



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community which matched the survey results from 2020 with a few exceptions:

- The 2007-2008 survey recorded the presence of a bank of spoil, directly to the east of the wet reedbed, that supported the open habitat OV25 Urtica dioica Cirsium arvense community. In 2014, this bank was found to be covered by False Oat-grass (Arrhenatherum elatius) and Common Nettle however was not subject to detailed survey and NVC classification. In 2020 the area was indistinguishable from the surrounding S26 community.
- Some areas of reedbed previously recorded as S4a were attributed to S26 in 2020.
- 5.2.5 Despite slight changes in area and extent of NVC habitats, the survey results presented above do not change the assessment of impacts on Sizewell SSI Marshes reed-bed and wet woodland presented at **Section 14.7c IEF Sizewell Marshes SSSI** in the Sizewell C Project ES (Ref. 2).
- 5.3 Area 2 Minsmere Walsberwick Heaths and Marshes SSSI
- 5.3.1 The 2020 survey results concluded that the habitat within Area 2 is most attributable to M23 *Juncus effuses/acutiflorus Galium palustre* rushpasture, most closely resembling the M23b *Juncus effusus* subcommunity due to the dominance of Soft-rush and the absence of herb species associated with other sub-communities.
- 5.3.2 The survey results presented above do not change the assessment of impacts on habitats within Minsmere-Walberswick Heaths and Marshes SSSI presented at **Section 14.7c IEF Minsmere European Site** in the Sizewell C Project ES (Ref. 2).
- 5.4 Area 3 Minsmere to Walberswick Heaths and Marshes SAC/ Ramsar

### Reedbed adjacent to the Leiston Drain

The reedbed to the east of the Leiston Drain was species-poor, supporting only 11 plant species recorded in the quadrats in 2014, and attributed to the S26 *Phragmites australis – Urtica dioica* tall-herb fen NVC community. This was considered unchanged in the 2020 walkover survey and so no quadrats were undertaken.



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#### **Dune Grassland**

- 5.4.3 This area had 11 plant species recorded in 2014. The flat dune grassland is attributable to the SD12 Carex arenaria Festuca ovina Agrostis capillaris dune grassland. SD12 is uncommon on the Suffolk coast and favours areas of stable sand where accretion is negligible, and erosion limited. This allows the process of leaching to occur, creating the acidic conditions required for this community to establish.
- 5.4.4 The 2020 survey results accord with the survey work undertaken in 2007-2008 and 2014, and there does not appear to have been a significant change in the dune grassland community or its extent. The presence of Heather and Sheep's Sorrel indicates that the sand substrate is acidic in nature, either originating from acidic sands or sands which have been established for a long time and have become acidic through prolonged leaching.

#### Sand dune

- 5.4.5 Twenty-one species were recorded within the sand dune in 2014. These included Lady's Bedstraw (*Galium verum*), Spiny Restharrow (*Ononis spinosa*) and Sweet Vernal-grass (*Anthoxanthum odoratum*). Both Sand Sedge and Sheep's-fescue were present in some abundance (covering between 50 and 90% of the vegetation in the quadrats sampled). Both Bell Heather and Heather were also present in discrete patches. This sand dune grassland was attributable to SD12 *Carex arenaria Festuca ovina Agrostis capillaris* dune grassland with the survey results in 2020 reflective of this community also.
- 5.4.6 The survey results presented above do not change the assessment of impacts on Minsmere to Walberswick heaths and marshes SAC presented at Section 14.7c IEF Minsmere European Site in the Sizewell C Project ES (Ref-224) (Ref. 2).

### 5.5 Area 4 - Sizewell Marshes SSSI fen meadows

A total of 41 plant species were recorded from all the quadrats across Fields A and B in 2014, which made this the most diverse area surveyed during the 2014 survey. Each quadrat supported between 11 and 21 species however, the plant species diversity is less than has been recorded in similar habitat in other areas of the SSSI; for example, the long-term monitoring work undertaken for SWT recorded between 38 and 51 plant species in each of their sample plots, although it should be noted that their sample plots are larger than the standard 2m by 2m square quadrats. The monitoring work undertaken by SWT did not include the areas sampled in 2014, and therefore no direct comparison is possible. However, fields to the south of the Field A



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and B appeared (based on visual observation at the time) to support a greater diversity of species. It is therefore possible that the plant community recorded in 2014 may be restricted to a discrete area that has been affected by surface water flooding.

- 5.5.2 The vegetation recorded in Fields A and B in 2014 appeared to be relatively homogenous and rush species were dominant, with Blunt-flowered Rush the most abundant species, with between 75 and 90% cover (in the quadrats sampled). Common Reed was present in every quadrat, suggesting wet conditions, with cover values between 4 and 10%. A moderately diverse range of fen meadow species were recorded in this area. These included Marsh Arrowgrass (Triglochin palustre), Brown Sedge (Carex disticha), Marsh Pennywort (*Hydrocotyle vulgaris*), Ragged Robin (*Lychnis flos-cuculi*) and Water Mint, species indicative of damp conditions, and Red Clover (Trifolium pratense), Tall Fescue (Festuca arundinacea), Selfheal (Prunella vulgaris) and Red Fescue (Festuca rubra agg.), which are species indicative of drier grasslands. The fen meadows within Field A and B were attributed to the M22 Juncus subnodulosus - Cirsium palustre mire community with M22d Iris pseudacorus sub-community present around the margins. Previous survey work has identified M22 as the dominant community across Sizewell Marshes SSSI. This is a widespread plant community associated with wet, base-rich soils, with a particular concentration in East Anglia.
- 5.5.3 Compared to the 2014 data the species diversity in Fields A and B in 2020 was lower (4-12 species and 4-9 species per quadrat respectively) and fewer species associated with drier conditions were recorded. M22 was still considered the appropriate NVC community however the whole of Field B was attributed to the M22d *Iris pseudocorus* sub-community due to the dominance of flood-tolerant species.
- Fields C, D and E, which were attributed to M22b in 2008, were similarly attributed to the M22 NVC community in the 2020 update survey results. They were drier than Fields A and B in 2020 with some patches along the southern edges of Field D and E considered to be more akin to M23b *Juncus effusus/acutiflorus Galium palustre* rush pasture, *Juncus effusus* subcommunity and contained species which cannot survive prolonged flooding. Plant diversity recorded in Field D and E in the 2020 survey was higher than that in Fields A and B (13-15 species and 13-19 species per quadrat in Field D and E respectively) however this has decreased since the 2008 results, which recorded 14-25 and 12–24 species per sample in Field D and E respectively. A further change is the presence of Blunt-flowered Rush in most quadrats in Field D in 2020, which was absent in 2008. Flat Rush, a notable species was recorded in Field C.



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- 5.5.5 The change in results would suggest that Field A and B, although noted as more waterlogged than other areas in the SSSI in previous survey results, may have been subject to further localised surface water flooding, and for a prolonged duration. Such a flooding event would cause localised enrichment of the soil, encourage the growth of rushes and Common Reed and would have a detrimental effect on plant species diversity. This may be the case particularly in Field B, which was entirely waterlogged, up to 25cm, at the time of survey. An increasing water table or increasing extent and duration of standing water may be impacting areas within Field D resulting in the spread of Blunt-flowered Rush into this compartment.
- 5.5.6 The survey results presented above do not change the assessment of impacts on Sizewell SSSI Marshes fen meadows presented at Section 14.7c IEF Sizewell Marshes SSSI in the Sizewell C Project ES (Ref-224) (Ref. 2).
- 5.6 Area 5 Woodland west of Sizewell B power station
- This woodland was classified W5a Alnus glutinosa Carex paniculata woodland, Phragmites australis subcommunity in previous surveys. The 2020 survey results accord with the survey work undertaken in 2007-2008 and 2014 and attributed Area 5 to W5 Alnus glutinosa Carex paniculata woodland, however due to the lack of Common Reed it was thought that W5a not the best fit for this habitat type.
- The survey results presented above do not change the assessment of impacts on the wet woodland west of Sizewell B power station presented at Section 14.7c IEF Broadleaved and mixed woodland in the Sizewell C Project ES (Ref-224) (Ref. 2).
- 5.7 Area 6 Coastal strip
- Area 6 is located within Sizewell Shingle Beaches CWS. Previous surveys attributed the dune grassland in Survey Area 6 to SD8 Festuca rubra Galium verum fixed dune grassland, in particular, the Luzula campestris subcommunity with a low growing species-rich sward. The sand dune was attributed to the SD7 Ammophilia arenaria Festuca rubra semi-fixed dune community while the vegetated shingle was attributed to the SD1a Rumex crispus Glaucium flavum shingle community, Lathyrus japonicus subcommunity. A detailed walkover survey in 2020 confirmed that NVC communities present were the same as previously identified.
- 5.7.2 Deptford Pink was identified in the area through desk-study information in the Sizewell C Project ES (Ref-224) (Ref. 2). Surveys in 2020 did not locate this



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- species but an anecdotal record, submitted online in June 2020, suggested Deptford Pink was present within Sizewell Shingle Beaches CWS.
- 5.7.3 The survey results presented above do not change the assessment of impacts on the coastal strip or Deptford Pink presented at Section 14.7c IEF: Suffolk Shingle Beaches CWS and IEF: Deptford Pink respectively in the Sizewell C Project ES (Ref-224) (Ref. 2).
- 5.7.4 The key approaches to mitigating potential impacts to the Deptford Pink populations present, within or adjacent to the construction site is detailed in Appendix 14C11 Deptford Pink Draft Licence (App-252) (Ref. 4).

