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Appendix 11.1: Kemsley Ornithological Surveys

Wheelabrator Kemsley (K3 Generating Station) and Wheelabrator Kemsley North (WKN) Waste to Energy Facility DCO

September 2019 -Submission Version **PINS ref: EN010083**

WHEELABRATOR KEMSLEY GENERATING STATION (K3) AND WHEELABRATOR KEMSLEY NORTH (WKN) WASTE TO ENERGY FACILITY DCO: ORNITHOLOGICAL SURVEYS 2019

WHEELABRATOR KEMSLEY GENERATING STATION (K3) AND WHEELABRATOR KEMSLEY NORTH (WKN) WASTE TO ENERGY FACILITY DCO:
ORNITHOLOGICAL SURVEYS 2018-9

September 2019

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EXECUTIVE SUMMARY

- RPS were commissioned by Wheelabrator Technologies Inc. to provide ecology consultancy services in relation to the development of Wheelabrator Kemsley ('K3' Generating Station) and the construction and operation of a waste-to-energy facility on adjacent land called Wheelabrator Kemsley North (WKN) at Kemsley Paper Mill, Sittingbourne, Kent.
- Previous ornithological surveys were undertaken in 2009 and 2016 by RPS (2009 & 2016) to inform the EfW application. This updated survey focuses on changes to the site area with respect to the ornithological interest.
- Survey methods included: Low and high tide counts of intertidal waterbirds, carried out between March 2018 – May 2018 and August 2018 – February 2019; territory mapping of breeding birds, undertaken comprising five survey visits between 11th April 2018 and 18th June 2018 and Marsh Harrier roost surveys, undertaken between January-March and October-December.
- A peak count of five Marsh Harriers were observed roosting within the reedbed area to the north of the survey area in November 2018, indicating the importance of the reedbed habitat to this species. Although the recorded peak number of Marsh Harriers entering the roost site in 2018 (5) is lower than previously recorded in 2016 (13) the reasoning for this reduction in numbers is unclear as the reedbed is of similar size and habitat quality in 2018 to when previously surveyed. With no data on the number of Marsh Harriers roosting in the reedbed in the intervening period, it is difficult to be sure of the driver of change.
- A total of 37 species were recorded during the survey of breeding birds at Kemsley between March and June. Of these species, four were confirmed to be breeding and 24 species were considered to be probably / possibly breeding, resulting in a breeding bird assemblage of 28 species. Records relating to the remaining nine species were considered to be of non-breeding individuals.
- One species (Marsh Harrier), which is afforded special protection, due to its inclusion on Annex 1 of the EU Birds Directive and two species (Marsh Harrier, Cetti's Warbler) afforded special statutory protection under or Schedule 1 of the Wildlife and Countryside Act, were found to be possibly be breeding within the Kemsley survey area.
- The single pair of Marsh Harrier within the reedbed area are considered to be of importance within the context of The Swale SPA with a population approaching that of county importance. Four territories of Cetti's Warbler within the survey area are considered to be of no more than local importance.
- Overall, the site contains a diversity of species and is of local importance as in 2009, 2016 and 2018. The loss of several species as breeding species (and associated effect on overall assemblage) is probably attributable to wider population declines of those particular species, whereas scrub clearance on site has probably affected total numbers of bird territories rather than species' presence/absence. Exact comparison between years is difficult since the extensive habitat creation associated with K3 will only be undertaken once construction is complete. It is likely that further surveys in later years as the mitigation habitat matures would find the site supporting similar numbers to those found in 2009 pre-construction.

- Six of the species recorded as breeding or probably breeding within the survey area in 2018 (Bullfinch, Cuckoo, Dunnock, Linnet, Reed Bunting and Song Thrush) are listed in Section 41 of the NERC Act 2006 as being of principal importance for the conservation of biodiversity in England. House Sparrows, which were also recorded within the survey area, are listed within the same section but were not breeding on the site.

- Three of the species recorded as breeding or probably/possibly breeding (Cuckoo, Linnet and Song Thrush) are included on the BoCC Red List. Although not breeding on site, two of the species recorded (Grey Wagtail and House Sparrow) are on the BoCC Red List.

- Five of the species recorded as breeding or probably/possibly breeding (Dunnock, Mallard, Marsh Harrier, Reed Bunting and Shelduck) are included on the BoCC Amber List. Although not breeding on site, two of the species recorded (Bullfinch and Garganey) are on the BoCC Amber List.

- A total of 53 species of waterbird were recorded using the intertidal survey area in 2018, and overall site usage peaked in February. Twenty-one species are included as interest features of The Swale SPA (either assemblage or in their own right) and/or Ramsar site (Avocet, Bar-tailed Godwit, Black-tailed Godwit, Brent Goose [Dark-bellied], Curlew, Dunlin, Greenshank, Grey Plover, Knot, Lapwing, Little Egret, Little Grebe, Oystercatcher, Pintail, Ringed Plover, Redshank, Shelduck, , Teal, Whimbrel and Wigeon).

- The peak count of one species (Black-tailed Godwit) recorded within the Kemsley survey area in 2018 represented 1% or more of the international population estimate.

- The peak counts of two species (Black-tailed Godwit and Whimbrel) recorded within the Kemsley survey area in 2018 represented 1% or more of the national population estimate for Great Britain.

- Significant proportions (>5%) of The Swale SPA populations for seven of the cited wintering and/or passage waterbird species were recorded. In winter these were Avocet, Black-tailed Godwit, Grey Plover, Knot, Pintail and Redshank; in spring these were Black-tailed Godwit and Redshank; and in autumn these were Black-tailed Godwit, Ringed Plover.

1 INTRODUCTION

Background to the study

1.1 RPS were commissioned by Wheelabrator Technologies Inc. to provide ecology consultancy services in relation to the development of Wheelabrator Kemsley ('K3' Generating Station) and the construction and operation of a waste-to-energy facility on adjacent land called Wheelabrator Kemsley North (WKN) at Kemsley Paper Mill, Sittingbourne, Kent.

1.2 The current study was commissioned to update surveys undertaken in 2009 and 2016 to inform the EfW application, with particular reference to any changes in the ornithological interest of the area. Bird survey reporting from 2016 is provided in Appendix 1 while that from 2009 is presented in Document 3.3 of the DCO Application.

1.3 Ornithological surveys at Kemsley were previously undertaken in 2009 and 2016 which included breeding bird surveys, intertidal waterbird surveys and Marsh Harrier roost surveys.

1.4 Surveys in 2018-19 comprised:

- Marsh Harrier roost surveys;
- breeding bird surveys; and
- intertidal waterbird surveys.

Conservation status

1.5 Due to the potential of the proposed development having adverse impacts on The Swale Special Protection Area (SPA), it was necessary to implement a study of those breeding and non-breeding waterbird species cited as interest features.

1.6 The legislative provisions for the protection of wild birds in the UK are contained primarily in Section 1- 7 of the Wildlife and Countryside Act (WCA) 1981 (as amended). Under the WCA, a wild bird is defined as any bird of a species that is resident in or is a visitor to the European Territory of any member state in a wild state.

1.7 The legislative provisions concerning plans and projects that have the potential to affect SPAs are contained in The Conservation of Habitats and Species Regulations 2017.

1.8 All birds, their nests and eggs are afforded protection under the Wildlife and Countryside Act 1981, as updated by the Countryside and Rights of Way Act 2000. It is an offence to:

- intentionally kill, injure or take any wild bird;
- intentionally take, damage or destroy the nest of any wild bird while it is in use or being built; and
- intentionally take or destroy the egg of any wild bird.

1.9 Schedule 1 birds cannot be intentionally or recklessly disturbed when nesting and there are increased penalties for doing so. Licences can be issued to visit the nests of such birds for conservation, scientific or photographic purposes but not to allow disturbance during a development even in circumstances where that development is fully authorised by consents such as a valid planning permission.

Aims and objectives

1.10 The aims of the Marsh Harrier survey were to check that the roost:

- still exists;
- contains similar numbers of roosting harriers as recorded in 2016; and
- assess the potential impacts of the development on roosting harriers.

1.11 The aims and objectives of the survey for breeding birds were to:

- identify whether the site supported any specially protected species or species of particular conservation concern;
- provide information on potential impacts of the development proposals to the breeding bird community identified in the study area.
- evaluate the data collected in 2018-19 against the baseline information collected in 2009 and 2016, considering the changes in habitat on-site.

1.12 The aims and objectives of the intertidal waterbird survey were to:

- record the abundance and distribution of waterbirds within the study area between March 2018 - May; and August 2018 - February 2019;
- evaluate the data collected in 2018 against the baseline information collected in 2009/2016; and
- evaluate the importance for waterbirds of those parts of The Swale estuary potentially at risk of disturbance from the proposed development.

1.13 The collected data will be presented to illustrate the spatial distributions and densities of species within the survey area. In order to consider the relative importance of the survey area, analysis considers species' abundance and distributions recorded during the surveys in comparison to their respective citations for the SPA.

Study area

Breeding bird and Marsh Harrier roost survey area

1.14 The proposed area of development is situated on what was once Kemsley Marshes, between Kemsley Paper Mill to the west, and the adjacent Swale estuary to the east.

1.15 Since breeding bird surveys in 2009, the majority of the scrub and vegetation on site has been removed and the site levelled with an aggregate of soil and stone to create a large expanse of

bare ground to enable the construction of K3. The site area has generally flat topography, except where the ground has been re-profiled to create shallow artificial slopes. A drainage ditch runs along the western boundary of the site in a north-south orientation and is connected to the marshland to the north of the site.

1.16 In the northern half of the survey site is a large area of reedbed habitat, with surrounding scrub.

1.17 Much of the surrounding area to the north-east, east and south of the site is associated with national designations for nature conservation.

Intertidal waterbird survey area

1.18 The intertidal waterbird survey area encompassed approximately 1.5 km of intertidal habitats centred on the planned location of the development.

Designated Sites

1.19 There are seven statutory sites (excluding sites designated for geological interest) within 5 km of the survey area, largely designated on the basis of wintering or passage populations of birds.

Table 1.1. Statutory sites within 5 km of the survey area

Site name	Type	Approximate Area (ha)	Distance from site (km)
The Swale	SPA/Ramsar/SSSI	6,515	0.01
Medway Estuary and Marshes	SPA/Ramsar/SSSI	4,684	2.4
Elmley	NNR	1,212	0.1

2 METHODS

Marsh Harrier roost survey

2.1 Two surveys per month were undertaken between January to March and October to December 2018, of a known reedbed roosting site for Marsh Harrier. Twelve survey visits were undertaken in total. Surveys began approximately one and a half hours before dusk and continued until dark.

2.2 The roost area was defined as the reedbed habitat within the northern half of the survey area. The reedbed was observed from a suitable vantage point, minimising disturbance to the birds entering the roost.

2.3 On each visit, registrations of Marsh Harrier flights entering the roosting area were recorded directly into ESRI Arcpad GIS software loaded onto handheld PDA devices, with a 1:10,000 scale Ordnance Survey base map of the study area (and adjacent land). A fresh map was used for each survey.

Breeding bird survey

2.4 The 2018 breeding bird survey was a repeat of the methods used by RPS during pre-application breeding bird surveys in 2016 (RPS, 2016). The breeding bird survey was undertaken based on a standard territory mapping methodology as outlined in Gilbert *et al*. (1998) and Bibby *et al*. (2000).

2.5 This method is based on the principle that many species during the breeding season are territorial. This is particularly the case amongst passerines, where territories are often marked by conspicuous song, display and periodic disputes with neighbouring individuals.

2.6 All bird species were recorded and mapped across the whole site.

2.7 The survey area was walked at a slow pace in order to locate and identify all individual birds. Visits were undertaken early in the morning, finishing before midday. The whole survey area was covered in each visit, using suitable optical equipment to observe bird behaviour. All areas of the site were approached to within 50-100m where possible. Survey routes were mapped and the direction walked alternated on each visit, to ensure that all areas were covered at various times of day across the duration of the survey. All species encountered within the survey area were recorded and mapped.

2.8 Surveys for breeding birds were undertaken between April and June 2018 with a total of five survey visits taking place. The survey visits and ornithologists undertaking the survey were as follows:

- Visit 1: 11th April 2018
- Visit 2: 3rd May 2018
- Visit 3: 18th May 2018
- Visit 4: 5th June 2018

- Visit 5: 18th June 2018

2.9 On each visit, registrations were recorded directly into ESRI Arcpad GIS software loaded onto handheld PDA devices, with a 1:10,000 scale Ordnance Survey base map of the study area (and adjacent land). A fresh map was used for each survey. Registrations of birds were recorded using standard British Trust for Ornithology (BTO) two letter species codes (BTO 2009). Specific codes were also used to denote singing, calling, movement between areas, flight, carrying food, nest building, aggressive encounters and other behaviour.

2.10 The expected outcome is that mapped registrations fall into clusters, approximately coinciding with territories. A cluster is generally a spatially distinct group of registrations that represent the activity of not more than one pair. Ideally, clusters include registrations of territorial behaviour across all visits and are clearly demarcated from adjacent clusters by simultaneous recording of neighbouring birds. Where a species exhibits high territory density, the mapping of simultaneously singing birds becomes essential. Territory boundaries are assumed to be between such birds.

2.11 Territory mapping methods produce analysis maps of non-overlapping ellipses encircling clusters of records thought to relate to separate pairs of breeding birds. These ellipses may not show the entire extent of the pairs' actual breeding territory which may be significantly larger; however, they are likely to show those areas in which the pair is most active.

2.12 On completion of the six surveys, analysis maps were produced for each species, consisting of all registrations recorded during the survey. From these species maps, the number of territories was calculated by identifying the number of territories or clusters present.

2.13 For late-arriving migrants, e.g. Spotted Flycatcher *Muscicapa striata,* for which fewer potential contacts are possible, only one registration is required to form a territory cluster. A number of species are not territorial and are dealt with appropriately, e.g. Linnet *Carduelis cannabina*, where data represent aggregations or loose colonies.

2.14 Standard registration mapping techniques were also used to record non-breeding species.

2.15 The following definitions have been used to identify the breeding status of the species recorded:

- confirmed breeding: Includes species for which territories were positively identified as a result of the number of registrations, the location of an active nest, and the presence of recently fledged young or downy young.
- probable breeding: Includes a pair observed in suitable nesting habitat in breeding season, or agitated behaviour / anxiety calls from adults suggesting probable presence of nest or young nearby. Behaviour was observed on insufficient occasions to confirm the presence of a territory.
- possible breeding: Includes species observed in breeding season in suitable nesting habitats, or singing male present (or breeding calls heard) in breeding season in suitable breeding habitat.
- non-breeding: Fly-over species observed but suspected to be on migration, or species observed but suspected to be summering non-breeder.

Assessment criteria

2.16 The assessment of the breeding bird community at Kemsley includes a focus on species that are afforded special statutory protection or those included on one, or more, of the lists of species of conservation interest. These include:

- species listed on Annex 1 of the EC Birds Directive (Directive 2009/147/EC) or species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended 1985);
- species included in the Birds of Conservation Concern (BoCC) Red and Amber Lists (Eaton *et al.*, 2015), and priority species within the UK Biodiversity Action Plan (UKBAP) (Anon, 2008) or Kent Local BAP (KBAP) (Kent BAP, 2009); and
- those occurring in nationally, regionally or locally important numbers.

2.17 Annex 1 species are those for which the UK Government are required to take special measures, including the designation of Special Protection Areas, to ensure the survival and reproduction of these species throughout their area of distribution.

2.18 The NERC list of Species of Principal Importance is used to guide decision-makers such as public bodies, including local and regional authorities, in implementing their duty under section 40 of the Natural Environment and Rural Communities Act 2006; under section 40 every public authority (e.g. a local authority or local planning authority) must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity. In addition, with regard to those species on the list of Species of Principal Importance prepared under section 41, the Secretary of State must:

"(a) take such steps as appear to the Secretary of State to be reasonably practicable to further the conservation of the living organisms and types of habitat included in any list published under this section, or

(b) promote the taking by others of such steps."

2.19 Species listed on the BoCC Red List are those that have declined in numbers by 50% over the last 25 years, those that have shown an historical population decline between 1800 and 1995 and species that are of global conservation concern. The 67 species on the Red List are of the most urgent conservation concern.

2.20 Species listed on the BoCC Amber List, of which there are currently 96, include those that have shown a moderate decline in numbers (25%-49%) over the last 25 years and those with total populations of less than 300 breeding pairs. Also included are those species which represent a significant proportion (greater than 20%) of the European breeding or wintering population, those for which at least 50% of the British population is limited to 10 sites or less, and those of unfavourable conservation status in Europe.

2.21 The remaining species are placed on the Green List, indicating that they are of low conservation priority. These species still receive full protection through the provisions of the Wildlife and Countryside Act 1981, as amended.

2.22 The UKBAP was launched in 1994 and established a framework and criteria for identifying species and habitat types of conservation concern. From this list, action plans for priority species of conservation concern were published, and have subsequently been amended and updated.

2.23 Species listed as priority bird species on the Kent BAP have also been considered for assessment.

Limitations

2.24 Since survey information was collected in 2016, the area of vegetation and scrub within the southern half of the survey area has been reduced due to habitat clearance as part of the construction of K3. All else being equal, this change in habitat availability is likely to affect the comparison of the datasets for 2016 and 2018. One would expect a reduction in the number of territories of scrub-dependent species.

Intertidal waterbird survey

2.25 The aim of the intertidal survey was to undertake two surveys at low tide and two surveys at high tide each month. Each survey covered a six hour period (three hours either side of high/low tide).

2.26 A total of 40 survey visits were undertaken between March 2018 and February 2019, bar June and July. The survey dates and tide details are tabulated in Table 2.1.

Table 2.1. Intertidal waterbird survey dates, tide times and observers

Date	Time of low tide	Tide Height (m)	Time of high tide	Tide Height (m)
7th March 2018	11:12	0.6		
8th March 2018	11:38	0.9		
28th March 2018			10:52	5.3
29th March 2018			11:56	5.7
10th April 2018	14:54	1.9		
12th April 2018			11:06	5
17th April 2018			14:23	6
20th April 2018	10:31	0.6		
1st May 2018			14:21	5.9
2nd May 2018	09:15	0.5		
18th May 2018	09:43	0.5		
24th May 2018			09:02	5.3
1st August 2018	10:13	1		
2nd August 2018	10:45	1.1		
22nd August 2018			10:32	4.9
23rd August 2018			11:32	5.1

4th September 2018	13:07	1.5		
5th September 2018	14:41	1.5		
26th September 2018			14:08	5.8
27th September 2018			14:41	5.9
9th October 2018			13:20	6
10th October 2018			14:01	6.1
16th October 2018	11:34	1.4		
17th October 2018	12:22	1.7		
6th November 2018			12:15	5.7
8th November 2018			13:37	5.9
14th November 2018	11:06	1.3		
15th November 2018	11:49	1.5		
4th December 2018			10:59	5.4
5th December 2018			11:51	5.5
14th December 2018	11:27	1.2		
17th December 2018	14:20	1.4		
15th January 2019	13:16	1.3		
16th January 2019	14:26	1.3		
21st January 2019			13:24	5.9
22nd January 2019			14:13	6.1
13th February 2019	12:27	1.1		
14th February 2019	13:28	1.3		
18th February 2019			12:21	5.7
19th February 2019			13:13	5.9

2.27 Observations during the survey were made from the sea wall, which provided a suitable vantage point to observe all birds without causing undue disturbance. An experienced ornithologist, equipped with binoculars and telescope of appropriate magnification, walked slowly along the seawall ensuring the entire area was surveyed hourly. Observers retraced their route of the first count during the second count, the procedure thereafter repeated for the remaining counts of the survey. As the site was a linear area with good visibility, birds could be observed from distance to avoid disturbance and minimise risk of double-counting.

2.28 The location and extent of flocks and individual waterbirds were recorded directly into ESRI Arcpad GIS Software on handheld PDA devices, with a 1:10,000 scale Ordnance Survey base map of the study area (and adjacent land). The distance from the recorder to birds was assessed through the use of landmarks present in the landscape and on the base map, which could be scaled as desired in the field. Birds were either plotted as individual counts at a location or as a flock, the extent of which could be plotted electronically directly onto the base map on the hand held PDAs. The observers were proficient in the use of this method and equipment having undertaken such surveys on numerous occasions previously across the UK at coastal, estuarine

and inland wetland sites. This is considered to be a robust and reliable method for recording birds and plotting their distribution.

2.29 The collected data, contained on flash memory cards, were then downloaded into ESRI ArcGIS software and distribution maps produced.

2.30 In addition to the waterbirds recorded along the intertidal areas, any observations of high tide wader roosts or raptors (such as harriers and owls) on the surrounding terrestrial areas were also recorded.

Definitions

2.31 The definition of waterbirds used in this study is in accordance with the Ramsar convention upon which the SPA citation was based, i.e. "birds ecologically dependent on wetlands". At the broad level of taxonomic order this is as follows (prior to surveys, species groups in bold were considered likely to be present in the proximity of the Kemsley site):

- penguins: *Sphenisciformes*.
- **divers**: *Gaviiformes*;
- **grebes**: *Podicipediformes*;
- wetland related pelicans, **cormorants**, darters and allies: *Pelecaniformes*;
- **herons**, bitterns, storks, ibises and spoonbills: *Ciconiiformes*;
- flamingos: *Phoenicopteriformes*:
- screamers, **swans**, **geese** and **ducks** (wildfowl): *Anseriformes*;
- wetland related **raptors**: *Accipitriformes* and *Falconiformes*;
- wetland related cranes, **rails** and allies: *Gruiformes*;
- Hoatzin: *Opisthocomiformes*;
- wetland related jacanas, **waders** (or shorebirds), **gulls**, skimmers and **terns**: *Charadriiformes*;
- coucals: *Cuculiformes*; and
- wetland related owls: *Strigiformes*;

2.32 For the purposes of this analysis, the term ‘spring’ is used to indicate the period March to May; ‘autumn’ to indicate the period of August to October and ‘winter’ includes the data collected in January-February 2019 and November-December 2018. Within this assessment, data has been collected during the latter period of winter 2017/2018 and early period of winter 2018/2019.

2.33 No surveys were undertaken in June and July as little to no passage of waterbirds occur in this month and was therefore considered as being of little relevance when assessing waterbirds in the

context of wintering and passage birds on The Swale SPA. No SPA citation breeding species were identified within the whole survey area in 2018.

2.34 A standard survey and analysis of waterbirds over the winter period would encompass November to February of a single winter but, due to the late commencement of surveys in January 2018, this was not possible. However, the weather in the early winter period (January-February) of 2019 was similar to that in the late period (November-December) of 2018. Therefore, all else being equal, data from a 'split' winter in a calendar, rather than biological year is considered as being representative of a typical winter period.

2.35 For the purposes of the analysis, the tidal cycle is divided into two periods. The term 'low tide' is used to indicate the period three hours either side of low tide, 'high tide' the period three hours either side of high tide.

3 RESULTS

Marsh Harrier roost survey

3.1 The peak count of Marsh Harrier observed entering the roost was 5 birds in November 2018. Table 3.1 shows the peak monthly counts of Marsh Harrier observed roosting in the reedbed at Kemsley in 2018.

Table 3.1. Peak counts of roosting Marsh Harrier recorded in 2018/2019

January	February	March	October	November	December
0	1	0	1	5	0

3.2 Observations were also recorded of Marsh Harriers showing interest in the roost site but did not always enter the reedbed to roost and moved off elsewhere. These additional records are not shown in Table 3.1.

Breeding bird survey

3.3 A total of 37 species were recorded during the breeding bird survey at Kemsley between March and June 2018. Of these species, four were confirmed to be breeding and 24 species were considered to be probably / possibly breeding, resulting in a breeding bird assemblage of 28 species. Records relating to the remaining nine species were considered to be of non-breeding individuals.

A summary of the breeding and conservation status of the 37 species recorded during the course of the survey, with the numbers of territories identified (or estimated in the case of probable and possible records) is provided in Table 3.2.

Table 3.2. The breeding and conservation status of species recorded during the breeding bird survey at Kemsley, March – June 2018

Species	Breeding status	Number of territories	Conservation Status					
			Annex 1 of the EU Birds Directive	Schedule 1 of WCA	UK BAP priority species	Species of Principal Importance (NERC)	Kent BAP	Birds of Conservation Concern 4
Buzzard	NB							
Blackbird	Probable breeding	3						
Blackcap	Probable breeding	1						
Blue Tit	Probable breeding	5						
Bullfinch	Possible breeding Only one record					●		Amber
Carrion Crow	Confirmed breeding							
Cetti's Warbler	Probable breeding	4		●			●	Green
Chiffchaff	Probable breeding	3						
Collared Dove	NB							
Cuckoo	Possible breeding	1				●		Red
Dunnock	Probable breeding	3			●	●	●	Amber
Garganey	NB			●				Amber
Goldfinch	Possible breeding	4					●	
Great Tit	Possible breeding	1						
Greenfinch	Possible breeding	1					●	
Grey wagtail	NB							Red
House sparrow	NB				●	●		Red
Jackdaw	NB							
Jay	NB							

Species	Breeding status	Number of territories	Conservation Status					
			Annex 1 of the EU Birds Directive	Schedule 1 of WCA	UK BAP priority species	Species of Principal Importance (NERC)	Kent BAP	Birds of Conservation Concern 4
Lesser Whitethroat	Possible breeding	1						
Linnet	Possible breeding	4			•	•		Red
Magpie	Confirmed breeding							
Mallard	Possible breeding							Amber
Marsh Harrier	Probable breeding		•	•			•	Amber
Moorhen	Possible breeding							
Pheasant	Possible breeding							
Reed bunting	Possible breeding				•	•		Amber
Reed Warbler	Probable breeding	7						
Robin	Possible breeding	1						
Rook	NB							
Sedge Warbler	Possible breeding							
Shelduck	Possible breeding	1					•	Amber
Song Thrush	Probable breeding	1			•	•		Red
Swallow	NB						•	
Whitethroat	Probable breeding	7						
Wood Pigeon	Confirmed breeding		•					
Wren	Confirmed breeding	8	•					

Notes on Table 3.2: NB – Non-breeding;

A total of four species were confirmed as breeding within the Kemsley survey area in 2018 which included Carrion Crow, Magpie, Wood Pigeon and Wren.

3.4 There were 24 species considered to be probably / possibly breeding within the survey area in 2016. These were Blackbird, Blackcap, Blue Tit, Bullfinch, Cetti's Warbler, Chiffchaff, Cuckoo, Dunnock, Goldfinch, Great Tit, Greenfinch, Lesser Whitethroat, Linnet, Mallard, Marsh harrier, Moorhen, Pheasant, Reed Bunting, Reed Warbler, Robin, Sedge Warbler, Shelduck, Song Thrush, White Throat. The Bullfinch was only heard calling on a single occasion. These species tend to be elusive and frequently non-vocal, so their breeding could potentially go un-detected within the reedbed area. Song Thrush were recorded throughout the survey period, but their behaviour was not wholly indicative of breeding on site and therefore could not be confirmed. The Jay and Chaffinch registrations were not wholly indicative of behaviour that enabled confirmation of breeding on site.

3.5 One species (Marsh Harrier) is afforded special statutory protection under Annex 1 of the EU Birds Directive (Directive 2009/147/EC), was recorded during the survey and was considered as breeding within the survey area.

3.6 Three species (Cetti's Warbler, Garganey and Marsh Harrier) recorded during the surveys are listed on Schedule 1 of the Wildlife and Countryside Act 1981. Of these, only Marsh Harrier was currently breeding within the Kemsley survey area.

3.7 Of the 28 species considered to be breeding or possibly breeding on site, five species are listed as a priority species in the UK BAP and as Species of Principal Importance under Section 41 of the NERC Act, three species are listed on the Kent BAP, three species are included on the BoCC Red List and six species are included on the BoCC Amber List. These species and their relevant statutory protection or list of conservation importance are shown in Table 3.2.

3.8 Nine species were recorded on migration or flying over the site and did not display any signs of breeding activity.

3.9 The locations of territories of species confirmed as breeding on site and listed on Schedule 1 of the Wildlife & Countryside Act (1981) are shown in Figure 3.1.

Intertidal waterbird survey

Abundance of waterbirds

3.10 A total of 53 species of waterbirds were recorded using the intertidal study area in 2018. Table 3.3 summarises the peak counts by month and season for each species recorded.

3.11 The peak seasonal waterbird counts on an individual count visit were as follows:

- winter (January-February and November-December) -5511;
- spring (March-May) - 1447; and
- autumn (August-October) - 982.

Table 3.3. Peak counts of all waterbird species recorded during intertidal surveys in 2018

Species	Winter		Spring			Autumn			Winter	
	Jan	Feb	Mar	Apr	May	Aug	Sep	Oct	Nov	Dec
Avocet	61	60	0	5	15	0	1	2	23	43
Blackbird	0	0	0	0	1	0	0	0	0	0
Bar-tailed Godwit	30	3	3	0	0	0	1	2	3	4
Black-headed Gull	200	2,000	800	31	30	200	75	144	360	600
Black-tailed Godwit	750	150	10	372	22	30	1	53	400	500
Brent Goose (Dark-bellied)	0	250	80	0	0	2	2	0	35	1
Barnacle Goose	0	0	0	0	0	1	1	0	0	0
Common Gull	8	40	2	5	0	0	0	5	12	11
Common Sandpiper	0	0	0	1	1	2	1	0	0	0
Common Tern	0	0	0	3	3	2	0	0	0	0
Coot	2	0	0	0	0	2	1	1	2	2
Cormorant	1	3	1	1	0	2	3	27	18	2
Curlew	14	48	1	2	2	35	6	4	40	65
Dunlin	850	600	70	0	0	12	5	7	440	850
Gadwall	0	0	0	0	1	0	0	0	0	0
Goldcrest	0	1	0	0	0	0	0	0	0	0
Great Black-backed Gull	0	0	0	1	1	1	0	0	0	1
Great Crested Grebe	3	3	2	2	4	1	0	0	2	9
Green Sandpiper	0	0	0	1	0	0	0	0	0	0
Greenshank	1	0	0	2	1	1	10	13	5	1
Grey Heron	1	0	0	0	1	1	2	1	1	2
Grey Plover	200	30	8	0	0	0	0	4	58	130
Hawfinch	2	0	0	0	0	0	0	2	0	0
Herring Gull	15	200	10	6	12	5	4	3	5	40

Species	Winter		Spring			Autumn			Winter	
	Jan	Feb	Mar	Apr	May	Aug	Sep	Oct	Nov	Dec
Kingfisher	1	0	0	0	0	0	1	0	1	1
Knot	350	650	0	0	0	0	0	0	0	0
Lapwing	200	30	17	0	0	4	1	0	16	40
Lesser Black-backed Gull	1	1	0	6	4	31	2	1	1	0
Little Egret	1	0	0	1	1	30	3	3	10	1
Little Grebe	12	14	10	1	3	3	2	7	13	12
Mallard	2	2	0	2	2	8	4	0	5	2
Mediterranean Gull	0	0	0	2	1	0	0	0	0	0
Moorhen	3	0	0	1	0	3	1	2	5	3
Mute Swan	2	0	0	0	2	0	0	0	0	0
Nuthatch	0	0	0	0	0	0	0	0	3	0
Oystercatcher	600	450	70	39	3	270	10	6	650	650
Pintail	0	16	0	0	0	0	0	0	0	0
Pochard	0	0	0	0	1	0	0	0	0	0
Redshank	75	200	2	90	2	260	89	75	200	70
Ringed Plover	20	1	0	0	0	40	13	12	18	9
Ring-necked Parakeet	0	0	0	0	0	3	0	0	0	0
Sandwich Tern	0	0	0	0	0	2	0	3	0	0
Scottish Crossbill	0	0	0	0	0	0	0	2	0	0
Shelduck	44	70	130	2	3	0	0	12	73	69
Shoveler	0	2	3	0	0	0	0	0	0	0
Snipe	1	1	0	0	0	0	0	0	1	0
Spotted Redshank	0	0	0	0	0	1	0	2	0	0
Teal	250	200	70	8	0	1	2	19	70	70
Tufted Duck	1	0	0	3	4	8	1	2	2	1
Turnstone	30	18	8	65	0	13	2	13	52	120
Whimbrel	0	0	0	4	19	8	0	0	0	0

Species	Winter		Spring			Autumn			Winter	
	Jan	Feb	Mar	Apr	May	Aug	Sep	Oct	Nov	Dec
Whitethroat	0	8	0	0	0	0	0	0	0	0
Wigeon	24	460	150	0	0	0	0	0	80	43
Peak visit count[1]	**2,963**	**5,511**	**1,446**	**431**	**87**	**737**	**238**	**396**	**2,099**	**2,545**
Total assemblage[2]	**3,755**	**5,511**	**1,447**	**656**	**139**	**982**	**244**	**427**	**2,604**	**3,352**

Notes on Table 3.3: 1. Peak visit count represents the greatest number of waterbirds observed in a single count; and 2. Total assemblage represents the total waterbird assemblage, the sum of the species peak numbers.

3.12 Summation of the individual species maxima during a season, irrespective of the count or date on which they occurred, provides a total waterbird assemblage for the season. This represents the minimum number of individual waterbirds using the area seasonally during the survey period. The peak waterbird assemblage, as recorded by the surveys in winter, spring and autumn were 15,222, 2,242 and 3,783 waterbirds respectively.

3.13 The peak counts of all waterbirds recorded at Kemsley in 2018-19 and the month within which their numbers peaked is included in Table 3.4.

Table 3.4. Peak counts of all waterbird species recorded during intertidal surveys in 2018-19

Species	Winter	Spring	Autumn
Avocet	61 (Jan)	15 (May)	2 (Oct)
Blackbird	0	1 (May)	0
Bar-tailed Godwit	30 (Jan)	3 (Mar)	2 (Oct)
Black-headed Gull	2000 (Feb)	800 (Mar)	200 (Aug)
Black-tailed Godwit	750 (Jan)	372 (Apr)	53 (Oct)
Brent Goose (Dark-bellied)	250 (Feb)	80 (Mar)	2 (Aug, Sep)
Barnacle Goose	0	0	1 (Aug, Sep)
Common Gull	40 (Feb)	5 (Apr)	5 (Oct)
Common Sandpiper	0	1 (Apr, May)	2 (Aug)
Common Tern	0	3 (Apr, May)	2 (Aug)
Coot	2 (Jan, Nov, Dec)	0	2 (Aug)
Cormorant	18 (Nov)	1 (Mar, Apr)	27 (Oct)
Curlew	65 (Dec)	2 (Apr, May)	35 (Aug)
Dunlin	850 (Jan, Dec)	70 (Mar)	12 (Aug)

Species	Winter	Spring	Autumn
Gadwall	0	1 (May)	0
Goldcrest	1(Feb)	0	0
Great Black-backed Gull	1(Dec)	1 (Apr, May)	1 (Aug)
Great Crested Grebe	9 (Dec)	4 (May)	1 (Aug)
Green Sandpiper	0	1 (Apr)	0
Greenshank	5 (Nov)	2 (Apr)	13 (Oct)
Grey Heron	2 (Dec)	1 (May)	2 (Sep)
Grey Plover	200 (Jan)	8 (Mar)	4 (Oct)
Hawfinch	2 (Jan)	0	2 (Oct)
Herring Gull	200 (Feb)	12 (May)	5 (Aug)
Kingfisher	1 (Jan, Nov, Dec)	0	1 (Sep)
Knot	650 (Feb)	0	0
Lapwing	200 (Jan)	17 (Mar)	4 (Aug)
Lesser Black-backed Gull	1 (Jan, Feb, Nov)	6 (Apr)	31 (Aug)
Little Egret	10 (Nov)	1 (Apr, May)	30 (Aug)
Little Grebe	14 (Feb)	10 (Mar)	7 (Oct)
Mallard	5 (Nov)	2 (April, May)	8 (Aug)
Mediterranean Gull	0	2 (Apr)	0
Moorhen	5 (Nov)	1 (Apr)	3 (Aug)
Mute Swan	2 (Jan)	2 (May)	0
Nuthatch	3 (Nov)	0	0
Oystercatcher	650 (Nov, Dec)	70 (Mar)	270 (Aug)
Pintail	16 (Feb)	0	0
Pochard	0	1 (May)	0
Redshank	200 (Feb, Nov)	90 (Apr)	260 (Aug)
Ringed Plover	20 (Jan)	0	40 (Aug)
Ring-necked Parakeet	0	0	3 (Aug)
Sandwich Tern	0	0	3 (Oct)
Scottish Crossbill	0	0	2 (Oct)
Shelduck	73 (Nov)	130 (Mar)	12 (Oct)
Shoveler	2 (Feb)	3 (Mar)	0
Snipe	1 (Jan, Feb, Nov)	0	0

Species	Winter	Spring	Autumn
Spotted Redshank	0	0	2 (Oct)
Teal	250 (Jan)	70 (Mar)	19 (Oct)
Tufted Duck	2 (Nov)	4 (May)	8 (Aug)
Turnstone	120 (Dec)	65 (Apr)	13 (Aug, Oct)
Whimbrel	0	19 (May)	8 (Aug)
Whitethroat	8 (Feb)	0	0
Wigeon	460 (Feb)	150 (Mar)	0

Spatial and temporal distribution of intertidal waterbirds

3.14 For 28 target species, seasonal spatial distribution maps are presented for high and low tidal survey periods during which birds were recorded (see Figures 3.2-3.36).

3.15 The high water maps have been plotted using the maximum species count occurring in each of the grid squares from the surveys. Therefore they do not represent a total of individuals across the site but the peak usage of each 100 m x 100 m grid square by the target species. The maps show the spatial distribution of the individual target species. They are expected to highlight areas that are important to the target species as roosting areas in each season.

3.16 The low water maps have been plotted using the peak summed counts of each low water period (three hours either side of low tide) occurring in each of the grid squares from the surveys. Therefore, they do not represent a total of individuals across the site but the peak of the total number of bird hours of use of each 100 m x 100 m grid square by the target species per period of maximum tidal flat exposure. The maps show the spatial distribution of the individual target species. They are expected to highlight areas that are important to the target species as foraging areas in each season.

4 EVALUATION

Marsh Harrier roost survey

4.1 A peak count of five birds were recorded entering the reedbed roost site in November 2018. This is a reduction of numbers from the peak count of 13 birds recorded roosting within this reedbed in 2016 (RPS, 2016).

4.2 Marsh Harrier is cited as an interest feature of The Swale SPA breeding assemblage, with 24 pairs during the breeding season (JNCC, 2006).

4.3 No national wintering population data is available for Marsh Harrier, but the national breeding population, based on a five-year mean and reported in the Rare Breeding Bird Panel (RBBP) report, is estimated to be 341 breeding pairs (Holling *et. al.*, 2016). The county population, when working out the five-year mean from the most recent RBBP reports (2010-2014) places the Kent population at 74 breeding pairs, although it is acknowledged in each annual report that this figure is likely to be an under-estimate. Based on atlas data, the Kent population is likely to number up to 100 pairs (Holling et. al., 2016). If a county population of 74 breeding pairs is used, the five Marsh Harrier recorded roosting in 2018 represents approximately 1.5% of the national population and 6.8% of the individual county population. However, if a maximum potential county population of 200 Marsh Harriers is used, the five birds recorded roosting in 2018 would represent approximately 2.5% of the Kent population.

4.4 The Marsh Harrier population has declined since 2016, whereas the national population has decreased by 2.3%. The individual county population has declined by 10.8%, with the site representing 17.6% of the population in 2016.

4.5 The information used for The Swale SPA citation is dated and thus reliable evaluations cannot be made against the figure of 24 breeding pairs, which is now considered to be much higher.

4.6 In consideration of all reported data on Marsh Harriers, the roost site is considered of no more than county importance.

Breeding bird survey

4.7 This section considers the changes in breeding assemblage at Kemsley between surveys undertaken in 2009 (RPS, 2009), 2016 (RPS, 2016) and 2018. In evaluating the data, consideration is made for changes in on-site habitat availability as well as national and local bird population trends.

4.8 Pertinently, since baseline survey information was collected in 2009, the area of scrub and grassland vegetation within the survey area has approximately halved due to habitat clearance as a result of the construction of K3. Therefore, direct comparisons of the datasets for 2009 and 2016 are difficult for the majority of bird species present on site.

4.9 The breeding assemblage at Kemsley in 2009 was 35 species which has declined over the nine years of surveys, with 30 species in 2016 and 28 species in 2018. Of this assemblage, only four species were confirmed as breeding in 2018. This is a notable difference from the 30 species confirmed as breeding in 2009 and 24 species in 2016.

4.10 Marsh Harriers are listed as SPA interest features and whilst no Marsh Harrier territories were recorded, they were recorded as potentially breeding in the study area.

4.11 Table 4.1. details species which were confirmed as breeding at Kemsley in either 2009, 2016 or 2018, together with the change in territory numbers between years, and species' conservation status. Where a species appears as "present" in the table, it is assumed that no change in territories has occurred. Where a species appears as "possible" or "probable", the change in territories has been estimated based on the number of "possible"/"probable" territories recorded.

Table 4.1. The number of breeding bird territories recorded in 2018 and previous surveys

Species	Number of breeding territories in 2009	Number of breeding territories in 2016	Number of breeding territories in 2018	Change in territories (+,-)		Conservation status
				2016 - 2018	2009 - 2018	
Bearded Tit	2	Probable	0	- 1	- 2	Schedule 1
Blackbird	7	6	3	- 3	- 4	
Blackcap	1	2	1	- 1	No Change	
Blue Tit	5	3	5	+ 2	No Change	
Carrion Crow	1	Present	Present	No Change	No Change	
Cetti's Warbler	6	7	4	- 3	- 2	Schedule 1
Chaffinch	3	Possible	0	- 1	- 3	
Chiffchaff	0	4	3	- 1	+ 3	
Cuckoo	Possible	1	1	No Change	No Change	NERC, UKBAP, KBAP, Red
Dunnock	14	10	3	- 7	- 11	NERC, UKBAP, Amber
Garden Warbler	1	0	0	No change	- 1	
Goldfinch	2	2	4	+ 2	+ 2	
Great Tit	3	3	1	- 2	- 2	
Greenfinch	1	1	1	No Change	No Change	
Lesser Whitethroat	1	1	1	No Change	No Change	

Linnet	7	1	4	+ 3	- 3	NERC, UKBAP, Red
Long-tailed Tit	Possible	3	0	- 3	- 1	
Magpie	3	Present	Present	No Change	No Change	
Marsh Harrier	1	1	Present	No Change	No Change	Annex 1, Schedule 1, Amber
Meadow Pipit	1	0	0	No Change	- 1	Amber
Nightingale	1	1	0	- 1	- 1	Red
Pheasant	1	0	Present	+ 1	No Change	
Reed Bunting	5	1	Present	No Change	No Change	NERC, UKBAP, KBAP, Red
Reed Warbler	22	10	7	- 3	- 15	
Robin	2	3	1	- 2	- 1	
Sedge Warbler	7	1	Present	No Change	No Change	
Shelduck	0	0	1	+ 1	+ 1	KBAP, Amber
Skylark	1	0	0	No Change	- 1	NERC, UKBAP, Red
Song Thrush	7	Probable	Present	No Change	No Change	NERC, UKBAP, Red
Starling	1	0	0	No Change	- 1	NERC, UKBAP, Red
Turtle Dove	1 - 2	0	0	No Change	- 1-2	NERC, UKBAP, KBAP, Red
Whitethroat	15	5	7	+ 2	- 8	
Woodpigeon	7	Present	Present	No Change	No Change	

Wren	17	19	8	- 11	- 9	

4.12 Of the 24 species identified as breeding or possibly breeding (Table 4.1), eight are covered by one or more of the criteria listed in section 2.16.

Breeding assemblage

4.13 The number of species recorded in an area is a simple measure of diversity that can indicate its importance at each season of the year. Fuller (1980) gives the following breeding diversity criteria which are presented in Table 4.2.