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Table 5: Summary of the 2020 survey and comparison to previous results

Receptor	2020 Survey Method	Submitted baseline	2020 Update Survey results
Area 1 – SSSI Triangle	Four NVC quadrats were taken in the reedbeds and one in the woodland.	W5a- Alnus glutinosa – Carex paniculata woodland, Phragmites australis subcommunity  S4a – Phragmites australis swamp and reed-fen  S26 – Phragmites australis – Urtica dioica tall-herb fen.  OV25 Urtica dioica – Cirsium arvense community	A small section of the W5a woodland has been reclassified as W2a – Salix cinerea – Betula pubescens – Phragmites australis woodland, Filipendula ulmaria subcommunity  The OV25 community is no longer present and has been succeeded by the S26 community.  Slight changes in distribution of other NVC types were noted
Area 2 – Minsmere- Walberswick Heaths and Marshes SSSI	Ten quadrats were taken.	Not previously surveyed	M23 Juncus effusus/Juncus acutiflorus– Galium palustre rush-pasture
Area 3 - Minsmere to Walberswick Heaths and Marshes SAC	The previously surveyed area was subjected to a detailed walkover. Four quadrats were taken in small previously	S26 Phragmites australis – Urtica dioica tall-herb fen	No changes identified. The additionally surveyed area comprised the same NVC type (SD12) as in the adjacent habitat

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Receptor	2020 Survey Method	Submitted baseline	2020 Update Survey results
	unsurveyed area directly north	SD12 Carex arenaria – Festuca ovina – Agrostis capillaris dune grassland	
		A2 Lemna minor community Lemnetrum minori	
		A16 Callitriche stagnalis community	
Area 4 – Sizewell Marshes SSSI fen-meadows	23 NVC quadrats were taken.	M22 Juncus subnodulosus – Cirsium palustre fen-meadow  M22d Juncus subnodulosus – Cirsium palustre fen-meadow, Iris pseudocorus subcommunity  M23b Juncus effusus/acutiflorus – Galium palustre rush pasture, Juncus effusus sub-community  W5a- Alnus glutinosa – Carex paniculata woodland, Phragmites australis subcommunity.	Fields surveyed were all the M22 community, as previously surveyed, however the most north-east field (Field B) now fits M22d and has a lower plant diversity than previously recorded, likely due to prolonged inundation.  Some additional M23b was noted in drier areas.  Blunt-flowered Rush was recorded from Field D, where it was absent in 2008.  Additional W5a woodland strips were catagorised, which were not previously mapped.

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Receptor	2020 Survey Method	Submitted baseline	2020 Update Survey results
Area 5 – Woodland west of Sizewell B power station	Surveyed from Sizewell Marshes SSSI. No quadrats taken.	W5a- Alnus glutinosa – Carex paniculata woodland, Phragmites australis subcommunity	No changes identified.
Area 6 – Sizewell beach	A detailed walkover was undertaken. A targetted survey for Deptfor Pink was carried out	SD1a Rumex crispus - Glaucium flavum shingle community, Lthyrus japonicus sub-community SD7 Ammophilia arenaria – Festuca rubra semi-fixed dune community SD8 Festuca rubra – Galium verum fixed dune grassland Desk-study record of Deptford Pink	No changes to NVC communities identified Deptford Pink indciendtally recorded but not confirmed through survey.



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### 6 CONCLUSION

- 6.1.1 Six areas were selected for detailed assessment in 2020 that may be directly or indirectly effected the Sizewell C Development.
- 6.1.2 The 2020 NVC surveys largely confirm the baseline presented in the Sizewell C Project ES (Ref-224) (Ref. 2) but highlighted the following changes: a minor alteration in extent and distribution of habitats within the Sizewell Marshes SSSI Triangle and the decrease in plant species diversity in part of the fen meadows due to prolonged flooding.
- 6.1.3 Despite the changes, the assessment of impacts on habitats within and adjacent to the Sizewell C main development site boundary reported in the Sizewell C Project ES: Volume 2, Chapter 14 Ecology and Ornithology (Ref-224) (Ref. 2) remain the same.



#### NOT PROTECTIVELY MARKED

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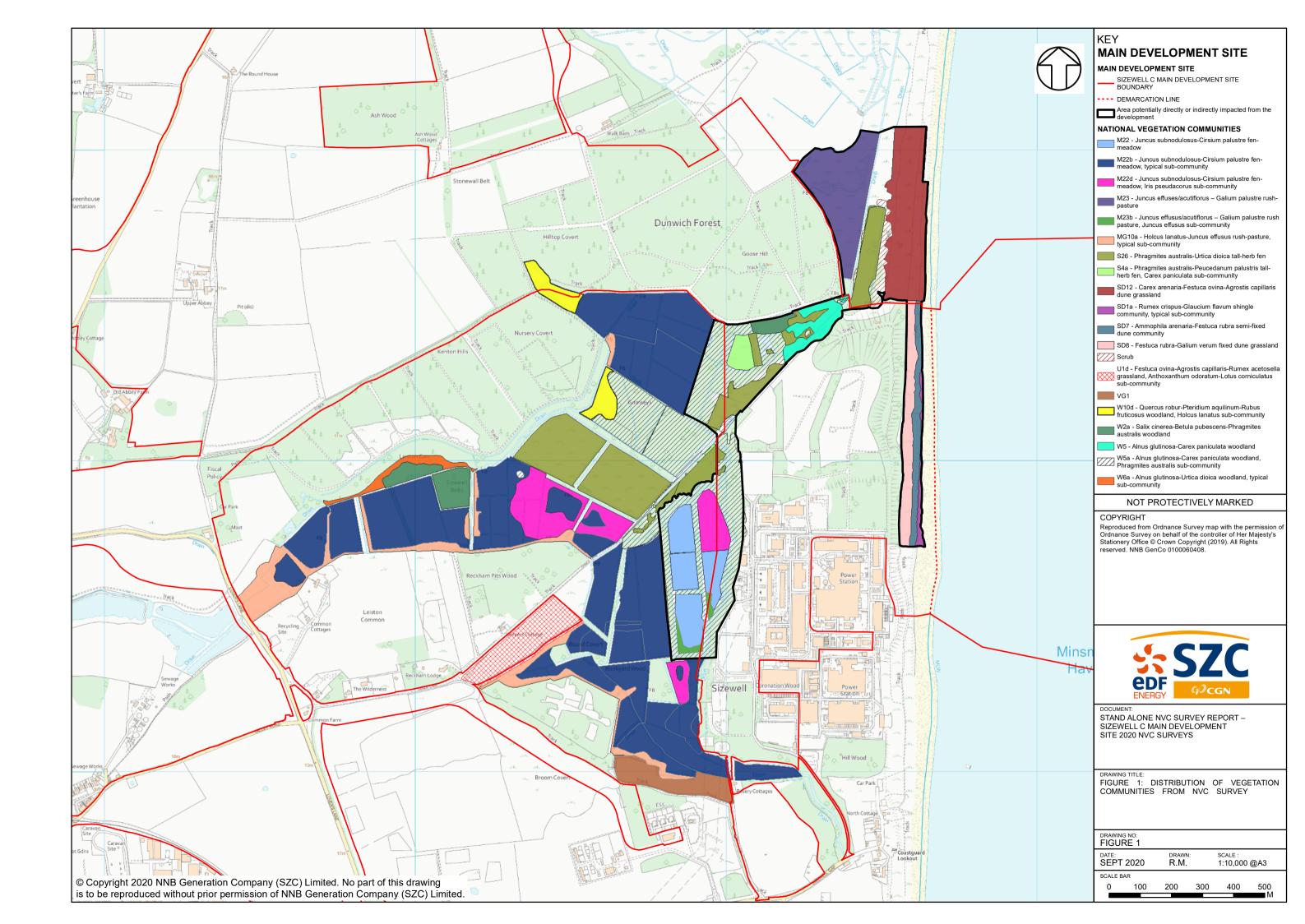


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**APPENDIX A: Figures** 

Figure 1: Distribution of Vegetation Communities from NVC

Survey





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### APPENDIX B: Site Photographs

### Area 1





Quadrat 15 (50x50)

Quadrat 15 (50x50)



No picture taken

Quadrat 16 (4x4)