Table 4.2. Breeding diversity criteria

National	Regional	County	Local
85+	0-84	50-69	25-49

4.14 Based on Fuller's criteria, the breeding bird assemblage of the survey area in 2016 is of Local importance. However, it should be noted that Fuller's analysis was developed in the 1970's. Since then species diversity has declined significantly (Eaton *et al*., 2015). As a result, Fuller's thresholds are too high for today's breeding bird populations. However, despite these changes in bird populations, and whilst also giving consideration to the number of species of conservation interest, it is still considered most likely that the breeding bird assemblage at the site is of no more than of Local importance.

4.15 When comparing with the assessment of the breeding assemblage made in 2009 and 2016 (RPS, 2009, Appendix 1), there has been no change in the site's importance for breeding birds. The loss of several species as breeding species (and associated effect on overall assemblage) is probably attributable to wider population declines of the species concerned, whereas scrub clearance on site to enable the construction of K3 has probably affected total numbers of territories rather than species' presence/absence.

4.16 Exact comparison between years is difficult since the extensive habitat creation associated with K3 will only be undertaken once construction is complete. It is likely that further surveys in later years as the mitigation habitat matures would find the site supporting similar numbers to those found in 2009 pre-construction.

Intertidal waterbird survey

4.17 The study area lies within The Swale SPA, where the SPA citation species are within the protection of the EU Birds Directive. It is therefore appropriate to consider the importance to birds of the study area as a whole in the context of the SPA waterbird assemblage.

Winter waterbird populations

4.18 Table 4.3 summarises the maximum winter counts recorded for key species which were either cited as part of The Swale SPA and/or The Swale Ramsar site (in italics); were considered ecologically dependent upon the intertidal habitat whose numbers exceeded a peak of 25 birds; or were frequently recorded (during at least 50% of survey visits). Data are also provided for the 1% threshold criteria, and the latest 5-year peak means for the SPA. The 1% criterion is used to assess the importance of wetlands. A wetland is considered internationally important if it regularly supports 1% of a species biogeographic (in this case NW Europe) population (Wetlands International 2016). A wetland in Britain is considered of national importance for a species' biogeographic population if it regularly supports 1% of the total numbers in Britain (Frost *et al*. 2016).

4.19 The waterbird data presented in The Swale SPA citation originate from the WeBS monthly coordinated 'core' counts made during high tide periods, principally from September to March. WeBS is a joint scheme run by the British Trust for Ornithology (BTO), Royal Society for the Protection of Birds (RSPB) and Joint Nature Conservation Committee (JNCC) in association with the Wildfowl & Wetlands Trust (WWT) to monitor non-breeding waterbirds in the UK. The scheme aims to assess population sizes, determine trends in numbers and distribution, and identify important sites for waterbirds (Frost *et al*. 2016).

4.20 For the majority of waterbirds, 1% thresholds for identifying wetland sites of national importance in Britain are only available for wintering populations. Due to the respective species phenologies, it is appropriate to apply these same thresholds in the assessment of wetlands of national importance using autumn count data for all waterbirds with the exception of waders (Frost *et al*. 2016). In many wader species, substantial passage of birds occurs through Britain which may comprise different subspecies or biogeographical populations to that of the wintering population. For a small number of wader species, e.g. Ringed Plover, 1% thresholds had previously been derived and published for this passage period. However, recent information from WeBS and the statutory agencies, as published in Frost *et al*. (2016), no longer provides separate 1% passage threshold criteria for any species. Therefore, for all wader species, the following evaluation uses the 1% national thresholds cited for wintering populations.

4.21 A total of 39 species of waterbirds were recorded using the intertidal study site during the surveyed winter months in 2018. Of these, 19 species were of conservation importance due to being listed as wintering and/or passage interest features on The Swale SPA and/or Ramsar designations. These species are (SPA species in italics): *Avocet*, *Bar-tailed Godwit*, Black-headed gull, *Black-tailed Godwit*, Curlew, Brent Goose (Dark-bellied), Dunlin, Greenshank, *Grey Plover*, *Knot*, Lapwing, Little Egret, Little Grebe, Oystercatcher, *Pintail*, *Redshank*, *Ringed Plover*, Shelduck, Teal, Turnstone and Wigeon.

Table 4.3. Comparison of peak winter waterbird counts 2018, with SPA population estimates and 1% thresholds for national and international importance

Species	Peak winter count in 2018		5yr peak mean for SPA (2010/11-2014/15)[1]	Great Britain 1% Threshold[2]	International 1% Threshold[3]
	Number of birds	% of SPA population			
Avocet[4]	*61*	*12.9*	*472 (Feb)*	*75*	*730*

Species	Peak winter count in 2018		5yr peak mean for SPA (2010/11-2014/15)[1]	Great Britain 1% Threshold[2]	International 1% Threshold[3]
	Number of birds	% of SPA population			
Bar-tailed Godwit	*30*	*3.6*	*831 (Jan)*	*380*	*1200*
Black-headed Gull	2000	73.2	2729 (May)	22000	20000
Black-tailed Godwit	*750*	*50.5*	*1484 (Oct)*	*430*	*610*
Brent Goose (Dark-bellied)	250	10.6	2355 (Jan)	950	2400
Common Gull	40	75.5	53 (Sep)	7000	16400
Coot	2	0.3	681 (Nov)	1800	17500
Cormorant	18	11.9	151 (Oct)	350	1200
Curlew	65	5.7	1137 (Jan)	1400	8400
Dunlin	850	12.7	6703 (Jan)	3500	13300
Great Crested Grebe	9	20	45 (Nov)	190	3500
Greenshank	5	20	25 (Oct)	6	2300
Grey Plover	*200*	*16.4*	*1223 (Jan)*	*430*	*2500*
Herring Gull	200	70.9	282 (Feb)	7300	10200
Knot	*650*	*27.4*	*2374 (Feb)*	*3200*	*4500*
Lapwing	200	3.1	6529 (Jan)	6200	20000
Lesser Black-backed Gull	1	2.4	41 (Feb)	1200	10200
Little Egret	10	8.3	120 (Oct)	45	1300
Little Grebe	14	22.6	62 (Jan)	160	3900
Mallard	5	0.45	1111 (Sep)	6800	45000
Moorhen	5			3200	20000
Mute Swan	2			740	320
Nuthatch	3				
Oystercatcher	650	12.5	5185 (Jan)	3200	8200

Species	Peak winter count in 2018		5yr peak mean for SPA (2010/11-2014/15)[1]	Great Britain 1% Threshold[2]	International 1% Threshold[3]
	Number of birds	% of SPA population			
Pintail	*16*	*5.3*	*303*	*290*	*600*
Redshank	*200*	*17.9*	*1120 (Nov)*	*1200*	*2400*
Ringed Plover	*20*	*6.3*	*318 (Jan)*	*340*	*730*
Shelduck	73	7.5	974 (Jan)	610	3000
Shoveler	*2*				
Snipe	1	2.1	48 (Jan)	10000	20000
Teal	250	6.7	3746 (Mar)	2100	5000
Tufted Duck	2			1100	1200
Turnstone	120	34.8	345 (Jan)	480	1400
Wigeon	460	4.2	10893 (Nov)	4400	15000

Notes on Table 4.3: 1. Frost *et al.* (2016); 2. Musgrove *et al.* (2013); 3. Wetlands International (2012); 4. The Swale SPA citation species are shown in italic.

Spring waterbird populations

4.22 Table 4.4 summarises the maximum spring counts recorded for key species which were either cited as part of The Swale SPA and/or The Swale Ramsar site (in italics); were considered ecologically dependent upon the intertidal habitat whose numbers exceeded a peak of 25 birds; or were frequently recorded (during at least 50% of survey visits). Data are also provided for the 1% threshold criteria, and the latest 5-year peak means for the SPA.

4.23 A total of 38 species of waterbirds were recorded using the intertidal study site in spring 2018. Of these, 23 species were of conservation value due to being species listed as wintering and/or passage interest features on The Swale SPA and/or Ramsar designations. These species are (SPA species in italics): *Avocet*, *Bar-tailed Godwit*, Black-headed Gull, *Black-tailed Godwit*, Brent Goose (Dark-bellied), Common Tern, Curlew, Dunlin, Greenshank*, Grey Plover*, Lapwing, Little Egret, Little Grebe, Mediterranean Gull, Oystercatcher, *Pintail*, *Redshank*, Shelduck, *Shoveler,* Teal, Turnstone, Whimbrel and Wigeon.

Table 4.4. Comparison of peak waterbird counts in spring 2018 with SPA population estimates and 1% thresholds for national and international importance

Species	Peak spring count in 2018		5yr peak mean for SPA (2010/11-2014/15)[1]	Great Britain 1% Threshold[2]	International 1% Threshold[3]
	Number of birds	% of SPA population			
Avocet[4]	*15*	*3.2*	*472 (Feb)*	*75*	*730*
Bar-tailed Godwit	*3*	*0.4*	*831 (Jan)*	*380*	*1200*
Black-headed Gull	800	29.3	2729 (May)	22000	20000
Black-tailed Godwit	*372*	*25.1*	*1484 (Oct)*	*430*	*610*
Brent Goose (Dark-bellied)	80	3.4	2355 (Jan)	950	2400
Common Gull	5	9.4	53 (Sep)	7000	16400
Common Sandpiper	1			1	17500
Common Tern	3	18.75	16 (May)	-[5]	1800
Cormorant	1	0.7	151 (Oct)	350	1200
Curlew	2	0.2	1137 (Jan)	1400	8400
Dunlin	70	1	6703 (Jan)	3500	13300
Gadwall	1			250	600
Great Black-backed Gull	1			760	4200
Great Crested Grebe	4	8.9	45 (Nov)	190	3500
Green Sandpiper	1			9	15500
Greenshank	2	8	25 (Oct)	6	2300
Grey Heron	1			610	2700
Grey Plover	*8*	*0.65%*	*1223 (Jan)*	*430*	*2500*
Herring Gull	12	1	282 (Feb)	7300	10200

Species	Peak spring count in 2018		5yr peak mean for SPA (2010/11-2014/15)[1]	Great Britain 1% Threshold[2]	International 1% Threshold[3]
	Number of birds	% of SPA population			
Lapwing	17	0.3	6529 (Jan)	6200	20000
Lesser Black-backed Gull	6	14.6	41 (Feb)	1200	10200
Little Egret	1	0.8	120 (Oct)	45	1300
Little Grebe	10	16.1	62 (Jan)	160	3900
Mallard	2	0.2	1111 (Sep)	6800	45000
Mediterranean Gull	2				
Moorhen	1			3200	20000
Mute Swan	2			740	320
Oystercatcher	70	1.4	5185 (Jan)	3200	8200
Pochard	1	0.7	136 (Jan)	380	3000
Redshank	*90*	*8*	*1120 (Nov)*	*1200*	*2400*
Shelduck	130	13.3	974 (Jan)	610	3000
Shoveler	*3*				
Teal	70	1.9	3746 (Mar)	2100	5000
Tufted Duck	4	2.7	146 (Jan)	1100	12000
Turnstone	65	18.8	345 (Jan)	480	1400
Whimbrel	19	135.7	14 (Aug)	+[6]	6700
Wigeon	150	1.4	10893 (Nov)	4400	15000

Notes on Table 4.4: 1. Frost et al. (2016); 2. Musgrove et al. (2013); 3. Wetlands International (2016); 4. The Swale SPA citation species are shown in italic; 5. '-' no data available; 6. '+' population too small for meaningful figure to be obtained.

Autumn waterbird populations

4.24 Table 4.5 summarises the maximum autumn counts recorded for key species which were either cited as part of The Swale SPA and/or The Swale Ramsar site (in italics); were considered ecologically dependent upon the intertidal habitat whose numbers exceeded a peak of 25 birds;

or were frequently recorded (during at least 50% of survey visits). Data are also provided for the 1% threshold criteria, and the latest 5-year peak means for the SPA.

4.25 A total of 39 species of waterbird were recorded using the intertidal study site during autumn 2018. Of these, 23 species were of conservation value due to being species listed as wintering and/or passage interest features on The Swale SPA and/or Ramsar designations. These species are (SPA species in italics): *Avocet*, *Bar-tailed Godwit*, Black-headed Gull, *Black-tailed Godwit*, Brent Goose (Dark-bellied), Common Tern, Curlew, Dunlin, Greenshank, *Grey Plover*, Lapwing, Little Egret, Little Grebe, Oystercatcher, *Pintail*, *Redshank*, *Ringed Plover*, Sandwich Tern, Shelduck, Spotted Redshank, Teal, Turnstone, and Whimbrel.

Table 4.5. Comparison of peak waterbird counts in autumn 2018 with SPA population estimates and 1% thresholds for national and international importance

Species	Peak autumn count in 2018		5yr peak mean for SPA (2010/11-2014/15)[1]	Great Britain 1% Threshold[2]	International 1% Threshold[3]
	Number of birds	% of SPA population			
Avocet[4]	*2*	*0.4*	*472 (Feb)*	*75*	*730*
Barnacle Goose	1				
Bar-tailed Godwit	*2*	*0.2*	*831 (Jan)*	*380*	*1200*
Black-headed Gull	200	7.3	2729 (May)	22000	20000
Black-tailed Godwit	*53*	*3.6*	*1484 (Oct)*	*430*	*610*
Brent Goose (Dark-bellied)	2	0.1	2355 (Jan)	950	2400
Common Gull	5	9.4	53 (Sep)	7000	16400
Common Sandpiper	2			1	17500
Common Tern	2	12.5	16 (May)	-[5]	1800
Coot	2	0.3	681 (Nov)	1800	17500
Cormorant	27	17.9	151 (Oct)	350	1200
Curlew	35	3.1	1137 (Jan)	1400	8400
Dunlin	12	0.18	6703 (Jan)	3500	13300
Great Black-backed Gull	1			760	4200

Species	Peak autumn count in 2018		5yr peak mean for SPA (2010/11-2014/15)[1]	Great Britain 1% Threshold[2]	International 1% Threshold[3]
	Number of birds	% of SPA population			
Great Crested Grebe	1	2.2	45 (Nov)	190	3500
Greenshank	13	52	25 (Oct)	6	2300
Grey Heron	2			610	2700
Grey Plover	*4*	*0.3*	*1223 (Jan)*	*430*	*2500*
Hawfinch	*2*				
Herring Gull	5	1.8	282 (Feb)	7300	10200
Kingfisher	1				2,000
Lapwing	4	0.1	6529 (Jan)	6200	20000
Lesser Black-backed Gull	31	75.6	41 (Feb)	1200	10200
Little Egret	30	25	120 (Oct)	45	1300
Little Grebe	7	11.3	62 (Jan)	160	3900
Mallard	8	0.7	1111 (Sep)	6800	45000
Moorhen	3			3200	20000
Oystercatcher	270	5.2	5185 (Jan)	3200	8200
Redshank	*260*	*23.2*	*1120 (Nov)*	*1200*	*2400*
Ringed Plover	*40*	*12.6*	*318 (Jan)*	*340*	*730*
Ring-necked Parakeet	*3*				
Sandwich Tern	3			-[5]	1700
Scottish Crossbill	2				
Shelduck	12	1.2	974 (Jan)	610	3000
Spotted Redshank	2	15.4	13 (Oct)	+[6]	600-1200

Species	Peak autumn count in 2018		5yr peak mean for SPA (2010/11-2014/15)[1]	Great Britain 1% Threshold[2]	International 1% Threshold[3]
	Number of birds	% of SPA population			
Teal	19	0.5	3746 (Mar)	2100	5000
Tufted Duck	8	5.5	146 (Jan)	1100	12000
Turnstone	13	3.8	345 (Jan)	480	1400
Whimbrel	8	57.1	14 (Aug)	+[6]	6700

Notes on Table 4.5: 1. Frost et al. (2016); 2. Musgrove et al. (2013); 3. Wetlands International (2016); 4. The Swale SPA citation species are shown in italic; 5. '-' no data available; 6. '+' population too small for meaningful figure to be obtained.

WeBS Alerts/SPA population trends

4.26 The "WeBS Alerts" system provides a method of identifying changes in numbers of waterbirds; the WeBS Alerts report (Cook *et al.*, 2013) provides a review of the status of species on sites in the UK which are designated due to their conservation value for non-breeding waterbirds (including The Swale SPA). Species that have undergone changes in numbers are identified. Trends are assessed over the short-, medium-, and long-terms (5, 10 and up to 25 years respectively). Where declines exceed 50%, High-Alerts are issued, and where declines lie between 25% and 50% Medium-Alerts are issued.

4.27 For The Swale SPA, 21 species were evaluated for the site, with alerts triggered for nine species in relation to The Swale SPA (Cook *et al.*, 2013).

4.28 Of the 21 species evaluated for Webs Alerts, 18 were recorded within the Kemsley intertidal survey area and seven of the nine 'alert species' were recorded during the intertidal waterbird surveys at Kemsley in 2016. These were Shelduck, Little Grebe, Cormorant, Grey Plover, Lapwing, Dunlin and Redshank.

4.29 Fourteen species, of the 21 evaluated Webs Alerts species, were recorded at Kemsley in significant numbers (>5%) in 2018 in relation to international, national or SPA populations. Of these:

- Avocet have decreased by 4% in the short-term but have increased by 67% in the medium-term and 11,100% in the long-term;
- Black-tailed Godwit have increased by 37% in the short-term, 48% in the medium-term and 1,750% in the long-term;
- Cormorant have decreased by 14% in the short-term, 31% in the medium-term and 72% in the long-term (the medium term decline triggering a Medium-Alert and the long-term decline triggering a High-Alert);
- Curlew have increased by 37% in the short-term, 24% in the medium-term and 6% in the long-term;

- Dunlin have increased by 14% in the short-term, but decreased by 36% in the medium-term and 30% in the long-term (the long-term decline triggering a Medium-Alert);
- Grey Plover have decreased by 2% in the short-term, 44% in the medium term and by 14% in the long-term (the medium-term decline triggering a Medium-Alert);
- Knot have increased by 9% in the short-term, decreased by 3% in the medium term and increased by 11% in the long-term;
- Lapwing have decreased by 17% in the short-term, by 42% in the medium-term but increased by 52% in the long-term (the medium-term decline triggering a Medium-Alert);
- Little Grebe have decreased by 31% in the short-term, by 74% in the medium-term and by 48% in the long-term (the short-term and long-term declines triggering a Medium-Alert and the medium-term decline triggering a High-Alert);
- Oystercatcher have decreased by 1% in the short-term, 13% in the medium term and by 9% in the long-term;
- Pintail have decreased by 12% in the short-term and 12% in the medium-term, but increased by 111% in the long-term; and
- Redshank have decreased by 4% in the short-term, 36% in the medium-term and 43% in the long-term (the medium- and long-term declines triggering Medium-Alerts).
- Shelduck decreased by 15% in the short-term and 26% in the medium-term, but increased by 22% in the long-term (the medium-term decline triggering a Medium-Alert);
- Teal have increased by 20% in the short-term, 35% in the medium-term and 252% in the long-term.

4.30 In light of these population changes (Cook *et al.*, 2013) the SPA populations of Cormorant, Dunlin, Grey Plover, Lapwing, Little Grebe, Redshank and Shelduck might be considered more vulnerable than the other species to any impacts of development that might affect the overall estuarine waterbird assemblage.

5 CONCLUSIONS

Marsh Harrier roost survey

5.1 A peak count of five Marsh Harriers was recorded entering the roost site in November 2018, indicating the importance of this reedbed habitat for the species in winter.

5.2 Although the recorded peak number of Marsh Harriers entering the roost site in 2018 (5) is lower than previously recorded in 2016 (13), the reasoning for this reduction in numbers is unclear as the reedbed is of similar size and habitat quality in 2018 to when previously surveyed in 2016. With no data on the number of Marsh Harriers roosting in the reedbed in the intervening period, it is difficult to be sure of the driver of change.

5.3 Roosting birds may be more susceptible to increased disturbance and, where alternative roosting locations exist (including the reedbed created on the Isle of Sheppey specifically for K3), have presumably chosen to utilise these. However, without supporting information regarding the use of other roost sites, this is purely speculative at this stage.

Breeding bird survey

5.4 The survey of breeding birds recorded a breeding assemblage of 37 species in 2018, compared with 30 species in 2016 and 35 species in 2009. Although the breeding assemblage has increased since 2009, only four species are confirmed as breeding which is notably different to 2009 (30). Several species of conservation interest have declined; Bearded Tit and Nightingale are now absent.

5.5 Site population changes are likely to be due to a combination of factors. Bearded Tit, Chaffinch, Long-tailed Tit and Nightingale have been lost on site as a breeding species and numbers of Cetti's Warbler, Dunnock, Wren have all declined markedly. The majority of these species have shown nationwide declines in recent years, so all else being equal it is likely that some species may have declined or been lost as breeding species irrespective of habitat clearance on site. Other species for which the site supported a single territory in 2018 (e.g. Cuckoo, Greenfinch, Linnet, Song Thrush) are also likely to have been declining in the area over the longer term.

5.6 On-site habitat reduction to enable the construction of K3 is likely to be a contributory factor in declines of some species. All else being equal, as evidenced by the territory numbers recorded, species that are likely to have been affected by the clearance of scrub vegetation between the two survey periods include Skylark, Meadow Pipit, Whitethroat, Linnet and Song Thrush.

5.7 Overall, the site contains a diversity of species and is of local importance as in 2016/09. The loss of several species as breeding species (and associated effect on overall assemblage) is probably attributable to wider population declines of those particular species, whereas scrub clearance on site has probably affected total numbers of bird territories rather than species' presence/absence.

5.8 Exact comparison between years is difficult since the extensive habitat creation associated with K3 will only be undertaken once construction is complete. It is likely that further surveys in later years as the mitigation habitat matures would find the site supporting similar numbers to those found in 2009 pre-construction.

5.9 All wild bird nests and their eggs are protected under the WCA. It is therefore a requirement that the development proposals avoid disturbance or harm to any birds breeding on the site. This can most easily be achieved by clearing habitats within the development area with the potential to support nesting birds outside of the breeding season (March – August inclusive).

Intertidal waterbird survey

5.10 In total, 53 species of waterbird were recorded using the intertidal survey area at Kemsley in 2018. Of these, 40 species were recorded using the intertidal survey area in winter; 38 species of waterbirds were recorded using the intertidal survey area in spring and 39 species were recorded using the intertidal survey area in autumn.

5.11 A total of 25 species of bird, considered as being of conservation importance due to being listed as wintering and/or passage interest features on The Swale SPA and/or Ramsar designations were recorded. These species are (SPA species in italics): *Avocet*, *Bar-tailed Godwit*, Black-headed gull, *Black-tailed Godwit*, Common Tern, Curlew, Brent Goose (Dark-bellied), Dunlin, Greenshank, *Grey Plover*, *Knot*, Lapwing, Little Egret, Little Grebe, Oystercatcher, *Pintail*, *Redshank*, *Ringed Plover*, Sandwich Tern, Shelduck, Spotted Redshank, Teal, Turnstone, Wigeon and Whimbrel.

5.12 The peak count of one species (Black-tailed Godwit) within the Kemsley survey area in winter 2018 represented 1% or more of the international population estimate.

5.13 The peak counts of two species (Black-tailed Godwit and Whimbrel) recorded within the Kemsley survey area in 2018 represented 1% or more of the national population estimate for Great Britain.

5.14 Significant proportions (>5%) of The Swale SPA populations for seven of the cited wintering and/or passage waterbird species were recorded. In winter these were Avocet, Black-tailed Godwit, Grey Plover, Knot, Pintail and Redshank; in spring these were Black-tailed Godwit and Redshank; and in autumn these were Black-tailed Godwit, Ringed Plover.

5.15 Two species (Cormorant, Little Grebe) have been identified within the WeBS Alerts system as showing declines on The Swale in the medium- and long-term that may suggest they are more vulnerable to negative impacts of the development. In light of these alerts, the SPA population of Dunlin, Grey Plover, Lapwing and Shelduck might also be considered more vulnerable than other species to any impacts of development that might affect the overall estuarine waterbird assemblage.

5.16 Waterbird distribution was evenly distributed across the survey area as a whole, but concentrations of waterbirds occurred on the east bank of The Swale around Elmley Hills, where roosting sites for Oystercatcher, Black-tailed Godwit, Avocet and other species in smaller numbers were recorded at high tide.

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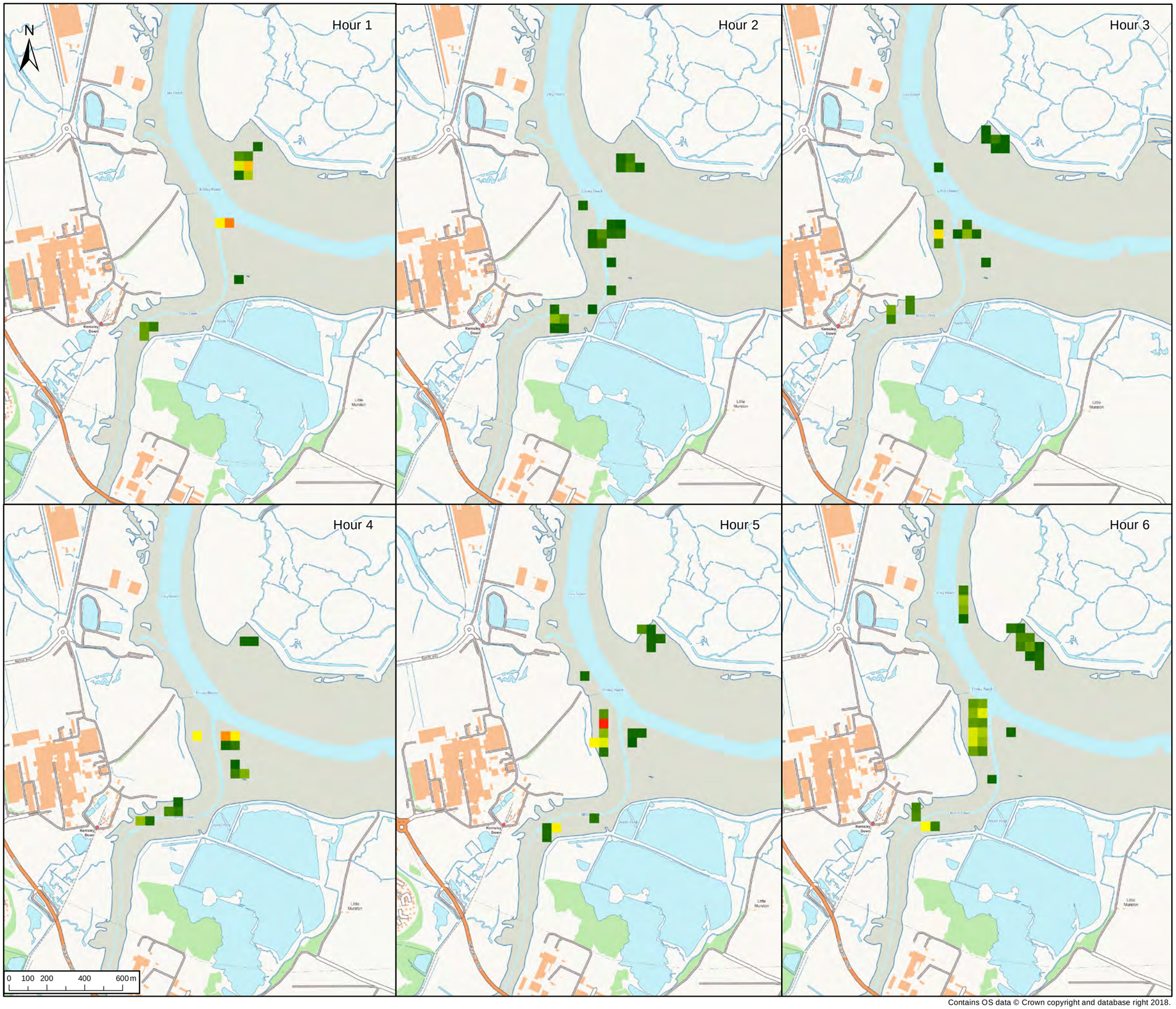
FIGURES

Figures 3.1. Location of Schedule 1 breeding bird territories in 2018

Figures 3.2-3.37 Distribution of key waterbird species at low and high tide in winter and spring



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Legend

Bird density

High : 110.87

Low : 1

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Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies

Project: Kemsley K3/WKN

Title: Density of Brent Goose recorded in high water survey

Status	Drawn By	PM/Checked By
Final	KM	MS
Job Ref	**Scale @ A3**	**Date**
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Drawing Number		**Rev**
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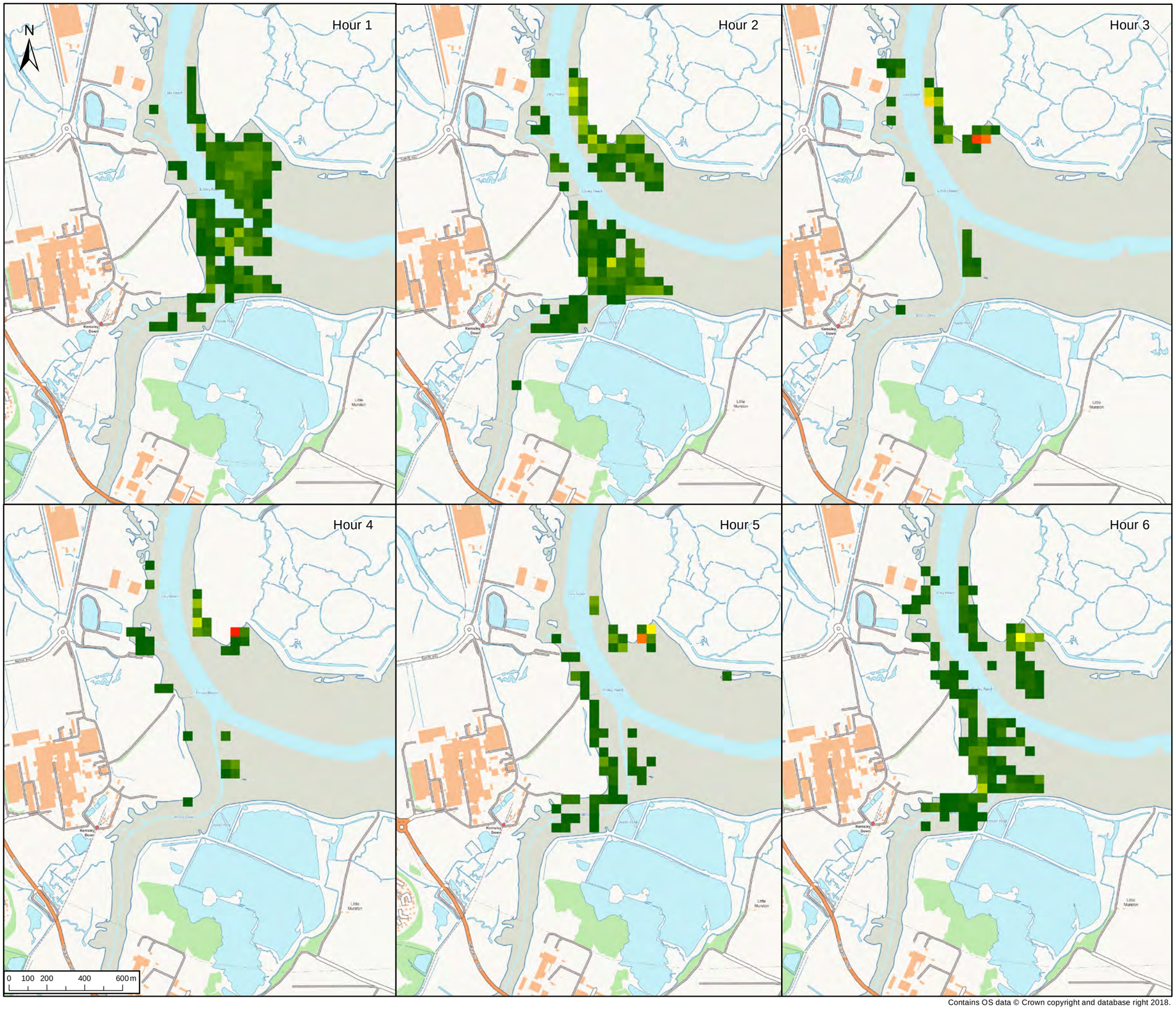

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Legend

Bird denisty

High : 949.07

Low : 1

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Project: Kemsley K3/WKN

Title: Density of Dunlin recorded in high water survey

Status	Drawn By	PM/Checked By
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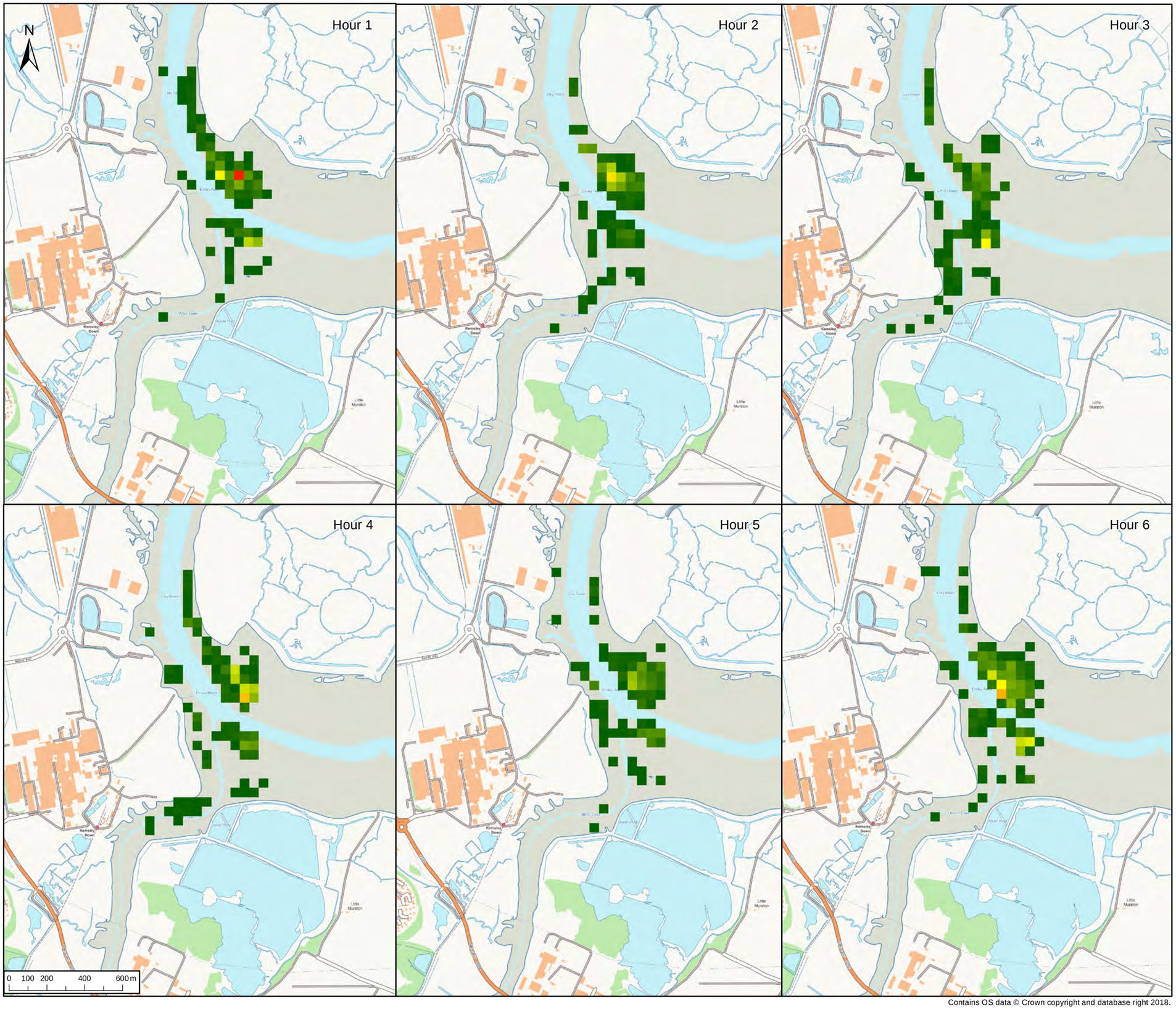

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Legend

Bird density

High : 287.31

Low : 1

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Project: Kemsley K3/WKN

Title: Density of Dunlin recorded in low water survey

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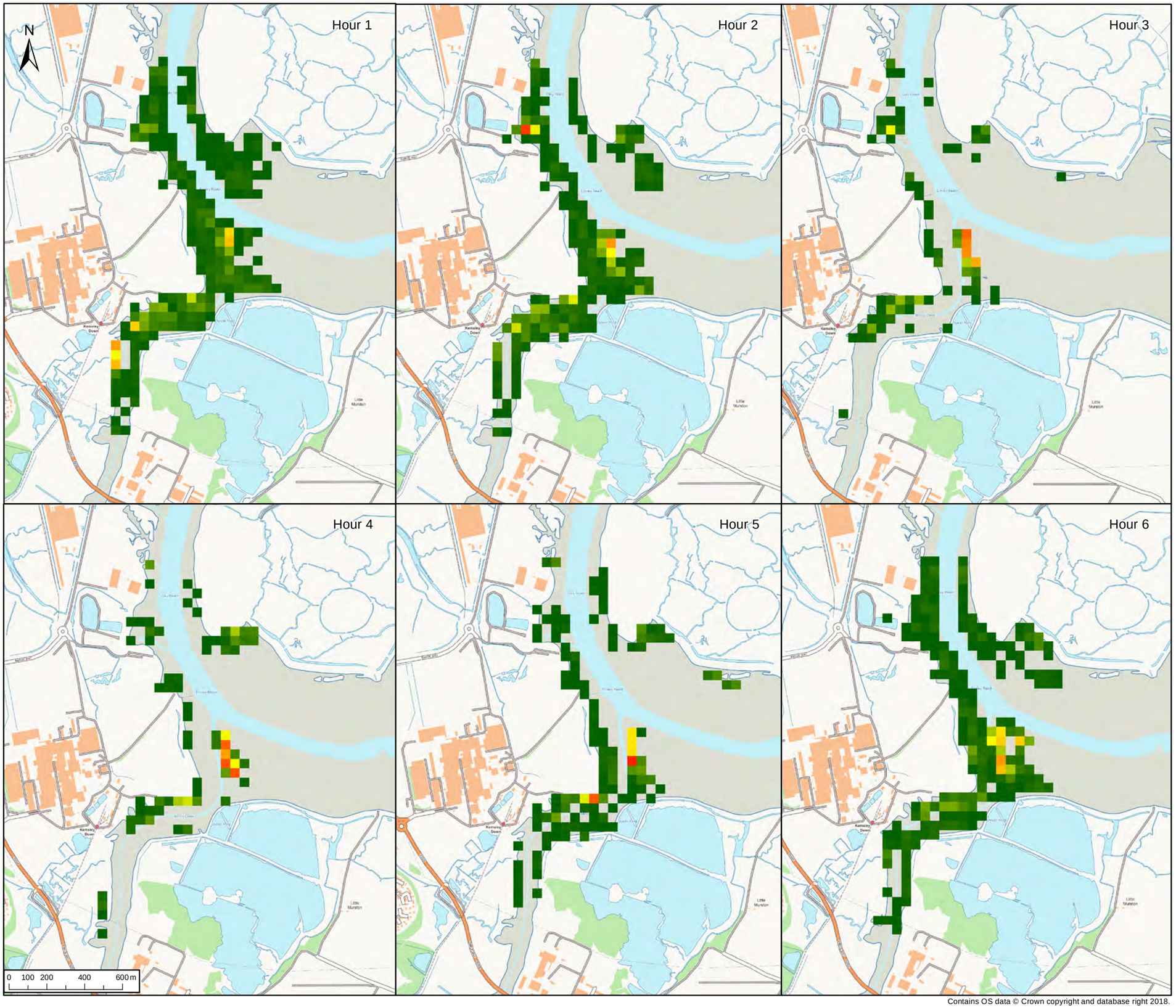

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Legend

Bird density

High : 231.95

Low : 1

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Project: Kemsley K3/WKN

Title: Density of Redshank recorded in high water survey

Status	Drawn By	PM/Checked By
Final	KM	MS
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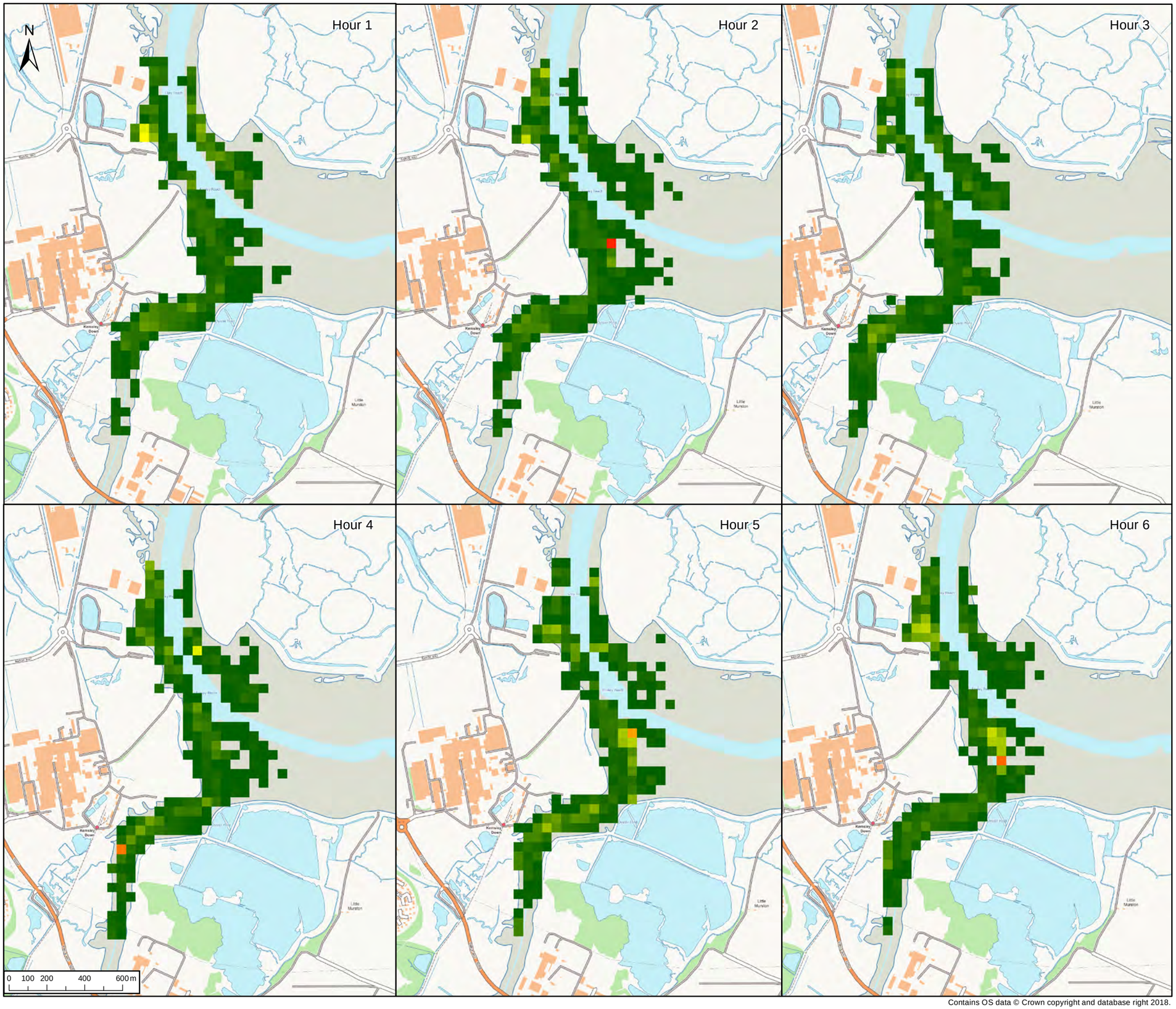

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Legend

Bird density

High : 137

Low : 1

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Client: Wheelabrator Technologies