Quadrat 17



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No picture taken



Quadrat 18

No picture taken

Quadrat 20

### Quadrat 19



Area 1 - Wet woodland

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Area 1 - Wet reedbed

### Area 2



Quadrat 1



Quadrat 2



### **NOT PROTECTIVELY MARKED**





Quadrat 3



Quadrat 4



Quadrat 5

Quadrat 6



### **NOT PROTECTIVELY MARKED**





Quadrat 7



Quadrat 8



Quadrat 9

Quadrat 10

### **NOT PROTECTIVELY MARKED**



Area 2 – Rush pasture

### Area 3







Quadrat 12



### **NOT PROTECTIVELY MARKED**

No photograph taken



Quadrat 13

Quadrat 14

### **NOT PROTECTIVELY MARKED**

### Area 4





Quadrat 21

Quadrat 22





Quadrat 23

Quadrat 24



### **NOT PROTECTIVELY MARKED**





Quadrat 25

Quadrat 26





Quadrat 27

Quadrat 28



### **NOT PROTECTIVELY MARKED**





Quadrat 29

Quadrat 30





Quadrat 31

Quadrat 32



### **NOT PROTECTIVELY MARKED**





Quadrat 34





Quadrat 35

Quadrat 36



### **NOT PROTECTIVELY MARKED**





Quadrat 37

Quadrat 38





Quadrat 39

Quadrat 40



### **NOT PROTECTIVELY MARKED**





Quadrat 41



Quadrat 42



Quadrat 43

Area 4 - Field A



### **NOT PROTECTIVELY MARKED**





Area 4 – Field B

Area 4 – Flat-sedge (*Blysmus compressus*)

### **NOT PROTECTIVELY MARKED**

### Area 5



Area 5 - Woodland

### Area 6



Area 6 – Dune grassland



Area 6 – Vegetated shingle



### **NOT PROTECTIVELY MARKED**

### APPENDIX C: 2020 Survey Results

### C.1. 2020 Quadrat Survey Data

### Table 6: NVC quadrat data for Area 1

Scientific name	Common name	Family	Q15 (50x50m)	Q16 (4x4m)
Cirsium palustre	Marsh Thistle	Asteraceae		1
Alnus glutinosa	Alder	Betulaceae	1	
Betula pubescens	Downy Birch	Betulaceae	6	
Calystegia sepium	Hedge Bindweed	Convolvaceae		2
Juncus effusus	Soft-rush	Juncaceae		2
Arrhenatherum elatius	False Oat-grass	Poaceae		1
Glyceria fluitans	Floating Sweet-grass	Poaceae		1
Holcus lanatus	Yorkshire-fog	Poaceae		8
Phragmites australis	Common Reed	Poaceae		4
Persicaria hydropiper	Water-pepper	Polygonaceae		5
Rumex conglomeratus	Clustered Dock	Polygonaceae		1
Populus nigra	Black Poplar	Salicaceae	5	
Salix caprea	Goat Willow	Salicaceae	1	
Urtica dioica	Common Nettle	Urticaceae		5
Cirsium palustre	Marsh Thistle	Asteraceae		1



### **NOT PROTECTIVELY MARKED**

Scientific name	Common name	Family	Q15 (50x50m)	Q16 (4x4m)
Alnus glutinosa	Alder	Betulaceae	1	
Betula pubescens	Downy Birch	Betulaceae	6	
Calystegia sepium	Hedge Bindweed	Convolvaceae		2
Juncus effusus	Soft-rush	Juncaceae		2
Arrhenatherum elatius	False Oat-grass	Poaceae		1
Glyceria fluitans	Floating Sweet-grass	Poaceae		1
Holcus lanatus	Yorkshire-fog	Poaceae		8
Phragmites australis	Common Reed	Poaceae		4
Persicaria hydropiper	Water-pepper	Polygonaceae		5
Rumex conglomeratus	Clustered Dock	Polygonaceae		1
Populus nigra	Black Poplar	Salicaceae	5	
Salix caprea	Goat Willow	Salicaceae	1	
Urtica dioica	Common Nettle	Urticaceae		5

### Table 7: NVC quadrat data for Area 1

Scientific name	Common name	Family	Q17	Q18	Q19	Q20
Cirsium palustre	Marsh Thistle	Asteraceae				1
Calystegia sepium	Hedge Bindweed	Convolvaceae	5	2	4	2



### **NOT PROTECTIVELY MARKED**

Scientific name	Common name	Family	Q17	Q18	Q19	Q20
Lycopus europaeus	Gypsywort	Lamiaceae				4
Mentha aquatica	Water Mint	Lamiaceae				7
Lythrum salicaria	Purple-loosestrife	Lythraceae			1	
Arrhenatherum elatius	False Oat-grass	Poaceae	1			
Phragmites australis	Common Reed	Poaceae	10	10	10	10
Poa sp.	Meadow-grass sp.	Poaceae	1			
Persicaria hydropiper	Water-pepper	Polygonaceae				3
Rumex hydrolapathum	Water Dock	Polygonaceae		1	1	
Solanum dulcamara	Bittersweet	Solanaceae			1	
Urtica dioica	Common Nettle	Urticaceae	7			1

### Table 8: NVC quadrat data for Area 2

Scientific name	Common Name	Family	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	<b>9</b>	Q10
Lemna minor	Common Duckweed	Araceae						4			4	
Spirodela polyrhiza	Greater Duckweed	Araceae						3			3	
Bidens cernua	Nodding Bur-marigold	Asteraceae									1	
Cirsium palustre	Marsh Thistle	Asteraceae				1						
Bolboschoenus maritimus	Sea Club-rush	Cyperaceae									8	
Carex otrubae	False Fox-sedge	Cyperaceae								1		



### **NOT PROTECTIVELY MARKED**

Scientific name	Common Name	Family	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
Eleocharis palustris	Common Spike-rush	Cyperaceae		1				1				
Eleocharis sp.	Spike-rush sp.	Cyperaceae								2	6	
Lotus pedunculatus	Greater Bird's-foot- trefoil	Fabaceae			3	5						1
Vicia cracca	Tufted Vetch	Fabaceae			2	1						
Geranium molle	Dove's-foot Crane's-bill	Geraniaceae				1						
Hydrocharis morsus- ranae	Frogbit	Hydrocharitaceae						7			3	
Juncus acutiflorus	Sharp-flowered Rush	Juncaceae	3	6	7	8	4					
Juncus articulatus	Jointed Rush	Juncaceae										9
Juncus effusus	Soft-rush	Juncaceae	5	7			5		10	9		
Juncus subnodulosus	Blunt-flowered Rush	Juncaceae	3									
Plantago lanceolata	Ribwort Plantain	Plantaginaceae										1
Agrostis sp.	Bent sp.	Poaceae							4			
Agrostis stolonifera	Creeping Bent	Poaceae	7	7	4	7	5	4	3	6		
Alopecurus geniculatus	Marsh Foxtail	Poaceae	4				2	2				
Alopecurus pratensis	Meadow Foxtail	Poaceae		3								
Anthoxanthum odoratum	Sweet Vernal-grass	Poaceae			4	3						2
Glyceria fluitans	Floating Sweet-grass	Poaceae	2						1			
Holcus lanatus	Yorkshire-fog	Poaceae	6	3	7	7	5			2		2

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### **NOT PROTECTIVELY MARKED**

Scientific name	Common Name	Family	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
Lolium perenne	Perennial Rye-grass	Poaceae		1		1						1
Poa trivialis	Rough Meadow-grass	Poaceae							2			
Schedonorus pratensis	Meadow Fescue	Poaceae										1
Agrostis capillaris	Common Bent	Poaceae		3						7		
Rumex acetosa	Common Sorrel	Polygonaceae			1	1						
Potamogeton natans	Broad-leaved Pondweed	Potamogetonaceae									3	
Ranunculus acris	Meadow Buttercup	Ranunculaceae			1	1						3
Ranunculus repens	Creeping Buttercup	Ranunculaceae	7	3			4					
Potentilla anserina	Silverweed	Rosaceae		8		5				4		1
Galium palustre	Marsh Bedstraw	Rubiaceae		2								
Sparganium emersum	Unbranched Bur-reed	Typhaceae									1	
Sparganium erectum	Branched Bur-reed	Typhaceae									5	

### Table 9: NVC quadrat data for Area 3

Scientific name	Common name	Family	Q11	Q12	Q13	Q14
Hypochaeris glabra	Smooth Cat's-ear	Asteraceae		4		
Hypochaeris radicata	Cat's-ear	Asteraceae				1
Pilosella officinarum	Mouse-ear Hawkweed	Asteraceae		3	2	