Project: Kemsley K3/WKN

Title: Density of Redshank recorded in low water survey

Status	Drawn By	PM/Checked By
Final	KM	MS
Job Ref	**Scale @ A3**	**Date**
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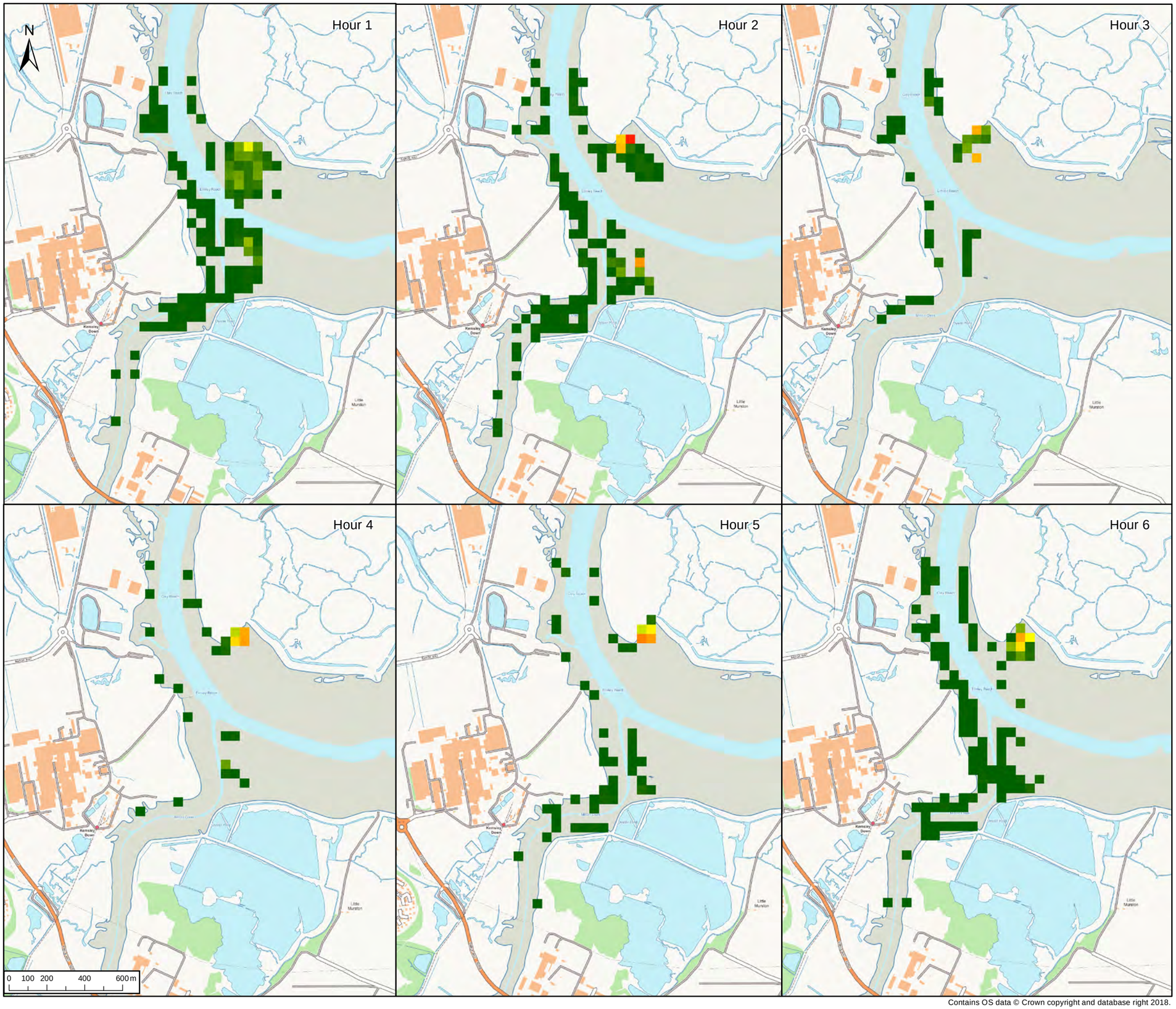

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Legend

Bird density

High : 74.57

Low : 1

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Client: Wheelabrator Technologies

Project: Kemsley K3/WKN

Title: Density of Grey Plover recorded in high water survey

Status	Drawn By	PM/Checked By
Final	KM	MS
Job Ref	**Scale @ A3**	**Date**
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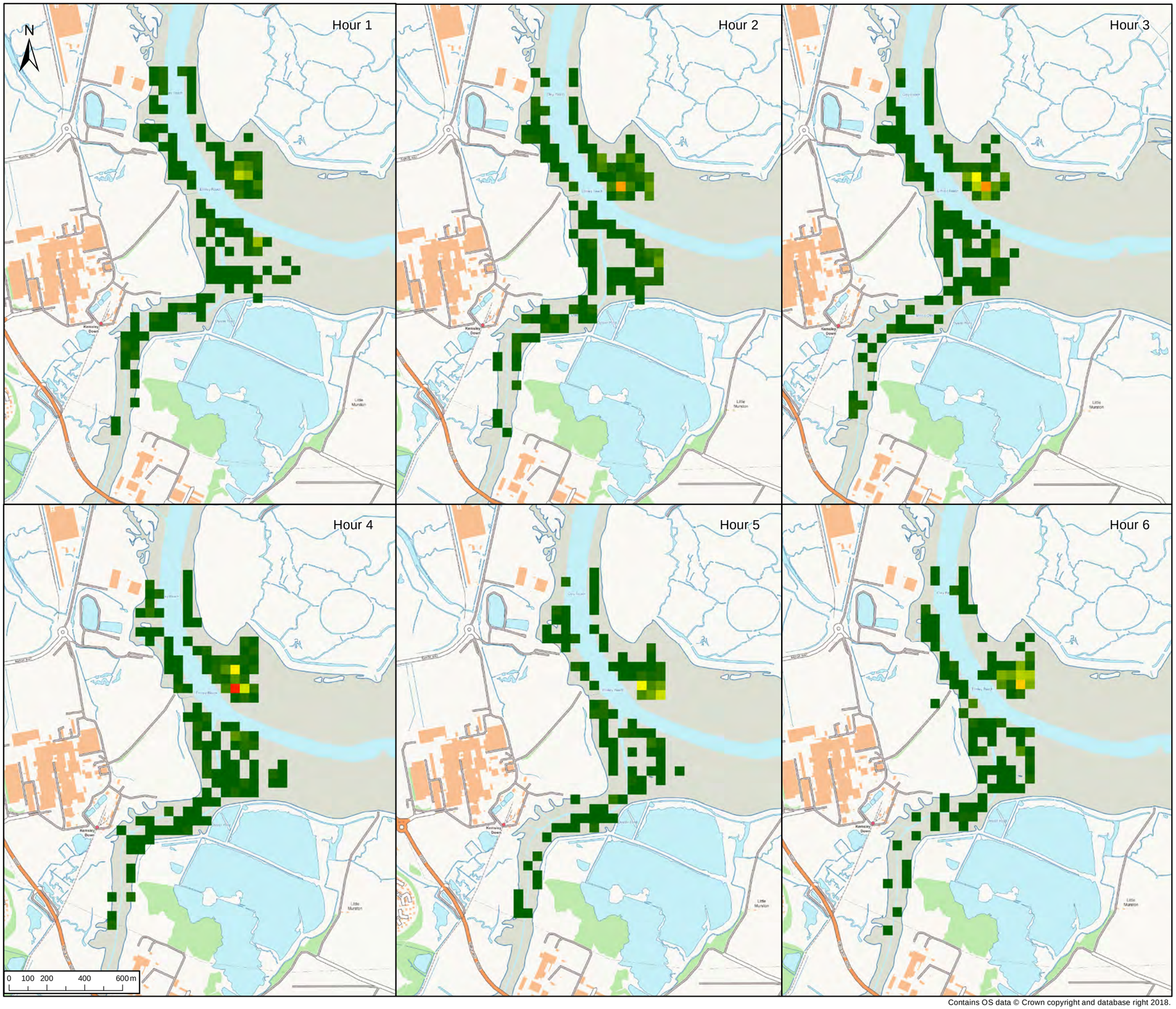

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Legend

Bird density

High : 25.84

Low : 1

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies

Project: Kemsley K3/WKN

Title: Density of Grey Plover recorded in low water survey

Status	Drawn By	PM/Checked By
Final	KM	MS
Job Ref	**Scale @ A3**	**Date**
ECO00047	1:20,000	OCT 18
Drawing Number		**Rev**
Figure 3.8		01

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Legend

Bird density

High : 84.67

Low : 1

Rev	Description	Date	Initial	Checked

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies

Project: Kemsley K3/WKN

Title: Density of Shelduck recorded in high water survey

Status	Drawn By	PM/Checked By
Final	KM	MS
Job Ref	**Scale @ A3**	**Date**
ECO00047	1:20,000	OCT 18
Drawing Number		**Rev**
Figure 3.9		01

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Legend

Bird density

High : 29.8519

Low : 1

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies

Project: Kemsley K3/WKN

Title: Density of Shelduck recorded in low water survey

Status	Drawn By	PM/Checked By
Final	KM	MS
Job Ref	**Scale @ A3**	**Date**
ECO00047	1:20,000	OCT 18
Drawing Number		**Rev**
Figure 3.10		01

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Legend

Bird density

High : 5

Low : 1

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies

Project: Kemsley K3/WKN

Title: Density of Shoveler recorded in high water survey

Status	Drawn By	PM/Checked By
Final	KM	MS
Job Ref	**Scale @ A3**	**Date**
ECO00047	1:20,000	OCT 18
Drawing Number		**Rev**
Figure 3.11		01

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Legend

Bird density

High : 2

Low : 1

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies

Project: Kemsley K3/WKN

Title: Density of Shoveler recorded in low water survey

Status	Drawn By	PM/Checked By
Final	KM	MS
Job Ref	**Scale @ A3**	**Date**
ECO00047	1:20,000	OCT 18
Drawing Number		**Rev**
Figure 3.12		01

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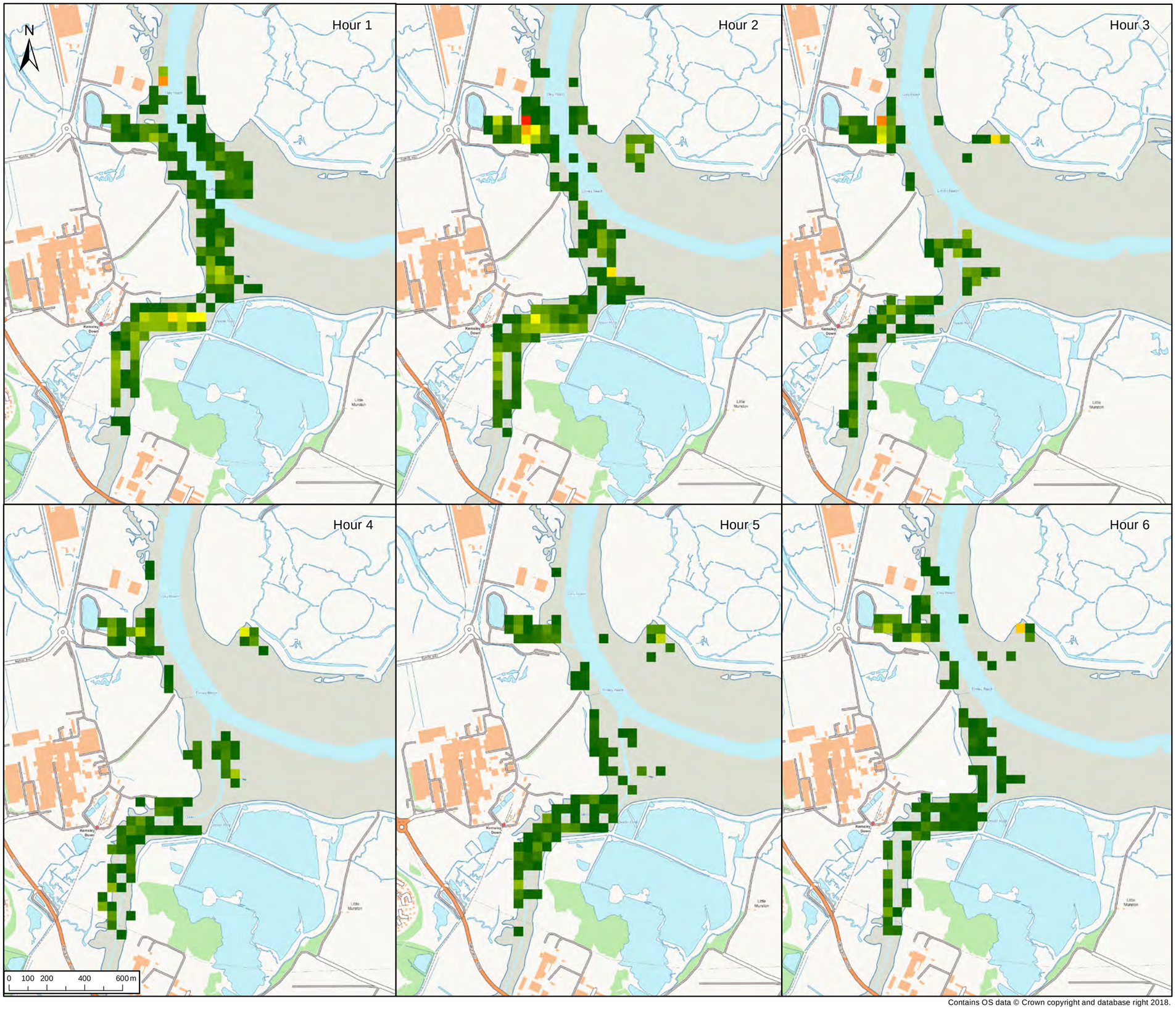

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Legend

Bird density

High : 149.17

Low : 1

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies

Project: Kemsley K3/WKN

Title: Density of Teal recorded in high water survey

Status	Drawn By	PM/Checked By
Final	KM	MS
Job Ref	**Scale @ A3**	**Date**
ECO00047	1:20,000	OCT 18
Drawing Number		**Rev**
Figure 3.13		01

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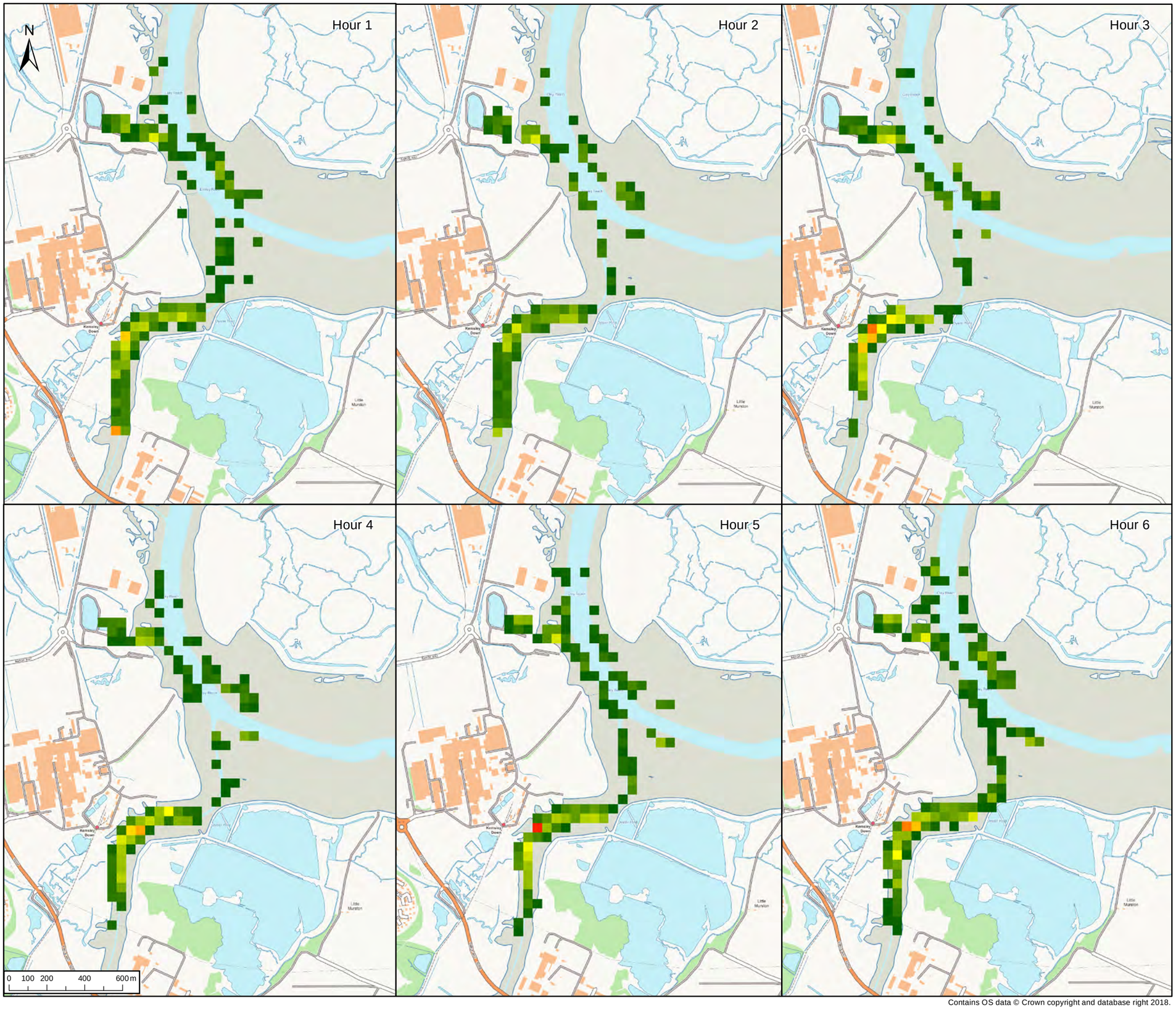
Document: V:\GIS temp (other offices work)\Kemsley K5\Drawings\47-0034-001 Teal HW.mxd



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Legend

Bird density

High : 151.01

Low : 1

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies

Project: Kemsley K3/WKN

Title: Density of Teal recorded in low water survey

Status	Drawn By	PM/Checked By
Final	KM	MS
Job Ref	**Scale @ A3**	**Date**
ECO00047	1:20,000	OCT 18
Drawing Number		**Rev**
Figure 3.14		01

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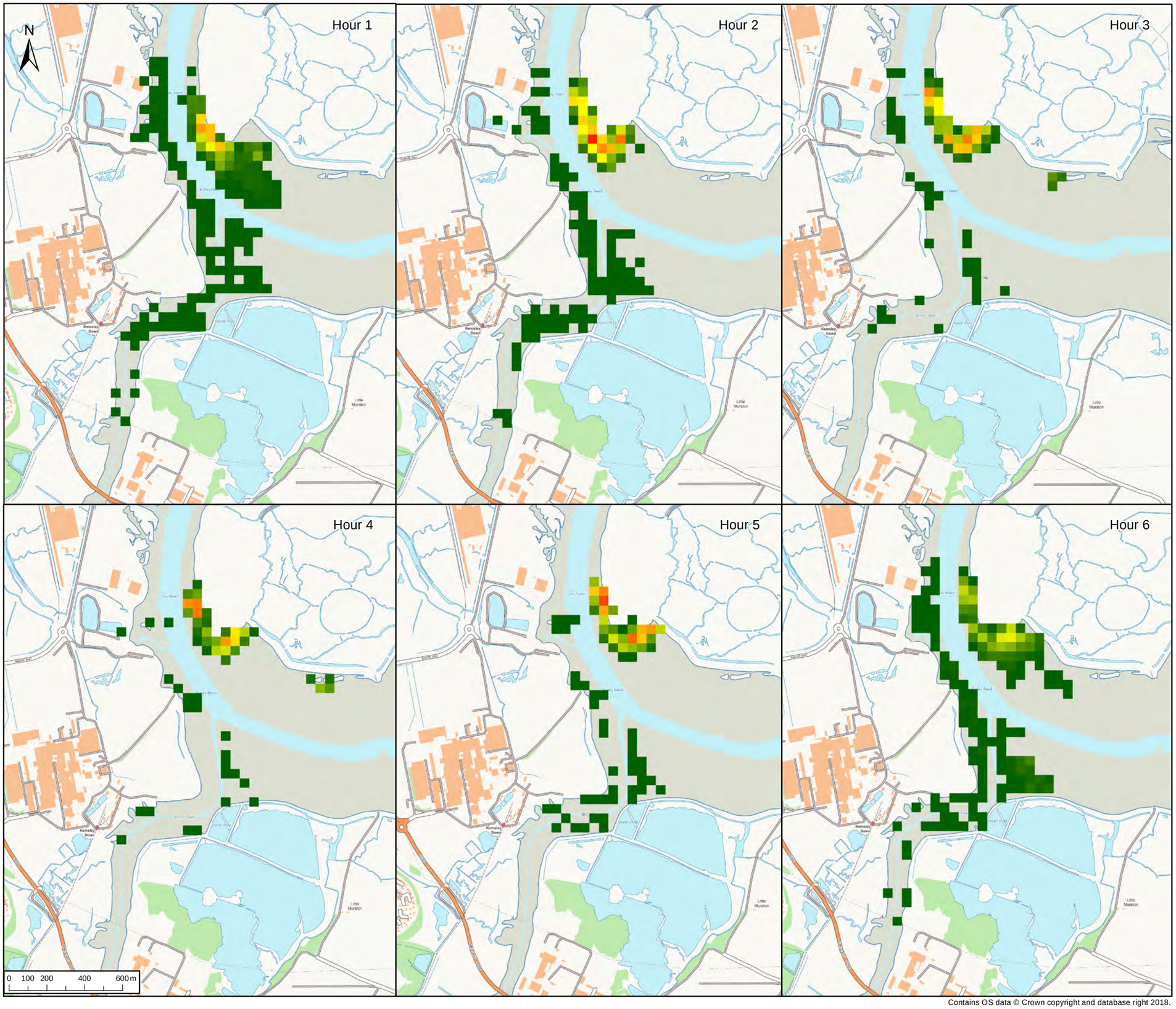

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Legend

Bird density

High : 490.94

Low : 0

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies

Project: Kemsley K3/WKN

Title: Density of Oystercatcher recorded in high water survey

Status	Drawn By	PM/Checked By
Final	KM	MS
Job Ref	**Scale @ A3**	**Date**
ECO00047	1:20,000	OCT 18
Drawing Number		**Rev**
Figure 3.15		01

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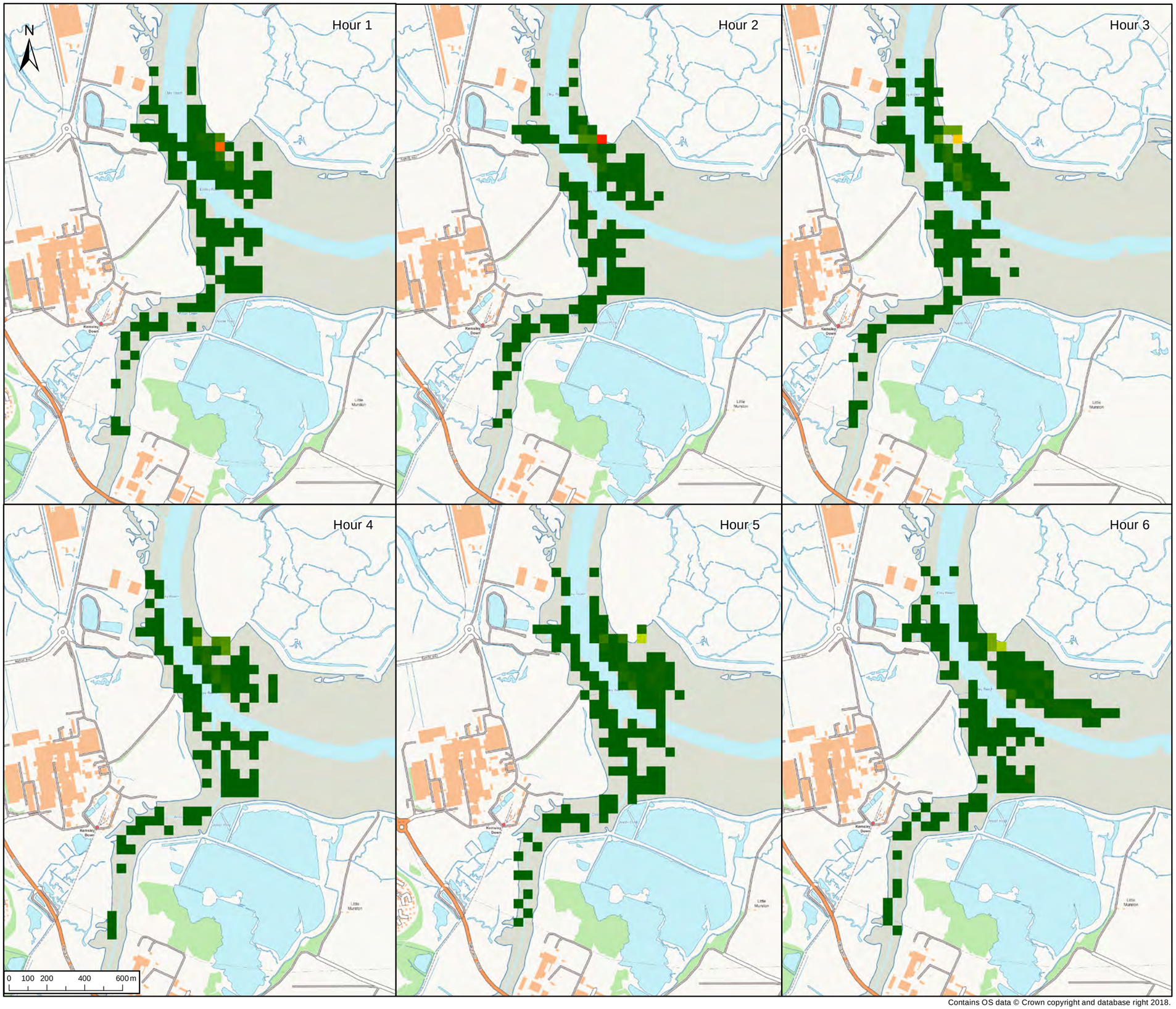
Document: V:\GIS temp (other offices work)\Kemsley K5\Drawings\47-0024-001 Oystercatcher HW.mxd



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Legend

Bird density

High : 315.56

Low : 1

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies

Project: Kemsley K3/WKN

Title: Density of Oystercatcher recorded in low water survey

Status	Drawn By	PM/Checked By
Final	KM	MS
Job Ref	**Scale @ A3**	**Date**
ECO00047	1:20,000	OCT 18
Drawing Number		**Rev**
Figure 3.16		01

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Legend

Bird density

High : 281.62

Low : 1

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies

Project: Kemsley K3/WKN

Title: Density of Lapwing recorded in high water survey

Status	Drawn By	PM/Checked By
Final	KM	MS
Job Ref	**Scale @ A3**	**Date**
ECO00047	1:20,000	OCT 18
Drawing Number		**Rev**
Figure 3.17		01

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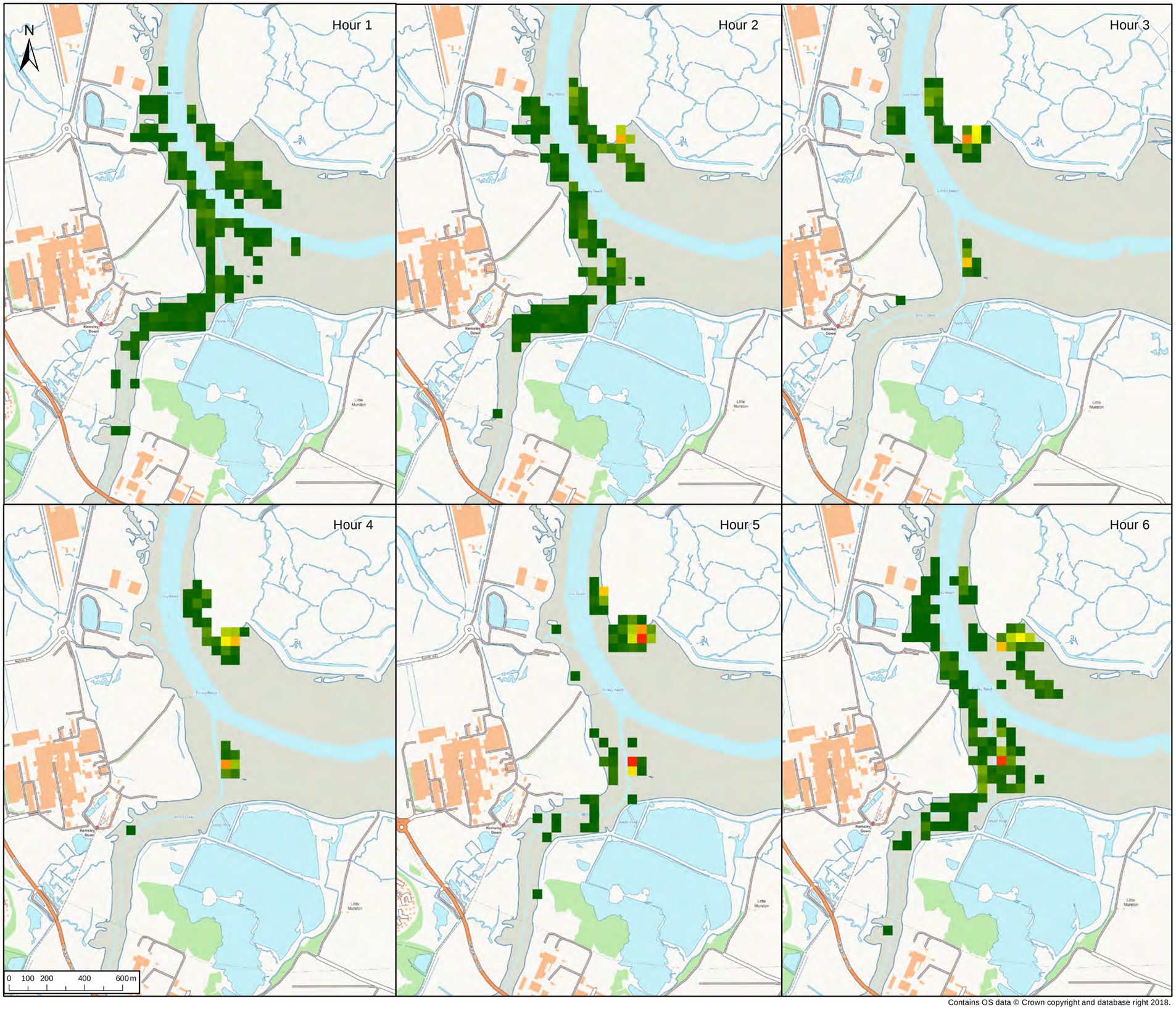
Document: V:\GIS temp (other offices work)\Kemsley K5\Drawings\47-0040-001 Lapwing HW.mxd



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Legend

Bird denisty

High : 691.17

Low : 0

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies

Project: Kemsley K3/WKN

Title: Density of Black-tailed Godwit recorded in high water survey

Status	Drawn By	PM/Checked By
Final	KM	MS
Job Ref	**Scale @ A3**	**Date**
ECO00047	1:20,000	OCT 18
Drawing Number		**Rev**
Figure 3.18		01

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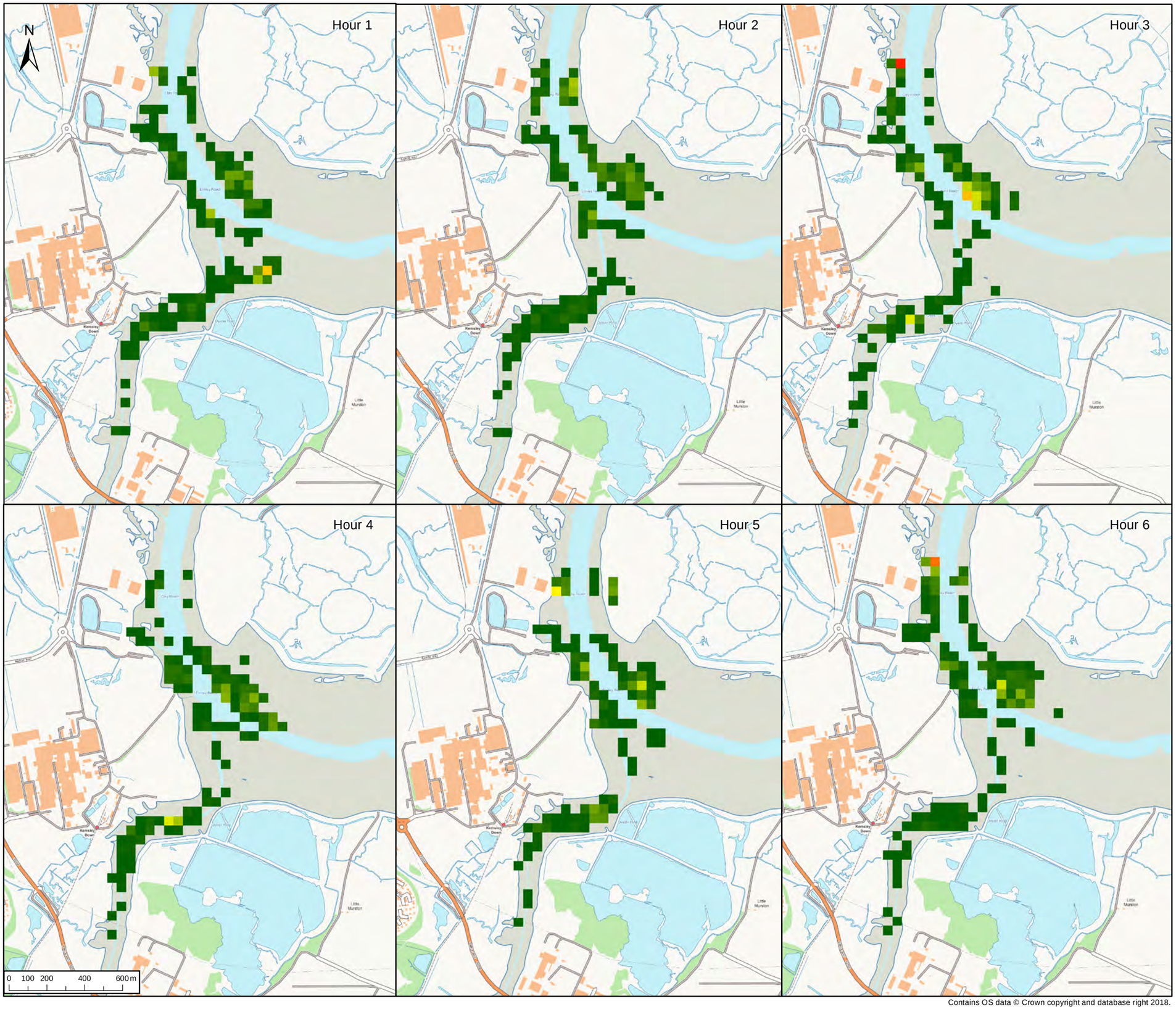
Document: V:\GIS temp (other offices work)\Kemsley K5\Drawings\47-0005-001 Black-tailed Godwit HW.mxd



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Legend

Bird density

High : 276.92

Low : 1

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies

Project: Kemsley K3/WKN

Title: Density of Black-tailed Godwit recorded in low water survey

Status	Drawn By	PM/Checked By
Final	KM	MS
Job Ref	**Scale @ A3**	**Date**
ECO00047	1:20,000	OCT 18
Drawing Number		**Rev**
Figure 3.19		01

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Legend

Bird density

High : 2

Low : 1

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies

Project: Kemsley K3/WKN

Title: Density of Green Sandpiper recorded in high water survey

Status	Drawn By	PM/Checked By
Final	KM	MS
Job Ref	**Scale @ A3**	**Date**
ECO00047	1:20,000	OCT 18
Drawing Number		**Rev**
Figure 3.20		01

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Legend

Bird density

High : 3

Low : 1

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies

Project: Kemsley K3/WKN

Title: Density of Green Sandpiper recorded in low water survey

Status	Drawn By	PM/Checked By
Final	KM	MS
Job Ref	**Scale @ A3**	**Date**
ECO00047	1:20,000	OCT 18
Drawing Number		**Rev**
Figure 3.21		01

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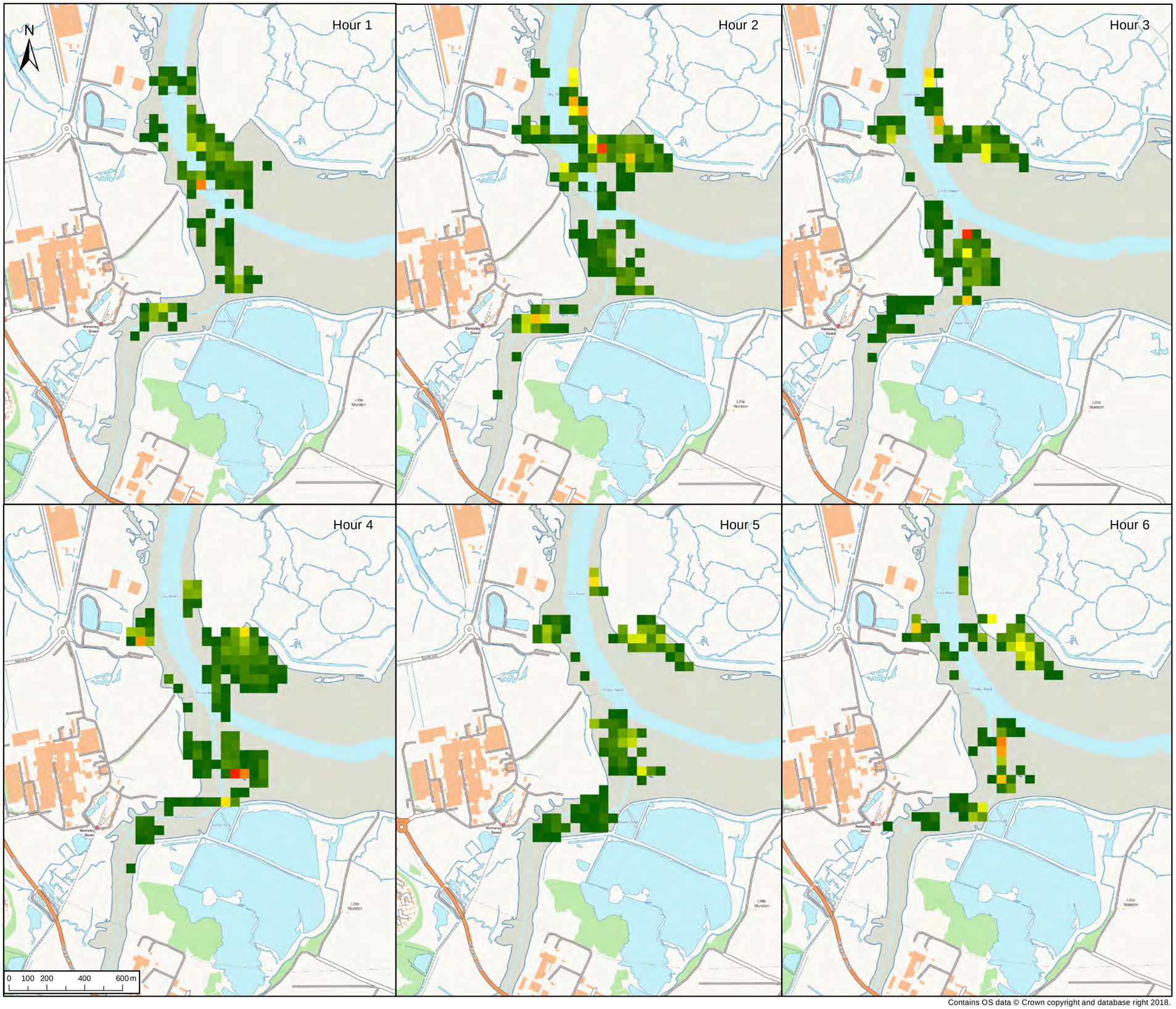
Document: V:\GIS temp (other offices work)\Kemsley K5\Drawings\47-0015-001 Green Sandpiper LW.mxd



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Legend

Bird density

High : 190.74

Low : 1

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies

Project: Kemsley K3/WKN

Title: Density of Wigeon recorded in high water survey

Status	Drawn By	PM/Checked By
Final	KM	MS
Job Ref	**Scale @ A3**	**Date**
ECO00047	1:20,000	OCT 18
Drawing Number		**Rev**
Figure 3.22		01

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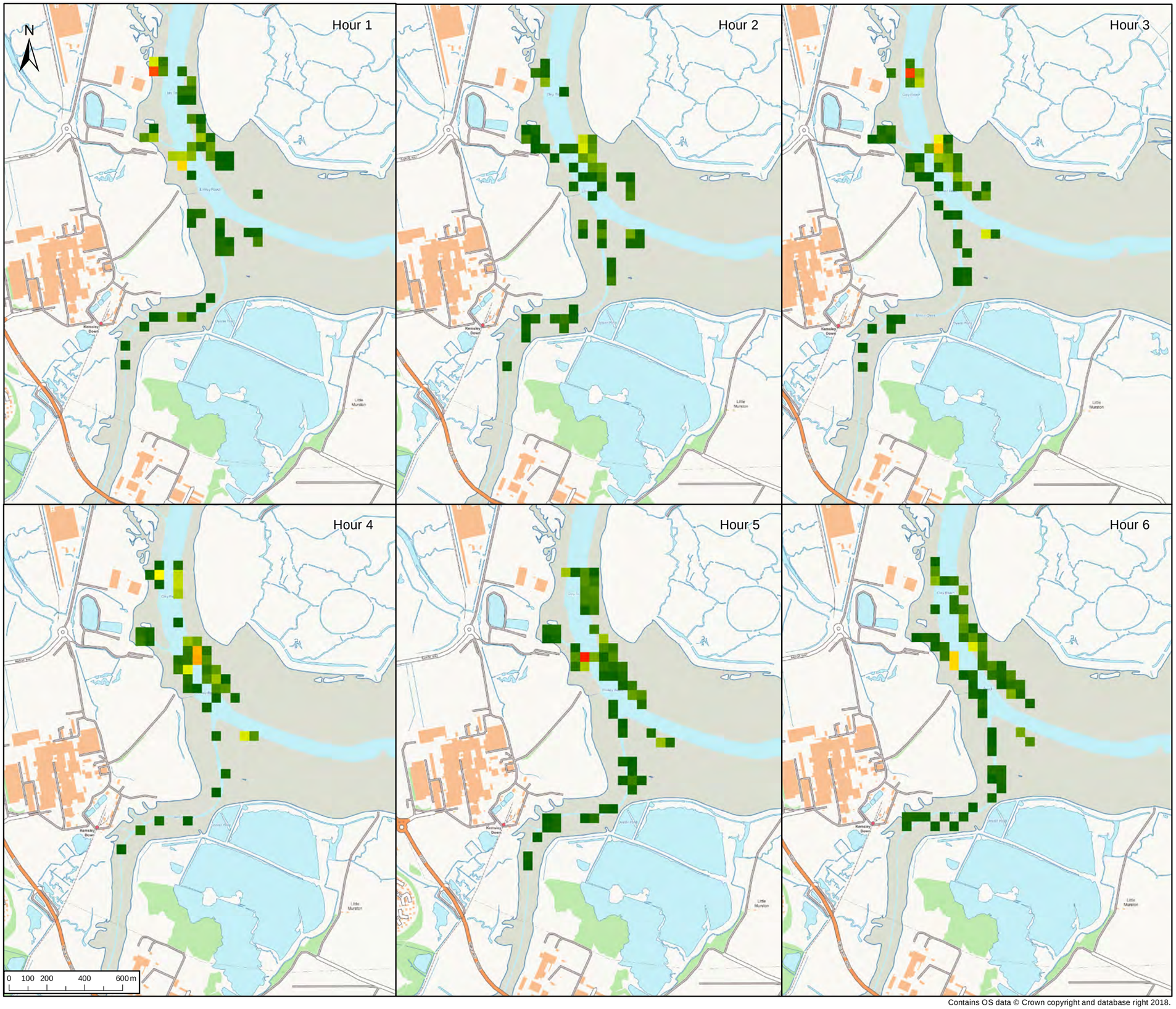
Document: V:\GIS temp (other offices work)\Kemsley K5\Drawings\47-0036-001 Wigeon HW.mxd



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2. If received electronically it is the recipient's responsibility to print to correct scale. Only written dimensions should be used.