### **NOT PROTECTIVELY MARKED**

Scientific name	Common name	Family	Q11	Q12	Q13	Q14
Taraxacum officinale agg.	Dandelion	Asteraceae	1			
Lonicera periclymenum	Honeysuckle	Caprifoliaceae				1
Cladonia sp.	Reindeer Lichen sp.	Cladoniaceae		9	4	
Carex arenaria	Sand Sedge	Cyperaceae	9	4	5	6
Bryophyta sp.	Moss sp.	NA		6	6	
Agrostis capillaris	Common Bent	Poaceae		2		
Aira praecox	Early Hair-grass	Poaceae		3		
Ammophila arenaria	Marram Grass	Poaceae				8
Anthoxanthum odoratum	Sweet Vernal-grass	Poaceae	2	3		6
Arrhenatherum elatius	False Oat-grass	Poaceae	3			
Elytrigia juncea	Sea Couch	Poaceae			2	
Festuca ovina	Sheep's-fescue	Poaceae		2	4	
Holcus lanatus	Yorkshire-fog	Poaceae	2	2		
Rumex acetosella	Sheep's Sorrel	Polygonaceae		3	8	
Rubus fruticosus agg.	Bramble	Rosaceae	4			

### Table 10. NVC quadrat data for Area 4

Scientific name	Common name	Family	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30	Q31
Oenanthe fistulosa	Tubular Water-	Apiaceae											
	dropwort												



### **NOT PROTECTIVELY MARKED**

Scientific name	Common name	Family	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30	Q31
Oenanthe lachenalii	Parsley Water- dropwort	Apiaceae			4	4	5						
Hydrocotyle vulgaris	Marsh Pennywort	Araliaceae	5	3	1	1	6				8		
Cirsium palustre	Marsh Thistle	Asteraceae	4					1	1	1			
Cardamine pratensis	Cuckooflower	Caryophyllaceae	1							1			
Silene flos-cuculi	Ragged Robin	Caryophyllaceae						1					
Calystegia sepium	Hedge Bindweed	Convolvaceae								4			
bolboschoenus maritimus	Sea Club-rush	Cyperaceae											
Carex acutiformis	Lesser Pond-sedge	Cyperaceae	1	1	4					5*			
Carex hirta	Hairy Sedge	Cyperaceae											1
Carex nigra	Common Sedge	Cyperaceae	4				4	4			2	2	
Carex panicea	Carnation Sedge	Cyperaceae									4	4	
Carex sp.	Sedge sp.	Cyperaceae											
Eleocharis sp.	Spike rush	Cyperaceae				2							
Equisetum fluviatile	Water Horsetail	Equisetaceae											
Equisetum palustre	Marsh Horsetail	Equisetaceae					1						
Lotus pedunculatus	Marsh Bird's-foot- trefoil	Fabaceae					1	1	3	1	4	4	
Trifolium pratense	Red Clover	Fabaceae						1	2			1	
Trifolium repens	White Clover	Fabaceae						8	3		1	2	
Vicia cracca	Tufted Vetch	Fabaceae								1	1	1	1
Iris pseudacorus	Yellow Iris	Iridaceae								1			
Juncus acutiflorus	Sharp-flowered Rush	Juncaceae									6	5	
Juncus articulatus	Jointed Rush	Juncaceae											
Juncus effusus	Soft-rush	Juncaceae								8			5

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### **NOT PROTECTIVELY MARKED**

Scientific name	Common name	Family	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30	Q31
Juncus gerardii	Saltmarsh Rush	Juncaceae				4							
Juncus inflexus	Hard Rush	Juncaceae	6		7			4	5	5	5		5
Juncus	Blunt-flowered Rush	Juncaceae	5	5	4	8	10	5	6	2	5	5	
subnodulosus													
Triglochin maritima	Sea Arrowgrass	Juncaginaceae											
Triglochin palustris	Marsh Arrowgrass	Juncaginaceae		1		1		1					
Mentha aquatica	Water Mint	Lamiaceae					5	4	6		4	7	1
Fraxinus excelsior	Ash (seedling)	Oleaceae											
Epilobium	Hoary Willowherb	Onagraceae											1
parviflorum													
Plantago	Ribwort Plantain	Plantaginaceae	2	1	1			2	2		1	4	
lanceolata													
Agrostis stolonifera	Creeping Bent	Poaceae	9	9	10	8	6	8	10	10	7	9	8
Anthoxanthum	Sweet Vernal-grass	Poaceae									4		
odoratum													
Cynosurus	Crested Dog's-tail	Poaceae						1					
cristatus													
Glyceria fluitans	Floating Sweetgrass	Poaceae											
Holcus lanatus	Yorkshire-fog	Poaceae	1					1	1	2	1		4
Phragmites	Common Reed	Poaceae	5	6	7	6	1						
australis													
Poa sp.	Meadow-grass sp.	Poaceae											1
Schedonorus	Meadow Fescue	Poaceae											4
pratensis													
Persicaria	Amphibious Bistort	Polygonaceae											4
amphibia													
Rumex acetosa	Common Sorrel	Polygonaceae											2
Rumex	Clustered Dock	Polygonaceae											
conglomeratus													

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### **NOT PROTECTIVELY MARKED**

Scientific name	Common name	Family	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30	Q31
Rumex obtusifolius	Broad-leaved Dock	Polygonaceae											1
Caltha palustris	Marsh-marigold	Ranunculaceae											
Ranunculus acris	Meadow Buttercup	Ranunculaceae						1	2				2
Ranunculus	Lesser Spearwort	Ranunculaceae						1	4			2	
flammula													
Ranunculus repens	Creeping Buttercup	Ranunculaceae								2		1	
Potentilla anserina	Silverweed	Rosaceae		2	1			5					
Galium palustre	Marsh Bedstraw	Rubiaceae	1					1	2	1	2	3	2



### **NOT PROTECTIVELY MARKED**

## **Table 11. NVC quadrat data Area 4 (continued)**

Scientific name	Common name	Family	Q32	Q33	Q34	Q35	Q36	Q37	Q38	Q39	Q40	Q41	Q42	Q43
Oenanthe fistulosa	Tubular Water- dropwort	Apiaceae	3											
Oenanthe lachenalii	Parsley Water- dropwort	Apiaceae							5		1			
Hydrocotyle vulgaris	Marsh Pennywort	Araliaceae							3		1			
Cirsium palustre	Marsh Thistle	Asteraceae		1										
Cardamine pratensis	Cuckooflower	Caryophyllaceae			1									
Silene flos- cuculi	Ragged Robin	Caryophyllaceae												
Calystegia sepium	Hedge Bindweed	Convolvaceae												
bolboschoenus maritimus	Sea Club-rush	Cyperaceae												10
Carex acutiformis	Lesser Pond- sedge	Cyperaceae						1						
Carex hirta	Hairy Sedge	Cyperaceae												
Carex nigra	Common Sedge	Cyperaceae	1	1			1				1			
Carex panicea	Carnation Sedge	Cyperaceae		8					1					
Carex sp.	Sedge sp.	Cyperaceae			1		5				4			
Eleocharis sp.	Spike rush	Cyperaceae												
Equisetum fluviatile	Water Horsetail	Equisetaceae						2						
Equisetum palustre	Marsh Horsetail	Equisetaceae												

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### **NOT PROTECTIVELY MARKED**

Scientific name	Common name	Family	Q32	Q33	Q34	Q35	Q36	Q37	Q38	Q39	Q40	Q41	Q42	Q43
Lotus	Marsh Bird's-	Fabaceae		3	3	3								
pedunculatus	foot-trefoil													
Trifolium	Red Clover	Fabaceae		1										
pratense														
Trifolium repens	White Clover	Fabaceae		4										
Vicia cracca	Tufted Vetch	Fabaceae		1		2			1					
Iris	Yellow Iris	Iridaceae				1					1			
pseudacorus														
Juncus	Sharp-flowered	Juncaceae				4								
acutiflorus	Rush													
Juncus	Jointed Rush	Juncaceae	2		2	1	5	8				1		
articulatus														
Juncus effusus	Soft-rush	Juncaceae	6		5	5								
Juncus gerardii	Saltmarsh Rush	Juncaceae												
Juncus inflexus	Hard Rush	Juncaceae	4	4		8	8	1	1					
Juncus	Blunt-flowered	Juncaceae	1	5				1	10	10	8	1	4	
subnodulosus	Rush													
Triglochin	Sea Arrowgrass	Juncaginaceae											5	
maritima														
Triglochin	Marsh	Juncaginaceae		1								8	4	1
palustris	Arrowgrass													
Mentha	Water Mint	Lamiaceae	4	5	1	6								
aquatica														
Fraxinus	Ash (seedling)	Oleaceae			1									
excelsior														
Epilobium	Hoary	Onagraceae				1								
parviflorum	Willowherb													
Plantago	Ribwort Plantain	Plantaginaceae		3										
lanceolata														

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### **NOT PROTECTIVELY MARKED**