Legend

Bird density

High : 149.24

Low : 1

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies

Project: Kemsley K3/WKN

Title: Density of Wigeon recorded in low water survey

Status	Drawn By	PM/Checked By
Final	KM	MS
Job Ref	**Scale @ A3**	**Date**
ECO00047	1:20,000	OCT 18
Drawing Number		**Rev**
Figure 3.23		01

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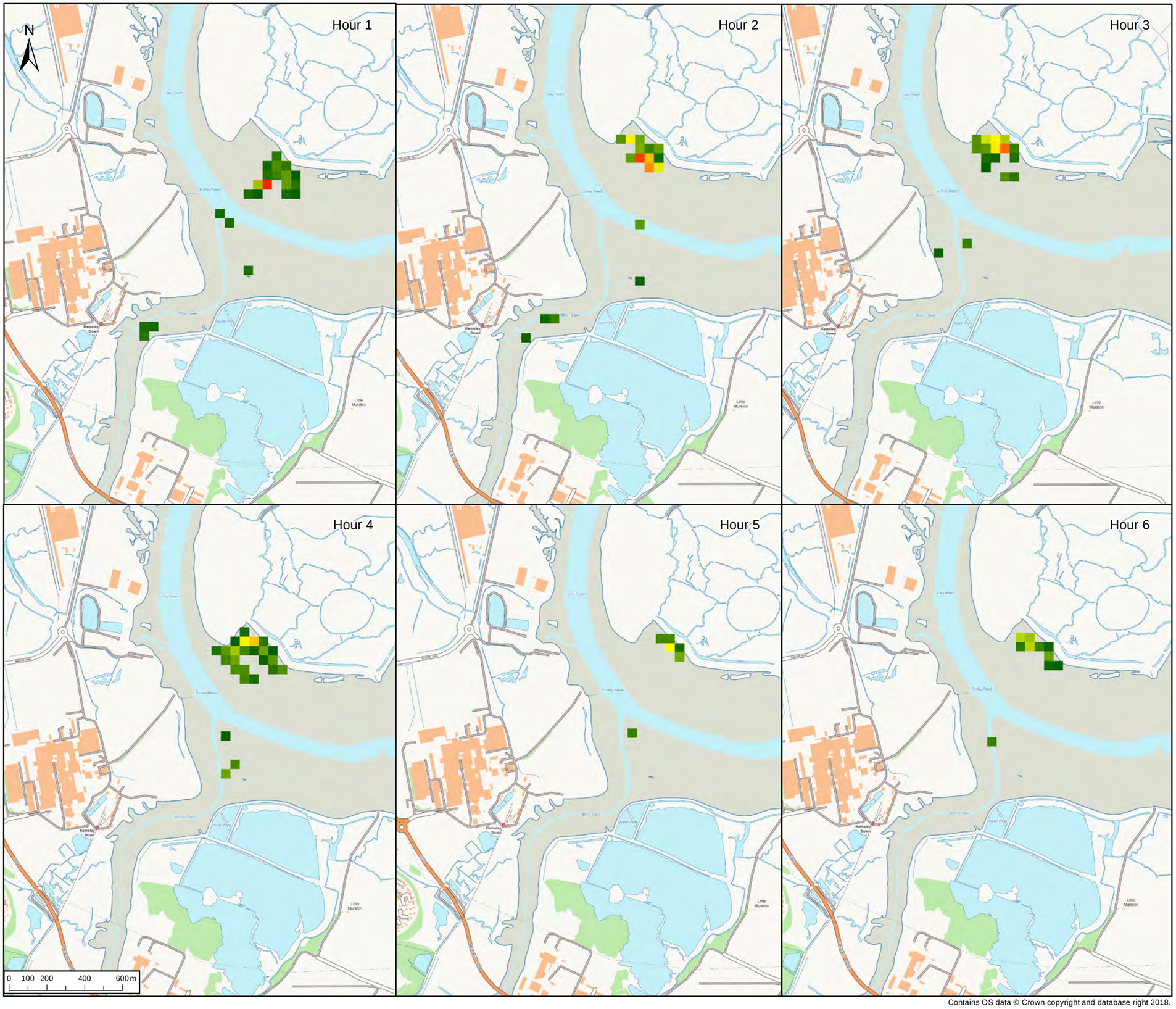
Document: V:\GIS temp (other offices work)\Kemsley K5\Drawings\47-0037-001 Wigeon LW.mxd



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Legend

Bird density

High : 66.75

Low : 1

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies

Project: Kemsley K3/WKN

Title: Density of Pintail recorded in high water survey

Status	Drawn By	PM/Checked By
Final	KM	MS
Job Ref	**Scale @ A3**	**Date**
ECO00047	1:20,000	OCT 18
Drawing Number		**Rev**
Figure 3.24		01

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Legend

Bird density

High : 63

Low : 1

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies

Project: Kemsley K3/WKN

Title: Density of Pintail recorded in low water survey

Status	Drawn By	PM/Checked By
Final	KM	MS
Job Ref	**Scale @ A3**	**Date**
ECO00047	1:20,000	OCT 18
Drawing Number		**Rev**
Figure 3.25		01

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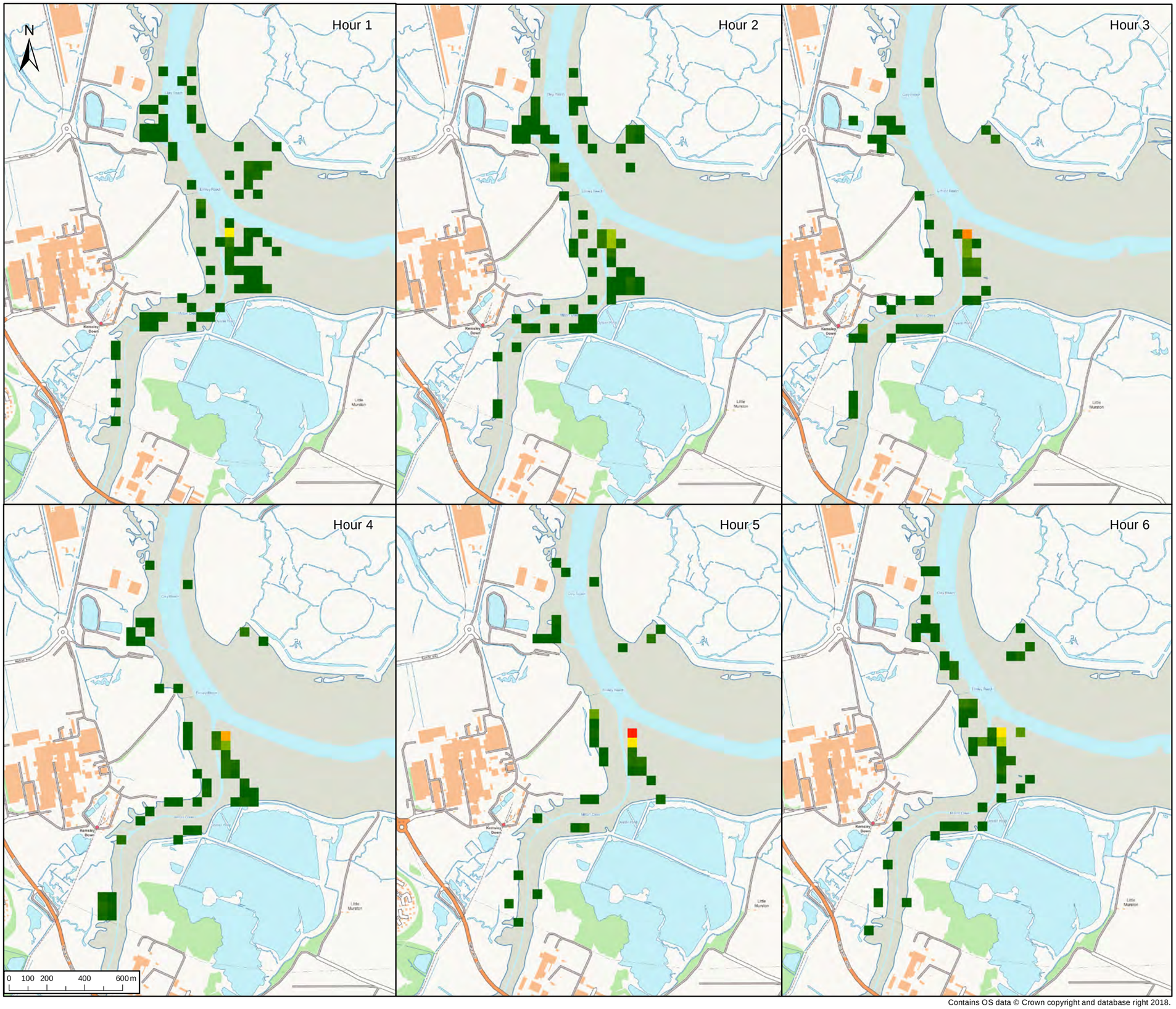
Document: V:\GIS temp (other offices work)\Kemsley K5\Drawings\47-0027-001 Pintail LW.mxd



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Legend

Bird density

High : 57.41

Low : 1

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies

Project: Kemsley K3/WKN

Title: Density of Little Egret recorded in high water survey

Status	Drawn By	PM/Checked By
Final	KM	MS
Job Ref	**Scale @ A3**	**Date**
ECO00047	1:20,000	OCT 18
Drawing Number		**Rev**
Figure 3.26		01

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Document: V:\GIS temp (other offices work)\Kemsley K5\Drawings\47-0022-001 Little Egret HW.mxd

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Legend

Bird density

High : 46

Low : 1

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies

Project: Kemsley K3/WKN

Title: Density of Little Egret recorded in low water survey

Status	Drawn By	PM/Checked By
Final	KM	MS
Job Ref	**Scale @ A3**	**Date**
ECO00047	1:20,000	OCT 18
Drawing Number		**Rev**
Figure 3.27		01

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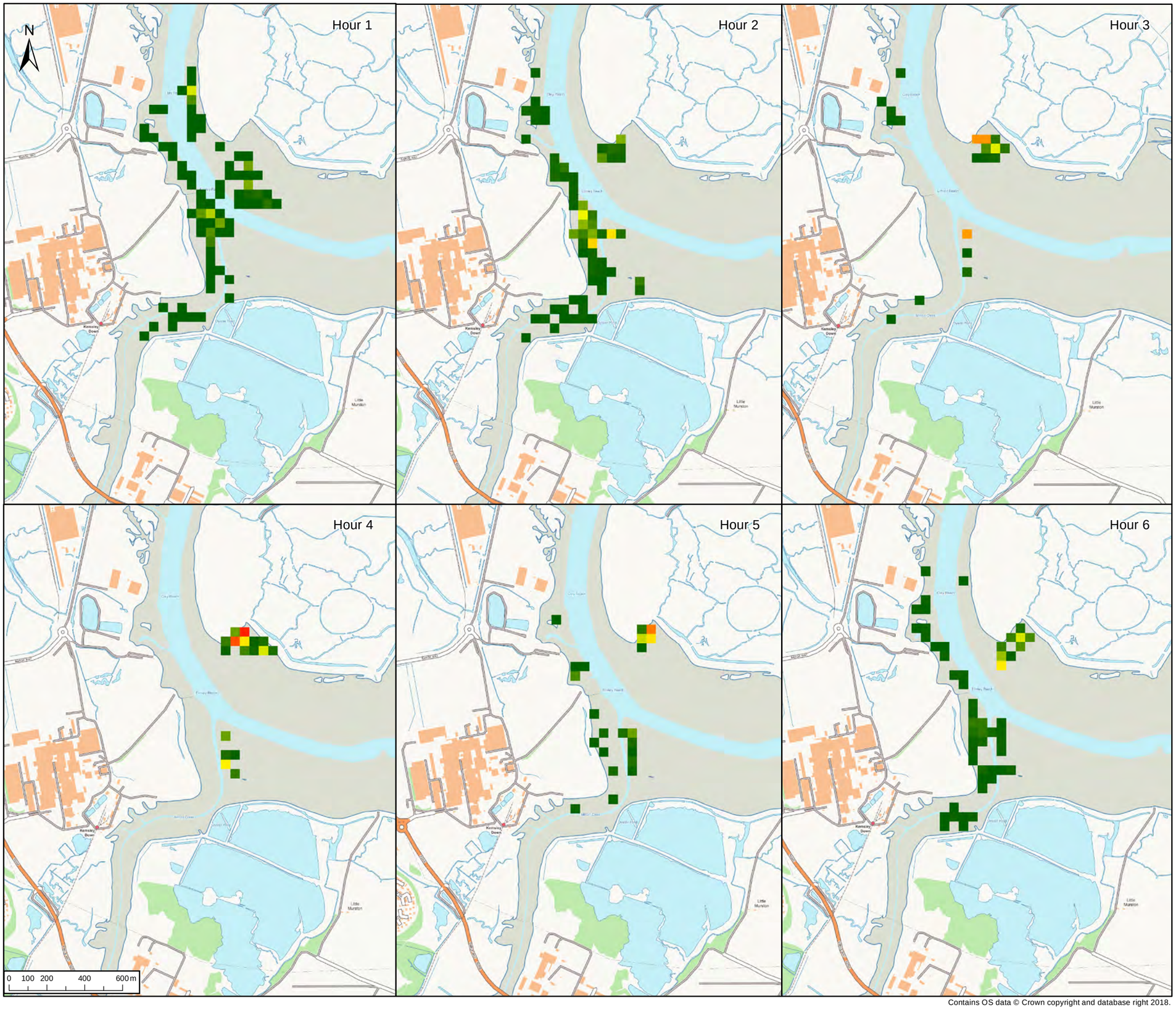
Document: V:\GIS temp (other offices work)\Kemsley K5\Drawings\47-0023-001 Little Egret LW.mxd



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Legend

Bird denisty

High : 110.93

Low : 11

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RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies

Project: Kemsley K3/WKN

Title: Density of Avocet recorded in high water survey

Status	Drawn By	PM/Checked By
Final	KM	MS
Job Ref	**Scale @ A3**	**Date**
ECO00047	1:20,000	OCT 18
Drawing Number		**Rev**
Figure 3.28		01

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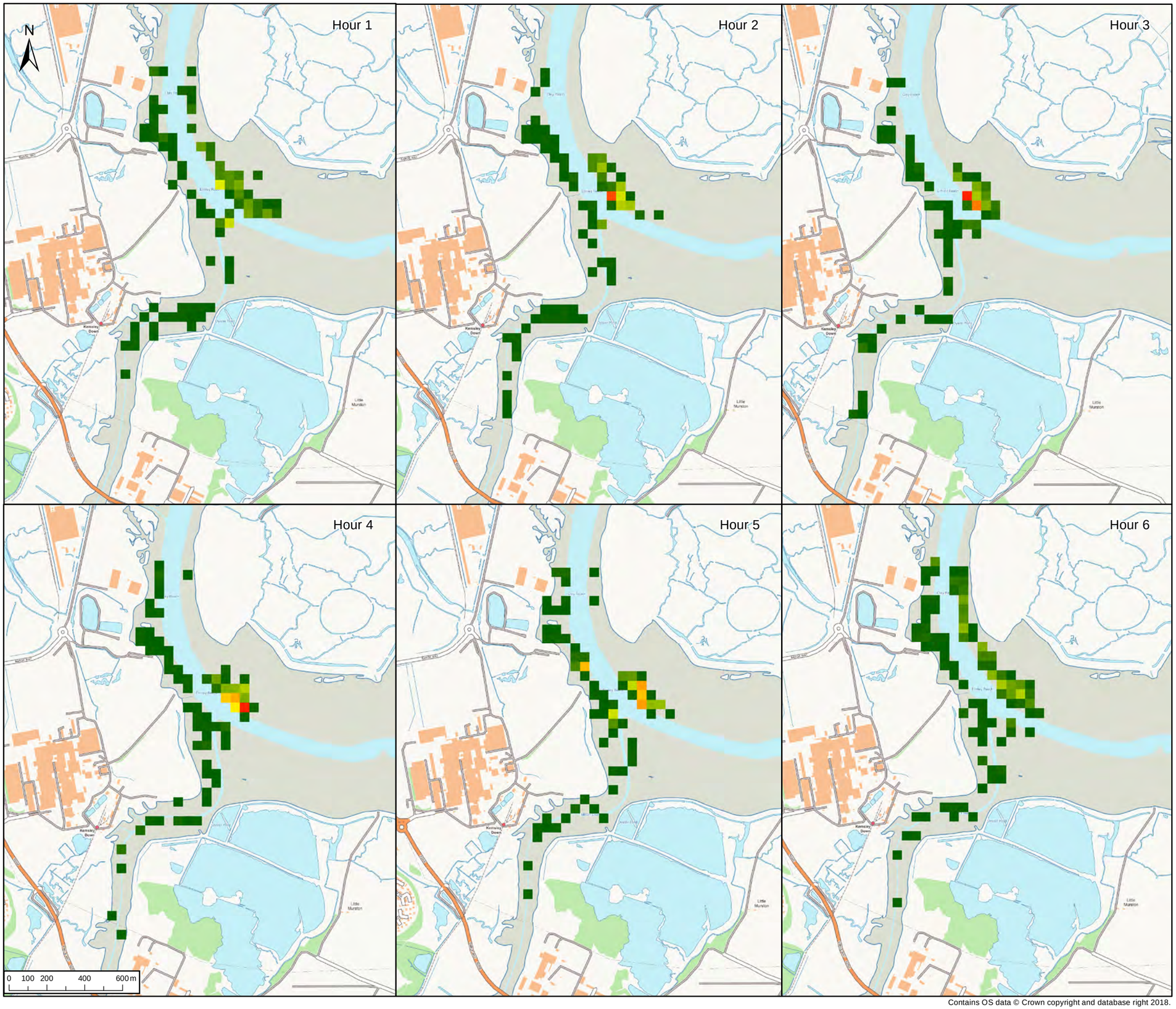
Document: V:\GIS temp (other offices work)\Kemsley K5\Drawings\47-0001-001 Avocet HW.mxd



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Legend

Bird density

High : 97.49

Low : 1

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T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies

Project: Kemsley K3/WKN

Title: Density of Avocet recorded in low water survey

Status	Drawn By	PM/Checked By
Final	KM	MS
Job Ref	**Scale @ A3**	**Date**
ECO00047	1:20,000	OCT 18
Drawing Number		**Rev**
Figure 3.29		01

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Legend

Bird density

High : 16

Low : 1

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T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies

Project: Kemsley K3/WKN

Title: Density of Bar-tailed Godwit recorded in high water survey

Status	Drawn By	PM/Checked By
Final	KM	MS
Job Ref	**Scale @ A3**	**Date**
ECO00047	1:20,000	OCT 18
Drawing Number		**Rev**
Figure 3.30		01

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Legend

Bird density

High : 25

Low : 1

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Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies

Project: Kemsley K3/WKN

Title: Density of Bar-tailed Godwit recorded in low water survey

Status	Drawn By	PM/Checked By
Final	KM	MS
Job Ref	**Scale @ A3**	**Date**
ECO00047	1:20,000	OCT 18
Drawing Number		**Rev**
Figure 3.31		01

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Legend

Bird density

High : 12

Low : 1

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Client: Wheelabrator Technologies

Project: Kemsley K3/WKN

Title: Density of Greenshank recorded in high water survey

Status	Drawn By	PM/Checked By
Final	KM	MS
Job Ref	**Scale @ A3**	**Date**
ECO00047	1:20,000	OCT 18
Drawing Number		**Rev**
Figure 3.32		01

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Legend

Bird density

High : 4.5

Low : 1

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T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies

Project: Kemsley K3/WKN

Title: Density of Greenshank recorded in low water survey

Status	Drawn By	PM/Checked By
Final	KM	MS
Job Ref	**Scale @ A3**	**Date**
ECO00047	1:20,000	OCT 18
Drawing Number		**Rev**
Figure 3.33		01