Scientific name	Common name	Family	Q32	Q33	Q34	Q35	Q36	Q37	Q38	Q39	Q40	Q41	Q42	Q43
Agrostis stolonifera	Creeping Bent	Poaceae	10	8	10	9	7	8	8	9	10	10	9	4
Anthoxanthum odoratum	Sweet Vernal- grass	Poaceae												
Cynosurus cristatus	Crested Dog's- tail	Poaceae												
Glyceria fluitans	Floating Sweetgrass	Poaceae	1		4									
Holcus lanatus	Yorkshire-fog	Poaceae		2	1									
Phragmites australis	Common Reed	Poaceae					2	1	4	2	4	4	6	5
Poa sp.	Meadow-grass sp.	Poaceae		1										
Schedonorus pratensis	Meadow Fescue	Poaceae												
Persicaria amphibia	Amphibious Bistort	Polygonaceae	4											
Rumex acetosa	Common Sorrel	Polygonaceae				1								
Rumex conglomeratus	Clustered Dock	Polygonaceae	1		1	1								
Rumex obtusifolius	Broad-leaved Dock	Polygonaceae												
Caltha palustris	Marsh-marigold	Ranunculaceae					1	1						
Ranunculus acris	Meadow Buttercup	Ranunculaceae	2	1	4									
Ranunculus flammula	Lesser Spearwort	Ranunculaceae	3	1										
Ranunculus repens	Creeping Buttercup	Ranunculaceae												

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### **NOT PROTECTIVELY MARKED**

Scientific name	Common name	Family	Q32	Q33	Q34	Q35	Q36	Q37	Q38	Q39	Q40	Q41	Q42	Q43
Potentilla	Silverweed	Rosaceae	1	2										
anserina														
Galium palustre	Marsh Bedstraw	Rubiaceae	1	1	1	4	2	1	2	1				

## C.2. Secondary species lists

Table 12. Plant species list recorded in Area 4 outside of the quadrat

Scientific name	Common name	Family	Field
Berula erecta	Lesser Water-parsnip	Apiaceae	В
Blysmus compressus	Flat-sedge	Cyperaceae	С
Carex paniculata	Greater Tussock-sedge	Cyperaceae	В
Schoenoplectus tabernaemontani	Grey Club-rush	Cyperaceae	В
Hypericum tetrapterum	Square-stalked St John's-wort	Hypericaceae	E
Juncus bufonius	Toad Rush	Juncaceae	D
Lycopus europaeus	Gypsywort	Lamiaceae	В
Veronica beccabunga	Brooklime	Plantaginaceae	E
Alopecurus geniculatus	Marsh Foxtail	Poaceae	B, D, E
Elymus repens	Common Couch	Poaceae	D
Polygonum aviculare	Knotgrass	Polygonaceae	E
Rumex hydrolapathus	Water Dock	Polygonaceae	В
Anagallis tenella	Bog Pimpernel	Primulaceae	E
Ranunculus sceleratus	Celery-leaved Buttercup	Ranunculaceae	D
Solanum dulcamara	Bittersweet	Solanaceae	В

## C.3. Further survey info



### **NOT PROTECTIVELY MARKED**

**Table 13: Survey details of Area 4 NVC quadrats** 

Quadrat	Field	Grid Reference	Date	Details
Q1	A	TM 46883 63802	18.08.2020	FEN-MEADOW
Q2	A	TM 46858 63805	18.08.2020	FEN-MEADOW
Q3	A	TM 46885 63731	18.08.2020	JUN.SUB
Q4	С	TM 46864 63686	18.08.2020	JUN.SUB
Q5	С	TM 46855 63660	18.08.2020	JUN.EFF
Q6	Е	TM 46900 63435	18.08.2020	JUN.SUB
Q7	E	TM 46909 63527	18.08.2020	JUN.SUB
Q8	D	TM 46933 63620	18.08.2020	JUN.EFF
Q9	D	TM 46989 63689	18.08.2020	JUN.EFF
Q10	D	TM 46961 63610	18.08.2020	JUN.SUB
Q11	Е	TM 46848 63402	19.08.2020	JUN.EFF
Q12	Е	TM 46849 63450	19.08.2020	JUN.EFF
Q13	Е	TM 46883 63490	19.08.2020	FEN-MEADOW



### **NOT PROTECTIVELY MARKED**

Quadrat	Field	Grid Reference	Date	Details
Q14	D	TM 46974 63585	19.08.2020	FEN-MEADOW
Q15	D	TM 46991 63668	19.08.2020	JUN.SUB
Q16	В	TM 46943 63757	20.08.2020	FLOODED
Q17	В	TM 46955 63755	20.08.2020	FLOODED
Q18	В	TM 46947 63801	20.08.2020	FLOODED
Q19	В	TM 46924 63869	20.08.2020	FLOODED
Q20	В	TM 46949 63880	20.08.2020	FLOODED
E1	А	TM 46848 63824	20.08.2020	Extra
E2	А	TM 46855 63764	20.08.2020	Extra
E3	А	TM 46854 63714	20.08.2020	Extra



### SIZEWELL C PROJECT - NATTERJACK TOAD SURVEY REPORT

### **NOT PROTECTIVELY MARKED**

## **NATTERJACK TOAD SURVEY REPORT**



## SIZEWELL C PROJECT – NATTERJACK TOAD SURVEY REPORT

### **NOT PROTECTIVELY MARKED**

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### 1 SUMMARY

## 1.1 Receptor Status 2020 Summary Overview

- 1.1.1 Four ponds were created for natterjack toad between 2004-2018, with tadpoles being translocated into two of them in 2005. Previous survey data, supplied by Suffolk Wildlife Trust (2005-2019), recorded natterjack toad in one pond, N1.
- 1.1.2 The potential impacts on the natterjack toad population supported by pond N1 is assessed in the Volume 2, Chapter 14 of the Sizewell C Project Environment Statement (ES) (App-224) (Ref. 1) which also outlines the requirements for mitigation and residual effects. Mitigation is discussed in more detail in the Sizewell C Project Natterjack Toad Method Statement (App-252) (Ref. 2) and Sizewell C Project Natterjack Toad Mitigation Strategy (App-252) (Ref. 3).
- 1.1.3 Surveys undertaken by Arcadis in 2020 confirmed the continued presence of natterjack toad tadpoles and adults in and adjacent to pond N1.
- 1.1.4 The results of the 2020 survey support the Development Consent Order (DCO) assessment submitted in the Sizewell C Project ES (App-224) (Ref.1). The proposed mitigation and residual effects submitted for the DCO would remain the same.

### 2 OVERVIEW

## 2.1 The Aims of the 2020 Survey Updates

2.1.1 Natterjack toad surveys were undertaken in 2020 to update the natterjack toad baseline and provide a baseline for future monitoring and inform the required European Protected Species Licences to permit development to proceed.

### 2.2 Submitted Baseline

Two ponds (N1 and N2) were created in 2004 at Retsom's Field (Figure 14C7B.2, **Appendix A**) by Suffolk Wildlife Trust, with two further ponds were created post 2015. In 2005 tadpoles from existing populations in Norfolk were introduced to pond N1 and N2. Subsequently, only N1 has remained as a successful breeding site as N2 dried out within 2 years of creation.



2.2.2 Pond N1 has been surveyed from 2005 – 2019 by Suffolk Wildlife Trust, the submitted baseline results of which are presented in **Table 1**, alongside the Suffolk Wildlife Trusts results from 2020.

Table 1: Summary results from SWT natterjack toad surveys - Pond N1

Year	Estimated Natterjack Tadpole Peak Counts	Adults Seen	Spawn Strings	Toadlets
2005	All the tadpoles disappeared from the pond with the butyl liner			
2006	The clay lined pond was damaged and all tadpoles killed.	1		
2007		Males seen and heard	Large number	Some
2008	3,000			
2009	3,000		16	A number
2010	2,500			None known to have emerged
2011	3,000		First strings in April. Second spawning in late July	Toadlets emerged
2012	5,000		8 in April 4-6 strings in July (but no survival)	
2013	5,000	Toads seen mating		A good number
2014	6-8,000 (more likely 10,000+)		11-13 in May	200+ June/July
2015	5,000+		First strings seen in May. Second brood of strings in July	200+
2016	2,500-3,000	2 adult couplings seen	2	Minimum of 450



Year	Estimated Natterjack Tadpole Peak Counts	Adults Seen	Spawn Strings	Toadlets
2017	0	Single juvenile / small adult (2.5" long)	0	
2018	15,000 (conservative estimate)	Single	8 in May 6 in June	300-500
2019	10,000 in May	Four adults in pond on 3 <sup>rd</sup> May Torch-surveys in mid-June found adults utilising the rabbit warren burrows up to 30+ metres SW of the pond	7 in May 3 in July	Several hundreds in May A few hundred in July
2020	1 <sup>st</sup> June: 500 20 <sup>th</sup> July: 600	2 in amplexus (during daytime) and 5 males, 1 female (during night-time) in May, including one individual recorded within rabbit warrens alongside N1.  6 males in June, including the same individual in the rabbit warren recorded in May  3 males in July, including one individual within Retsom's field south of N1.	4 in May 1 in July	60 in June 1 in August

- 2.2.3 The natterjack toads recorded at Pond N1 are thought to hibernate in rabbit warrens within Retsom's Field.
- 2.2.4 Pond N3 was excavated in Retsom's Field in 2015; no natterjack toad tadpoles were introduced, and no sightings have been recorded by Suffolk Wildlife Trust at this pond to date. In 2018, the RSPB created a new pond/scrape (N4) complex on Minsmere Levels, immediately to the north of Retsom's Field; however, there has been no signs of breeding in either of these ponds to date.
- 2.2.5 Natterjack toad was considered to be an Important Ecological Feature at the national level under the Chartered Institute of Ecology and Environmental Management (CIEEM) guidelines and of high importance, following the Environmental Impact Assessment specific assessment methodology in Sizewell C Project Main Development Site: Volume 2, Chapter 14: Appendix 14A5 Amphibians (App-233) (Ref 1). A summary of effects arising from the development for natterjack toad is located in Sizewell C Project Main Development Site: Volume 2, Chapter 14, Tables 14.19 and 14.20 (App-224) (Ref 1). Further detail pertaining to proposed mitigation is



set out in the Sizewell C Project Natterjack Toad Method Statement (<u>App-252</u>) (Ref. 2) and Sizewell C Project Natterjack Toad Mitigation Strategy (<u>App-252</u>) (Ref. 3) which includes:

- Ring fencing the Water Management Zone (WMZ) and trapping and translocating individuals to a safe location adjacent to the breeding pond.
- Works to be avoided during nocturnal hours and lighting to follow best practice to minimise disturbance and sky glow off site.
- A new strategically placed pond to be created and refuge and overwintering opportunities in Retsom's Field to be improved.

## 2.3 Update Surveys

2.3.1 All natterjack toad ponds (N1-N4) were surveyed in 2020.

### 3 METHODS

- 3.1.1 Surveys were undertaken by Duncan Sweeting (survey licence holder: 2020-49068-SCI-SCI) initially an accredited agent working on John Baker's licence (reference number: 2020-45307-SCI-SCI) and was assisted Ana Pino Blanco and/or Toby Abrehart (MCIEEM) (dates provided in **Appendix B**, **Table 3**).
- 3.1.2 Survey methodology was undertaken in accordance with Natural England Standing Advice (Ref 4) and methodologies detailed in Beebee & Denton (Ref 5) including:
  - Torchlight surveys (night searches) were undertaken between May and July, between dusk and dawn and on mild or warm nights (10 - 15°C) with preference for survey during or after rain.
  - Searches for toads under refugia were carried out during the daytime between Spring and Autumn and during mild weather (in hot weather toads spend more time underground).
  - Spawn string counts were undertaken at least once a week from May to July.
  - Systematic terrestrial habitat searches were undertaken of the survey area, working back and forth, undertaking a visual search for suitable habitat looking for toads foraging, hibernation, and burrows areas. Terrestrial habitat searches were undertaken between May and July,



during daylight hours on mild or warm days (10 - 15°C with a preference for survey during or after rain that week), at least once a week and using an endoscope to look into burrows to look for sheltering toads.

 The age of captured animals (by measuring them) was assessed and the following parameters were also recorded: weather data at site; animal sex; stage of life; number (tadpoles, spawn strings, etc.); snoutvent length (SVL) measurements; photograph (avoiding females spawning and males in amplexus); and location.

### 4 RESULTS

4.1.1 A summary of the 2020 Arcadis survey is presented in **Table 2**; raw data is detailed in **Table 3**, **Appendix B**.

Table 2: Summary results from Arcadis 2020 natterjack toad surveys

Pond	Estimated natterjack tadpole peak counts	Spawn strings	Estimate of female numbers	Estimate of adult population size
N1	600-800	5 in May 1 in June/July <sup>1</sup>	7	12 <sup>2</sup>
N2	0	0	0	0
N3	0	0	0	0
N4	0	0	0	0

## 5 DISCUSSION

- 5.1.1 It appears that, subject to natural fluctuation, the adult population size has remained relatively constant. The indicative adult population size for 2020 is estimated at around 12 adult natterjack toads and it is possible (though improbable) that the population within Retsom's Field has some genetic interchange with the population in Minsmere. It is assessed that the population is of national significance.
- 5.1.2 It should be noted that, with the exception of years where breeding has failed (2006-2007 and 2017), the tadpole peak count observed by Arcadis in 2020 were the lowest since recording began. This has been attributed to corvid predation that was recorded this year. N1 is surrounded by stock proof fencing and the supporting posts provided corvid perch locations. It is unclear

<sup>&</sup>lt;sup>1</sup> The spawn string in June/July was not recorded and is based on the presence of tadpoles. Female count assumes May and June/July spawn strings are from different females as breeding within one or two months.

<sup>&</sup>lt;sup>2</sup> 5 of the male adults that were recorded within N1 on 14th July were the same individuals recorded on 21st May.



why the impacts of corvid on tadpoles were so severe in 2020 (this factor had not been noted in previous years) but measures are being explored to prevent this for 2021, which may include netting over the pond.

- The 2020 results presented above do not change the assessment of impacts on natterjack toad presented at Section 14.10c of the Sizewell C Project ES (App-224) (Ref. 1) and does not change the proposed mitigation presented in the Natterjack Toad Method Statement (App-252) (Ref. 2) and Mitigation Strategy (App-252) (Ref. 3).
- 5.1.4 Mitigation for natterjack will be secured by a suite of documents that will evolve through the development process, these are:
  - Natterjack Toad Draft Licence (part one and part 2) and accompanying method statement (App-252) (Ref. 2); and
  - Natterjack Toad Mitigation Strategy (<u>App-252</u>) (Ref. 3).

### 6 CONCLUSION

6.1.1 The results of the 2020 natterjack toad survey supports the DCO assessment based on the previous baseline survey data submitted in the Sizewell C Project ES (App-224) (Ref. 1). The proposed mitigation and the residual effects submitted for the Sizewell C Project DCO would remain the same as that submitted in Sizewell C Project ES (App-224) (Ref. 1).

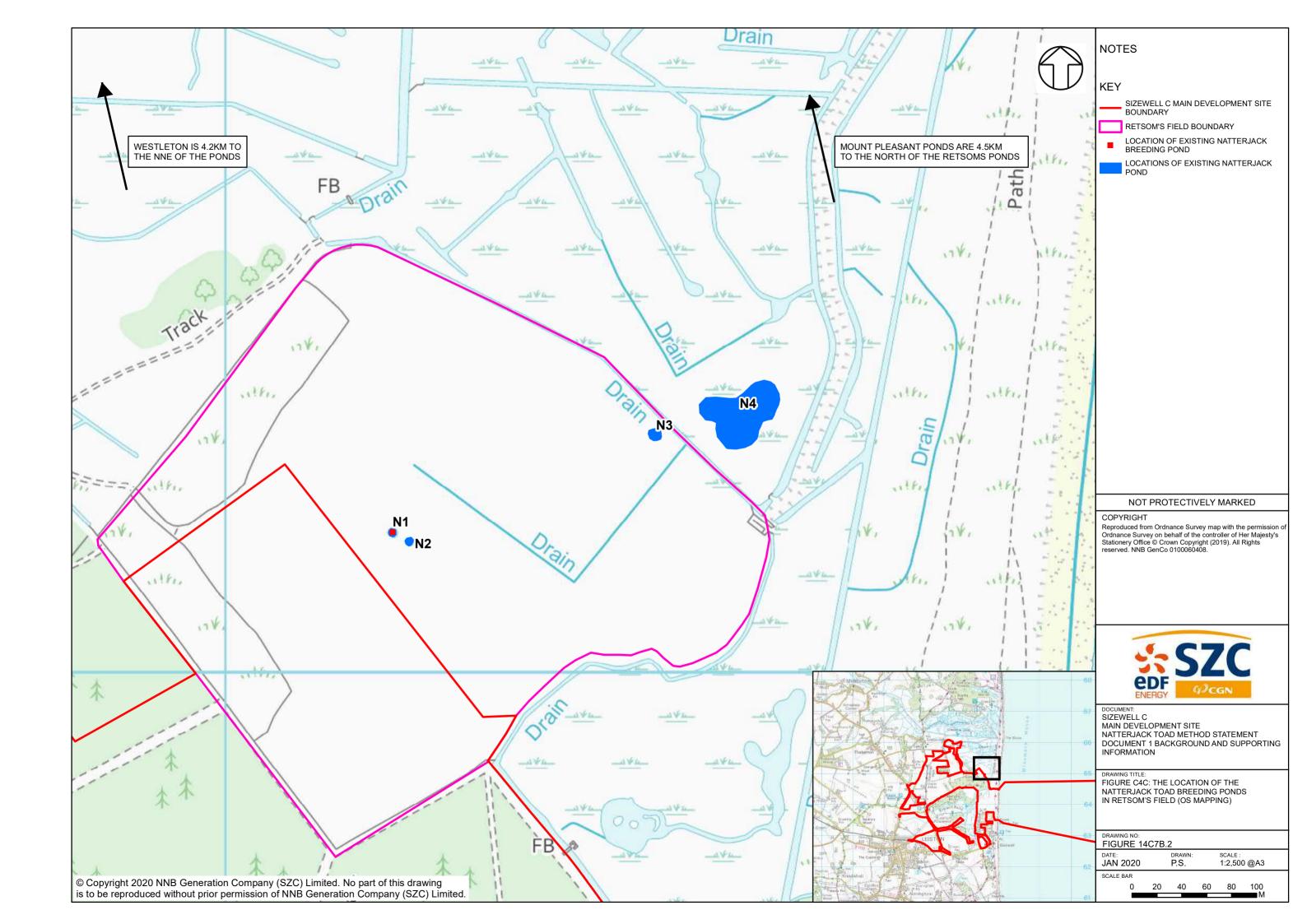


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APPENDIX A: FIGURES

A.1. Figure 14C7B.2





## APPENDIX B: 2020 NATTERJACK TOAD SURVEY RESULTS



Table 3: Natterjack toad survey results 2020

Date	Pond	Spawn strings	Tadpoles	Metamorphs	Notes
21.05.2020	N1	4pr	0	0	Males calling in pond 1
					Female laying spawn in the pond making a total of 5 string pr by the end of the night
	N2	0	0	0	Pond dry
	N3	0	0	0	No active signs Common toads nearby
	N4	0	0	0	No active signs Common toads nearby
29.05.2020	N1	0	600-800	0	Tadpoles hundreds
	N2	0	0	0	Pond dry
	N3	0	0	0	N/A
	N4	0	0	0	N/A
01.06.2020	N1	0	500-700	0	Tadpoles hundreds
	N2	0	0	0	Pond dry
	N3	0	0	0	N/A
	N4	0	0	0	N/A
08.06.2020	N1	0	400-600	0	Tadpoles hundreds
	N2	0	0	0	Pond dry



Date	Pond	Spawn strings	Tadpoles	Metamorphs	Notes
	N3	0	0	0	N/A
	N4	0	0	0	N/A
15.06.2020	N1	0	200-400	0	Tadpoles hundreds
	N2	0	0	0	Pond dry
	N3	0	0	0	Water level 18cm
	N4	0	0	0	N/A
22.06.2020	N1	0	200	150-200	Metamorphs leaving pond, being attacked by corvids and ants (hundreds of metamorphs)
	N2	0	0	0	Pond dry
	N3	0	0	0	Water level 10cm
	N4	0	0	0	N/A
29.06.2020	N1	0	0	0	N/A
	N2	0	0	0	Pond dry
	N3	0	0	0	Water level 8cm
	N4	0	0	0	N/A
06.07.2020	N1	0	0	0	No animals seen
	N2	0	0	0	Pond dry
	N3	0	0	0	Water level 7cm



Date	Pond	Spawn strings	Tadpoles	Metamorphs	Notes
	N4	0	0	0	N/A
14.07.2020	N1	0	150-200	0	Five male adults in pond calling (22.45 onwards)
					All animals absent from pond at dawn (except tadpoles)
					Good conditions, rain night before
					Five males all recaptures from 21/05/2020
	N2	0	0	0	Pond dry
	N3	0	0	0	Water level 4cm
	N4	0	0	0	N/A



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## **PHASE 1 HABITAT SURVEY UPDATE 2020**



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### 1 SUMMARY

## 1.1 Receptor Status 2020 Summary Overview

- 1.1.1 Phase 1 habitat surveys of land associated with the proposed Sizewell C main development site were undertaken by Wood Group between 2010-2012 (App-229) (Ref. 1) with surveys undertaken by Arcadis in 2019 of an area of Sizewell Marshes Site of Special Scientific Interest (SSSI) and two sandpits located either side of the bridleway to Upper Abbey Farm. Habitat classification was incidentally monitored during other ecological surveys undertaken between 2014-2019 by Arcadis and any changes in habitat classification were noted.
- 1.1.2 The surveys undertaken between 2010 and 2019 identified the largest component of the proposed development site comprised arable farmland habitat. Away from the arable fields, a diverse range of habitats were present, including broadleaved woodland, conifer plantation, acid grassland, dune grassland, vegetated shingle and wetland (including fen meadow, wet woodland, ditches and reedbed).
- 1.1.3 An updated Phase 1 habitat survey was undertaken by Arcadis in 2020. The survey found habitats within the site have remained broadly consistent with the results recorded during the 2010-2012 Phase 1 habitat surveys. Differences were recorded in limited areas and these are included in the updated habitat mapping shown as Figure 1.
- 1.1.4 The results of the 2020 update Phase 1 habitat survey support the DCO assessment based on the previous baseline survey data submitted in the Sizewell C Project Environmental Statement (ES) (App-224) (Ref. 7).

### 2 OVERVIEW

### 2.1 The Aims of the Survey Updates

- 2.1.1 The aim of the 2020 Phase 1 habitat survey update was to identify any changes to habitats within the proposed development site, update the existing baseline and provide a baseline for future monitoring.
- 2.2 Submitted Baseline
- 2.2.1 Previous Phase 1 habitat surveys undertaken by Wood Group 2010-2012 (App-229) (Ref. 1) identified that the largest component of the proposed development site was arable farmland habitat, intensively managed and of little intrinsic botanical diversity, although the margins of the fields support



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two uncommon arable weeds, Corn Spurrey (Spergula arvensis) and Shepherd's Cress (Teesdalia nudicaulis).

- Away from the arable fields, a diverse range of habitats were present, including broadleaved woodland, conifer plantation, acid grassland, dune grassland, vegetated shingle and wetland (including fen meadow, wet woodland, ditches and reedbed). These included habitats of national importance, the wetland habitats within Sizewell Marshes Site of Special Scientific Interest (SSSI), and the dune and shingle vegetation forming part of the Suffolk Shingle Beaches County Wildlife Site (CWS). Habitats of county importance included mixed and broad-leaved woodland and acid grassland. To the north of the site, the Minsmere to Walberswick Heaths and Marshes Special Area of Conservation (SAC) supported wetland, heathland and coastal vegetation of international importance (App-229) (Ref. 1).
- A Phase 1 habitat survey and NVC survey was undertaken by Arcadis is 2019 of an area of Sizewell Marshes SSSI to accommodate footpath to bypass Rosary Cottages as part of the SZB relocated facilities proposals. The surveys identified that the habitat within the portion of Sizewell Marshes SSSI due to be lost to accommodate the main platform and crossing comprised wet woodland, reedbed, fen meadow and ditches which supported a diverse range of aquatic plant communities (App-229) (Ref. 1).
- A Phase 1 habitat survey and NVC survey was undertaken by Arcadis in 2019 of two sandpits located either side of the bridleway to Upper Abbey Farm. The Phase 1 habitat survey and NVC survey of the sandpits identified that the sandpits supported a mixture of semi-natural broadleaved woodland, dense scrub, species-poor semi-improved grassland, tall ruderal vegetation and occasional scattered mature trees (App-229) (Ref. 1).
- 2.2.5 **Table 1** provides a summary of the value of the habitats present within the proposed development site boundary as assessed in the Environmental Statement (App-229) (Ref. 1).

Table 1: Summary of the importance of ecological receptors as assessed in the Main Development Site Environmental Statement

Feature/Receptor	Importance (CIEEM/EIA Methodology).
Arable habitat	Local/Low
Conifer and mixed plantation	Local/Low



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Feature/Receptor	Importance (CIEEM/EIA Methodology).
Broad-leaved woodland	County/Medium
Wet woodland (within Sizewell Marshes SSSI)	National/High
Hedgerow and scrub	Local/Low
Platform grassland	Local/Low
Deptford Pink	County/Medium
Acid grassland	County/Medium
Arable reversion to acid grassland (reptile receptor areas and Aldhurst farm)	Local/Low
Rush pasture and fen meadow (within Minsmere to Walberswick Heaths and Marshes SSSI and Sizewell Marshes SSSI)	National/High
Reedbed (within Sizewell Marshes SSSI)	National/High

## 2.3 2020 Update surveys

2.3.1 In addition to the Phase 1 Habitat survey, detailed botanical surveys were undertaken on a number of vegetation types across the main development site during 2020 and are reported in the NVC Survey Report.



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## 3 METHODS

- 3.1.1 A Phase 1 habitat survey was undertaken in July and September 2020 by Porscha Thompson (MCIEEM) and Richard Prew (GradCIEEM). The survey area comprised all habitats within the site boundary, where access was possible, to assess the baseline ecological conditions on the site.
- 3.1.2 The survey used the existing survey as a baseline and the survey involved checking that the dominant habitat types previously identified and mapped following the Phase 1 habitat survey methodology recommended by the Joint Nature Conservation Committee (JNCC) (Ref. 4) were still consistent with previous survey results. Where habitats differed from what was previously recorded this was updated to reflect current site conditions. Dominant plant species were noted, as were any uncommon species or species indicative of particular habitat types. Botanical names follow 'New Flora of the British Isles' (Ref. 5).
- 3.1.3 Any non-native invasive species present within and adjacent to the site were also recorded.

## 4 RESULTS

4.1.1 The baseline is largely aligned with the previous surveys undertaken by Wood Group (App-229) (Ref. 1), however there were a few discrete areas where differences were recorded. The results of the 2020 updated Phase 1 habitat survey are presented on **Figure 1**. The following paragraphs describe those limited areas in which the 2020 survey recorded changes or additions to the vegetation described in the Sizewell C ES (App-229) (Ref. 1) on the basis primarily of the 2010-12 survey:

### **Invasive Species**

4.1.2 Several stands of Japanese Rose (*Rosa rugosa*) were recorded along the boundary of conifer plantation woodland surrounding Retsom's Field (Target Note 1). Incidental records of Indian (Himalayan) Balsam (*Impatiens glandulifera*) were also noted outside of the development boundary (Target Note 2) This species is included on Schedule 9 of the Wildlife and Countryside Act 1981 (Ref. 6).

#### Scrub

4.1.3 Areas of dense mature scrub were recorded along the boundary of an arable field to the west of Studio Field, reflecting maturing plantings in this area (Target Note 3). Species recorded in these areas comprised Elm (*Ulmus* sp.),



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Bramble (*Rubus fruticosus* agg.), Oak (*Quercus* sp.), Travellers-joy (*Clematis vitalba*), young Sycamore (*Acer pseudoplatanus*), Hawthorn (*Crataegus monogyna*), Field Maple (*Acer campestre*), Gorse (*Ulex europaeus*) and Blackthorn (*Prunus spinosa*).

### Scattered Trees/Line of Trees

- 4.1.4 A line of mature Oak trees and occasional Pine (*Pinus* sp.) were recorded between two arable fields (Badgers Burrow and Old Covey) that was previously mapped as semi-natural broadleaved woodland (Target Note 4).
- 4.1.5 A line of mature Oak trees and Ash trees was recorded south-west of Upper Abbey Farm that was previously recorded as a species poor hedgerow with trees (Target Note 5).

### Semi-improved Acid Grassland

An area of semi-improved acid grassland was recorded to the south of Lower Abbey Farm at Black Walks that was previously recorded as neutral semi-improved grassland (Target Note 6). The species composition was mostly consistent with the area of semi-improved acid grassland previously recorded to the east with Common Bent (*Agrostis capillaris*) dominant with abundant Sheep's Sorrel (*Rumex acetosella*) and Lady's Bedstraw (*Galium verum*) recorded. There was much evidence of rabbit grazing creating areas of bare ground and moss (*Polytrichum* sp.) and lichen (*Cladonia* sp.) dominated patches. Sand Sedge (*Carex arenaria*) was present but at lower density than the area to the east.

### Species Poor Semi-improved Grassland

Areas of species poor semi-improved grassland with scattered scrub and scattered young trees were recorded along the north boundary of an arable field to the west of the Studio Fields complex that was previously recorded as arable land (TN7). Within this area the sward was dominated by False Oat-grass (*Arrhenatherum elatius*) with Couch (*Elytrigia* sp.) and Cock's-foot (*Dactylis glomerata*) recorded less frequently. Forbes within these areas comprised Field Bindweed (*Convolvulus arvensis*), Common Nettle (*Urtica dioica*), Yarrow (*Achillea millefolium*), Ribwort Plantain (*Plantago lanceolata*), Common Mallow (*Malva sylvestris*), Perforate St John's-wort (*Hypericum perforatum*), Common Stork's-bill (*Erodium cicutarium*), Sheep's Sorrel and White Campion (*Silene latifolia*). Areas of bare ground were also recorded. Scrub species within these areas comprised Bramble, Gorse, Hawthorn, Rose (*Rosa* sp.) and Tree Lupin (*Lupinus arboreus*). Scattered trees comprised young Sycamore and Oak trees.



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4.1.8 Within the same arable field, a sloped area of species poor semi-improved grassland with scattered scrub was recorded in the middle of the arable field (Target Note 8). Within this area towards the lower gradient of the slope the presence of Creeping Bent (*Agrostis stolonifera*), Horsetail (*Equisetum* sp.) and Spike-rush (*Eleocharis* sp.) indicated that this section of the grassland has periodically wetter conditions. Moving up the slope, drier conditions were noted with the species composition comprising predominantly Yorkshire-fog (*Holcus lanatus*) and Cock's-foot. Forbes recorded comprised Creeping Thistle (*Cirsium arvense*), Common Fleabane (*Pulicaria dysenterica*), Hawkweed (*Hieracium* sp.), Common Ragwort (*Senecio jacobaea*), Creeping Buttercup (*Ranunculus repens*), Redshank (*Persicaria maculosa*) and Spear Thistle (*Cirsium vulgare*). Bramble and Willow (*Salix* sp.) scrub was noted scattered throughout the grassland area. Well established ant hills were also recorded in this area.

#### Bracken

4.1.9 An area of dense Bracken (*Pteridium aquilinum*) was recorded along the north boundary of an arable field to the west of Studio Fields complex that was previously recorded as arable land (Target Note 9).

### Standing Water

- 4.1.10 Two new and perhaps temporary waterbodies were recorded on the edge of arable fields likely the result of irrigation run off. A shallow waterbody recorded on the eastern boundary of south Stone Walk (Target Note 10). The waterbody was heavily vegetated with Club-rush (*Schoenoplectus* sp.) and sedge species (*Carex* sp.) with occasional patches of open water.
- 4.1.11 An area of shallow open water was also recorded within a field depression on the western boundary of Badger Burrow (Target Note 11).

### Arable

4.1.12 An area of arable cover crop was recorded north of Upper Abbey Farm that was previously recorded as species poor semi-improved grassland (Target Note 12). Species recorded within this area comprised Sunflower (*Helianthus* sp.), Alkanet (*Anchusa officinalis*), Bristle-grass (*Setaria* sp.), Fat-hen (*Chenopodium album*), Borage (*Borago officinalis*), Viper's-bugloss (*Echium vulgare*), Scarlet Pimpernel (*Anagallis arvensis*) along with Crucifer and Lettuce (*Lactuca* sp.) species. This planting forms part of the habitat diversification of this area for marsh harrier compensatory foraging habitats.



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### Hedgerows

4.1.13 Three hedgerows not previously mapped were noted and recorded during the 2020 Phase 1 habitat survey along the lane running directly to the east of Upper Abbey Farm. Two hedgerows were also recorded within arable fields to the east of Upper Abbey Farm. The details of these hedgerows are presented in **Table 2**.

**Table 2: Hedgerow descriptions** 

Hedgerow number	Phase 1 Habitat category	Description
1	Hedge with trees species- poor	Hedgerow comprising predominantly elm with scattered mature Oak and Ash trees.
2	Hedgerow with trees species poor	Hedgerow comprising predominantly Elm with occasional Hawthorn and Blackthorn with a dense Ivy coverage with mature Ash tree.
3	Intact hedge species poor	Hedgerow comprising Hawthorn and Blackthorn with a dense Ivy coverage
4	Hedge with trees species poor	Hedgerow comprising Hawthorn and Blackthorn and elm with Crab Apple (Malus sylvestris) tree.
5	Defunct hedge species poor	Hedgerow comprising Hawthorn and Blackthorn.

## 5 DISCUSSION

An update Phase 1 habitat survey was undertaken of land associated with the proposed Sizewell C Main Development Site by Arcadis in 2020. The 2020 survey undertaken by Arcadis found habitats within the site have remained broadly consistent with the results recorded during Phase 1 habitat surveys undertaken in 2010-2012 by Wood Group and in 2019 by Arcadis (App-229) (Ref. 1), however there were a few discrete areas where differences were recorded. Habitats recorded during the 2020 surveys comprised lines of deciduous trees, dense and scattered scrub, semi-improved acid grassland, species poor semi-improved grassland, dense bracken, standing waterbodies, hedgerows and arable land.



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5.1.2 The survey results presented above do not change the assessment of impacts on plants and habitats presented at Section 14.7 in the Environmental Statement.

## 6 CONCLUSION

6.1.1 The results of the 2020 update Phase 1 habitat survey supports the DCO assessment based on the previous baseline survey data submitted in the Sizewell C Project ES (App-224) (Ref. 7).



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### **NOT PROTECTIVELY MARKED**

**APPENDIX A: Figures** 

A.1. Figures