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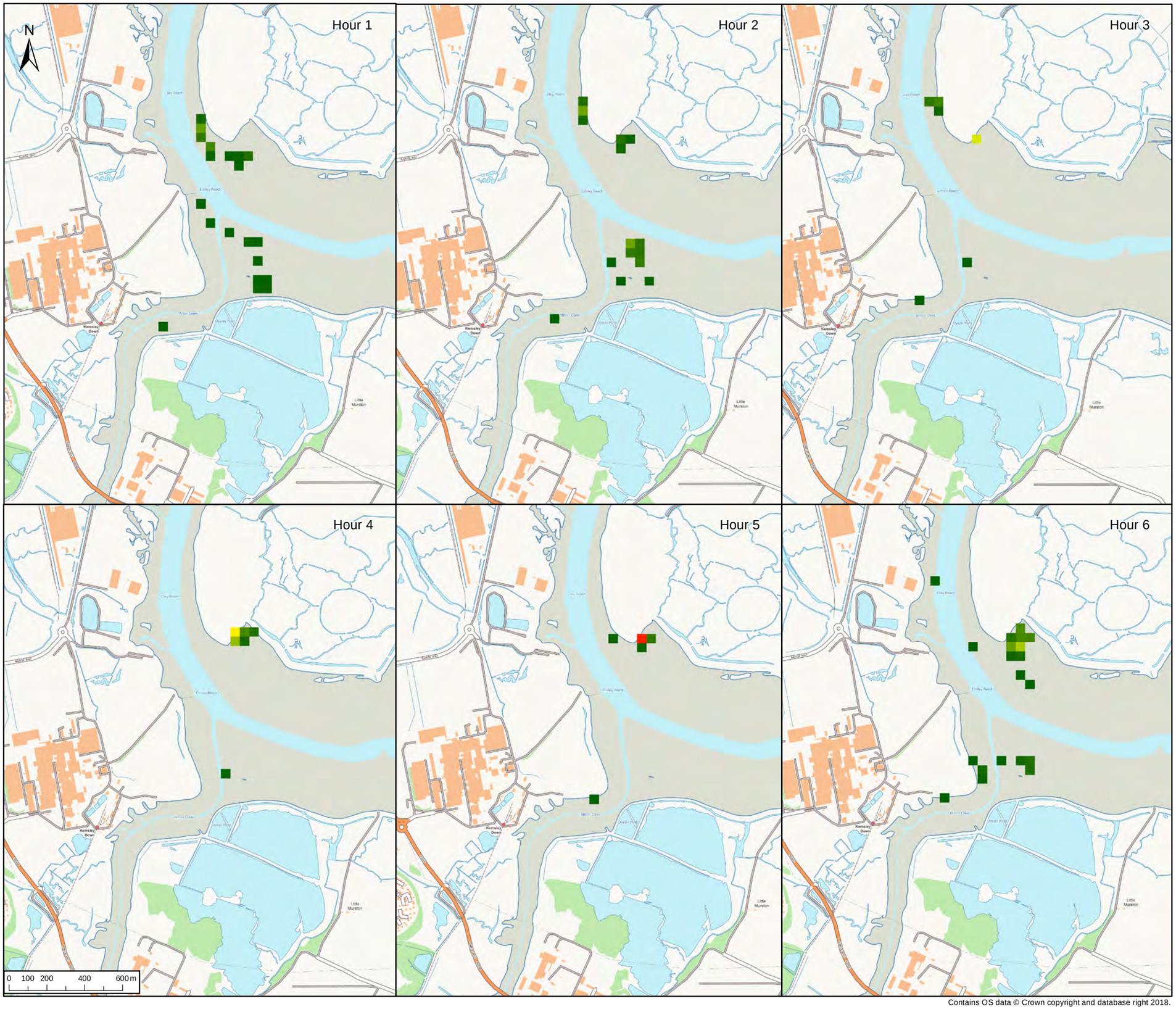

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Legend

Bird density

High : 1102.03

Low : 1

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T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies

Project: Kemsley K3/WKN

Title: Density of Knot recorded in high water survey

Status	Drawn By	PM/Checked By
Final	KM	MS
Job Ref	**Scale @ A3**	**Date**
ECO00047	1:20,000	OCT 18
Drawing Number		**Rev**
Figure 3.34		01

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Legend

Bird density

High : 130.89

Low : 1

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T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies

Project: Kemsley K3/WKN

Title: Density of Knot recorded in low water survey

Status	Drawn By	PM/Checked By
Final	KM	MS
Job Ref	**Scale @ A3**	**Date**
ECO00047	1:20,000	OCT 18
Drawing Number		**Rev**
Figure 3.35		01

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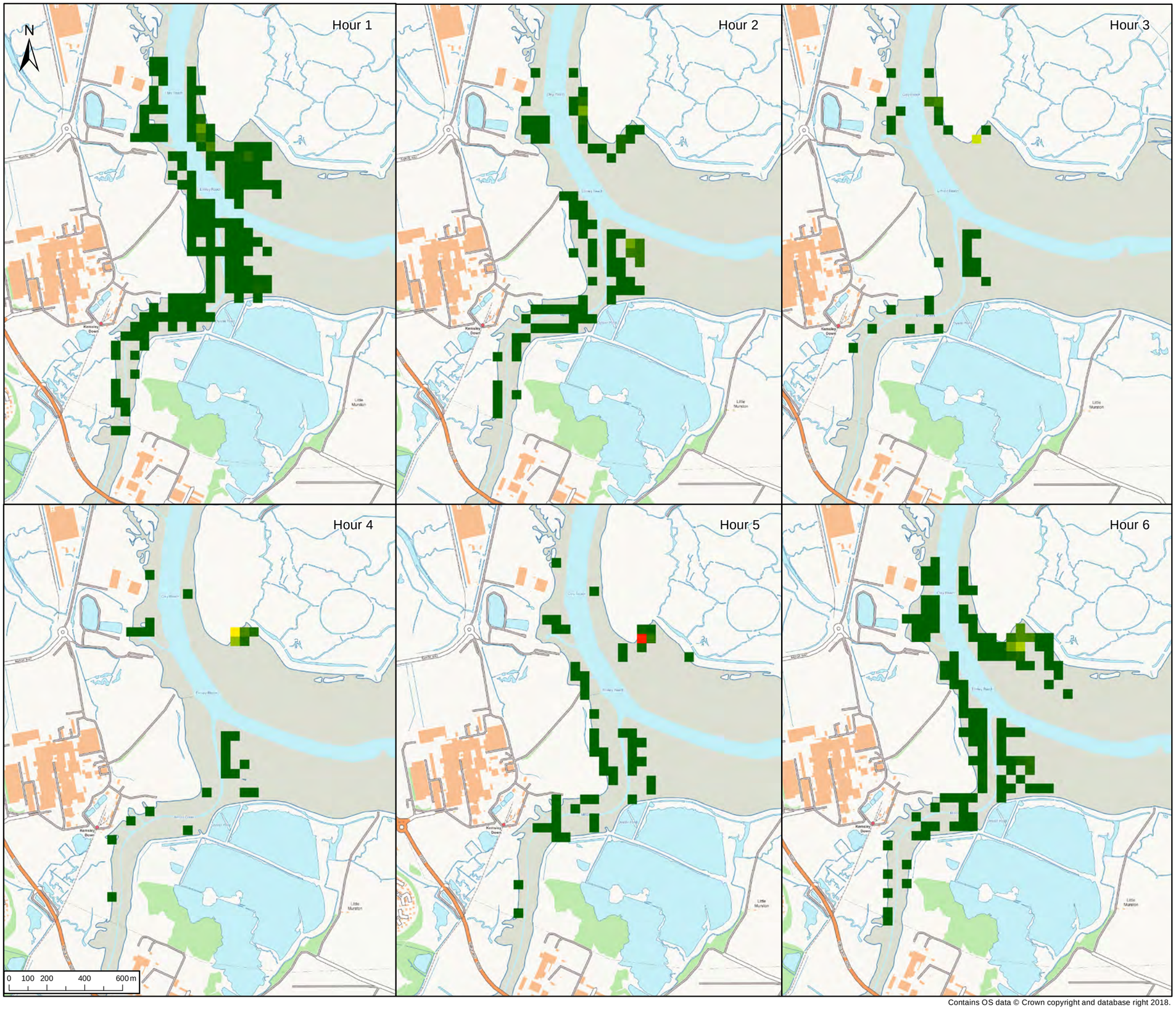

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Legend

Bird denisty

High : 1092.03

Low : 1

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T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies

Project: Kemsley K3/WKN

Title: Density of Curlew recorded in high water survey

Status	Drawn By	PM/Checked By
Final	KM	MS
Job Ref	**Scale @ A3**	**Date**
ECO00047	1:20,000	OCT 18
Drawing Number		**Rev**
Figure 3.36		01

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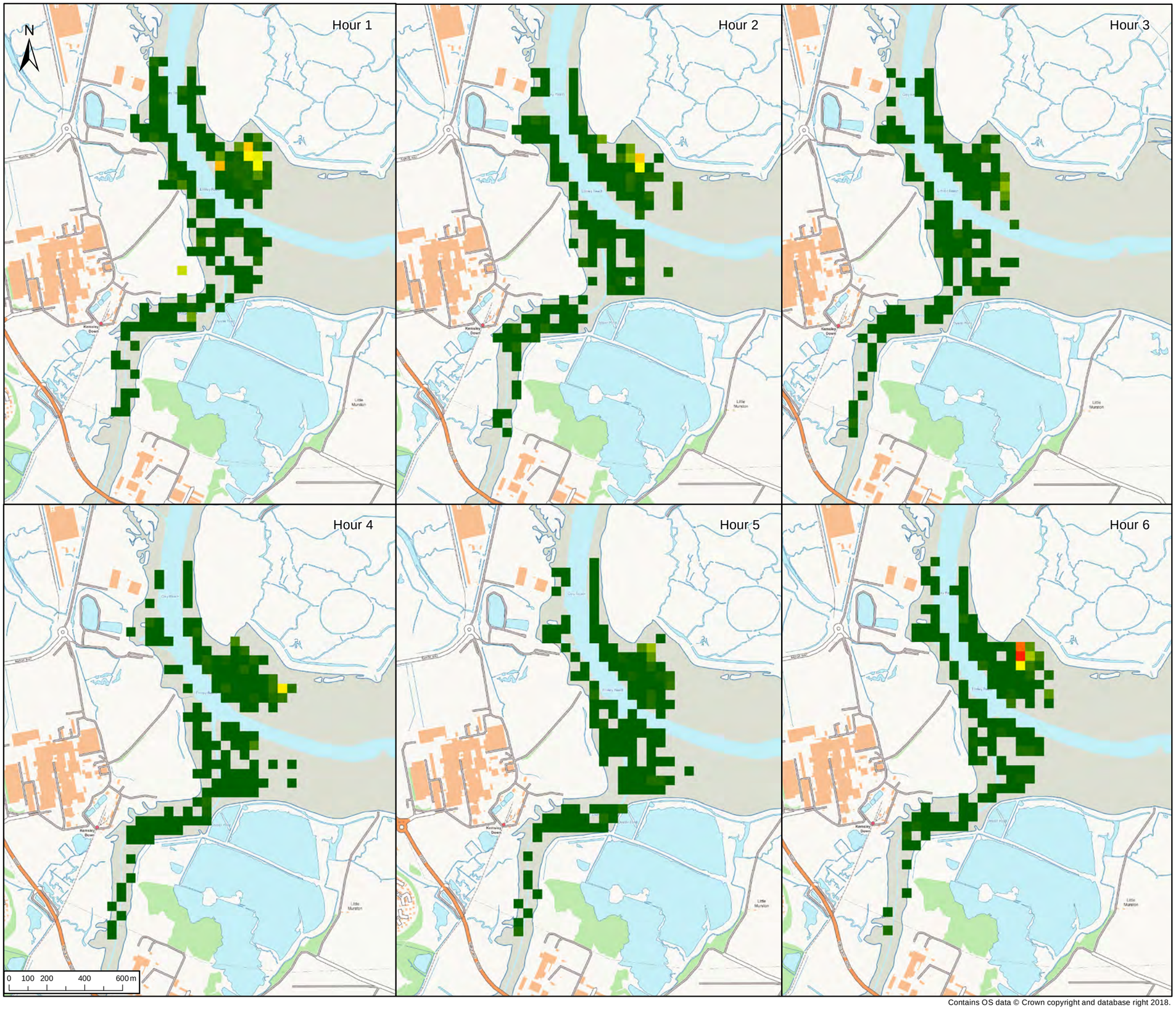
Document: V:\GIS temp (other offices work)\Kemsley K5\Drawings\47-0010-001 Curlew HW.mxd



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Legend

Bird density

High : 23.79

Low : 1

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Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies

Project: Kemsley K3/WKN

Title: Density of Curlew recorded in low water survey

Status	Drawn By	PM/Checked By
Final	KM	MS
Job Ref	**Scale @ A3**	**Date**
ECO00047	1:20,000	OCT 18
Drawing Number		**Rev**
Figure 3.37		01

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APPENDICES

Appendix 1 – 2016 Bird Survey Reports

WHEELABRATOR KEMSLEY GENERATING STATION (K3) AND WHEELABRATOR KEMSLEY NORTH (WKN) WASTE TO ENERGY FACILITY DCO KEMSLEY PAPER MILL: ORNITHOLOGICAL SURVEYS 2016

WHEELABRATOR KEMSLEY
ORNITHOLOGICAL SURVEYS 2016

January 2017

Our Ref: **OXF9163**

RPS
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QUALITY MANAGEMENT

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Reviewed by:	**Chas Holt**
Authorised by:	**Mike Barker**
Date:	**06/01/17**
Project Number/Document Reference:	**OXF9163-R-004b**
Client:	**Wheelabrator Technologies Inc.**

CONTENTS

TABLES

FIGURES

EXECUTIVE SUMMARY

- RPS were commissioned by Wheelabrator Technologies Inc. to provide ecology consultancy services in relation to the development of an Energy from Waste (EfW) facility at Kemsley Paper Mill, Sittingbourne, Kent.
- The current study was commissioned to update surveys undertaken in 2009 and 2010 to inform the EfW application with particular reference to changes in the area with respect to the ornithological interest.
- Surveys in 2016 comprised: Low and high tide counts of intertidal waterbirds were carried out between January-May and July-December; territory mapping of breeding birds was undertaken comprising six survey visits between 19th March and 22nd June; and Marsh Harrier roost surveys were undertaken between January-March and October-December.
- A peak count of 13 Marsh Harriers were observed roosting within the reedbed area to the north of the survey area in January 2016, indicating the importance of the reedbed habitat to this species. Although the recorded peak number of Marsh Harriers entering the roost site in 2016 (13) is lower than previously recorded in 2010 / 2011 (50), the reasoning for this reduction in numbers is unclear as the reedbed is of similar size and habitat quality in 2016 to when previously surveyed in 2010 / 2011. With no data on the number of Marsh Harriers roosting in the reedbed in the intervening period, it is difficult to be sure of the driver of change.
- A total of 43 species were recorded during the survey of breeding birds at Kemsley between March and June. Of these species, 24 were confirmed to be breeding and six species were considered to be probably / possibly breeding, resulting in a breeding bird assemblage of 30 species. Records relating to the remaining 13 species were considered to be of non-breeding individuals. One other species, Peregrine, was recorded outside of the survey area and was considered to probably be breeding on the Paper Mill chimney stacks.
- One species (Marsh Harrier), which is afforded special protection, due to its inclusion on Annex 1 of the EU Birds Directive and three species (Marsh Harrier, Cetti's Warbler and Bearded Tit) afforded special statutory protection under or Schedule 1 of the Wildlife and Countryside Act, were found to be breeding within the Kemsley survey area.
- The single pair of Marsh Harrier within the reedbed area is considered to be of importance within the context of The Swale SPA with a population approaching that of county importance. Seven territories of Cetti's Warbler within the survey area is considered to be of no more than local importance and the single territory of Bearded Tit, though not confirmed, would be considered to be of local importance.
- Overall, the site contains a diversity of species and is of local importance as in 2009. The loss of several species as breeding species (and associated effect on overall assemblage) is probably attributable to wider population declines of those particular species, whereas scrub clearance on site has probably affected total numbers of bird territories rather than species' presence/absence.

- Five of the species recorded as breeding or probably breeding within the survey area in 2016 (Cuckoo, Dunnock, Song Thrush, Linnet and Reed Bunting) are listed in Section 41 of the NERC Act 2006 as being of principal importance for the conservation of biodiversity in England.
- Four of the species recorded as breeding or probably/possibly breeding (Cuckoo, Nightingale, Song Thrush and Linnet) are included on the BoCC Red List.
- Three of the species recorded as breeding or probably/possibly breeding (Marsh Harrier, Dunnock and Reed Bunting) are included on the BoCC Amber List.
- A total of 54 species of waterbird were recorded using the intertidal survey area in 2016, and overall site usage peaked in December. Twenty-one species are included as interest features of The Swale SPA and/or Ramsar site (Avocet, Bar-tailed Godwit, Black-tailed Godwit, Brent Goose [Dark-bellied], Curlew, Dunlin, Greenshank, Grey Plover, Knot, Lapwing, Little Egret, Little Grebe, Oystercatcher, Pintail, Ringed Plover, Redshank, Shelduck, Spotted Redshank, Teal, Whimbrel and Wigeon).
- No peak counts of any species recorded within the Kemsley survey area in 2016 represented 1% or more of the international population estimate.
- The peak counts of four species (Avocet, Black-tailed Godwit, Greenshank and Little Egret) recorded within the Kemsley survey area in 2016 represented 1% or more of the national population estimate for Great Britain.
- Significant proportions (>5%) of The Swale SPA populations for seven of the cited wintering and/or passage waterbird species were recorded. In winter these were Avocet, Black-tailed Godwit, Grey Plover, Knot and Redshank; in spring these were Avocet, Black-tailed Godwit, Pintail and Redshank; and in autumn these were Avocet, Black-tailed Godwit, Grey Plover, Redshank and Ringed Plover.
- Three species (Cormorant, Little Grebe, Redshank) have been identified within the WeBS Alerts system as showing declines on The Swale in the medium- and long-term that may suggest they are more vulnerable to negative impacts of the development. In light of these alerts, the SPA population of Dunlin, Grey Plover, Lapwing and Shelduck might also be considered more vulnerable than other species to any impacts of development that might affect the overall estuarine waterbird assemblage.
- Waterbird distribution was evenly distributed across the survey area as a whole, but concentrations of waterbirds occurred on the east bank of The Swale around Elmley Hills, where roosting sites for Oystercatcher, Black-tailed Godwit, Avocet and other species in smaller numbers were recorded at high tide.
- The number of species and assemblage of waterbird between surveys undertaken at Kemsley in 2009/10 and 2016 has shown no significant change between years.

1 INTRODUCTION

Background to the study

1.1 RPS were commissioned by Wheelabrator Technologies Inc. to provide ecology consultancy services in relation to the development of an Energy from Waste (EfW) facility at Kemsley Paper Mill, Sittingbourne, Kent.

1.2 The current study was commissioned to update surveys undertaken in 2009 and 2010 to inform the EfW application, with particular reference to any changes in the ornithological interest of the area .

1.3 Ornithological surveys at Kemsley were previously undertaken in 2009 (breeding birds) 2009/2010 (intertidal waterbird surveys) and 2010/2011 (Marsh Harrier roost surveys).

1.4 Surveys in 2016 comprised:

- Marsh Harrier roost surveys;
- breeding bird surveys; and
- intertidal waterbird surveys.

Conservation status

1.5 Where there is the potential of the proposed development to have an effect on the adjacent The Swale Special Protection Area (SPA), for instance through disturbance, it was necessary to implement a study of those waterbird species cited as interest features of the SPA (i.e. breeding and non-breeding waterbirds).

1.6 The legislative provisions for the protection of wild birds in the UK are contained primarily in Section 1- 7 of the Wildlife and Countryside Act (WCA) 1981 (as amended). Under the WCA, a wild bird is defined as any bird of a species that is resident in or is a visitor to the European Territory of any member state in a wild state.

1.7 The legislative provisions concerning plans and projects that have the potential to affect SPAs are contained in The Conservation of Habitats and Species Regulations 2010 (these regulations have replaced The Conservation (Natural Habitats &c) Regulations 1994).

1.8 All birds, their nests and eggs are afforded protection under the Wildlife and Countryside Act 1981, as updated by the Countryside and Rights of Way Act 2000. It is an offence to:

- intentionally kill, injure or take any wild bird;
- intentionally take, damage or destroy the nest of any wild bird while it is in use or being built; and
- intentionally take or destroy the egg of any wild bird.

1.9 Schedule 1 birds cannot be intentionally or recklessly disturbed when nesting and there are increased penalties for doing so. Licences can be issued to visit the nests of such birds for conservation, scientific or photographic purposes but not to allow disturbance during a development even in circumstances where that development is fully authorised by consents such as a valid planning permission.

Aims and objectives

1.10 The aims of the Marsh Harrier survey were to check that the roost:

- still exists;
- contains similar numbers of roosting harriers as recorded in 2010 / 2011; and
- assess the potential impacts of the development on roosting harriers.

1.11 The aims and objectives of the survey for breeding birds were to:

- identify whether the site supported any specially protected species or species of particular conservation concern;
- provide information on potential impacts of the development proposals to the breeding bird community identified in the study area.
- evaluate the data collected in 2016 against the baseline information collected in 2009, considering the changes in habitat on-site.

1.12 The aims and objectives of the intertidal waterbird survey were to:

- record the abundance and distribution of waterbirds within the study area between January - May; and July - December 2016;
- evaluate the data collected in 2016 against the baseline information collected in 2009/2010; and
- evaluate the importance for waterbirds of those parts of The Swale estuary potentially at risk of disturbance from the proposed development.

1.13 The collected data will be presented to illustrate the spatial distributions and densities of species within the survey area. In order to consider the relative importance of the survey area, analysis considers species' abundance and distributions recorded during the surveys in comparison to their respective citations for the SPA.

Study area

1.14 A map of the survey areas is provided in Figure 1.1.

Breeding bird and Marsh Harrier roost survey area

1.15 The proposed area of development is situated on what was once Kemsley Marshes, between Kemsley Paper Mill to the west and the adjacent Swale estuary to the east.

1.16 Since breeding bird surveys in 2009, the majority of the scrub and vegetation on site has been removed and the site levelled with an aggregate of soil and stone to create a large expanse of bare ground. The site area has generally flat topography, except where the ground has been re-profiled to create shallow artificial slopes. A drainage ditch runs along the western boundary of the site in a north-south orientation and is connected to the marshland to the north of the site.

1.17 In the northern half of the survey site is a large area of reedbed habitat, with surrounding scrub.

1.18 Much of the surrounding area to the north-east, east and south of the site is associated with national designations for nature conservation.

Intertidal waterbird survey area

1.19 The intertidal waterbird survey area encompassed approximately 1.5 km of intertidal habitats centred on the planned location of the development.

Designated Sites

1.20 There are seven statutory sites (excluding sites designated for geological interest) within 5 km of the survey area, largely designated on the basis of wintering or passage populations of birds. The location and boundaries of each site are shown in Figure 1.2. Table 1.1 lists these sites and distance from the Kemsley site.

Table 1.1. Statutory sites within 5 km of the survey area

Site name	Type	Approximate Area (ha)	Distance from site (km)
The Swale	SPA/Ramsar/SSSI	6,515	0.0
Medway Estuary and Marshes	SPA/Ramsar/SSSI	4,684	2.4
Elmley	NNR	1,212	0.1

1.21 Table 1.2 summarises details of the ornithological interest features (interest features of SPAs, Ramsar sites and SSSIs are taken from relevant standard data forms, information sheets and citations respectively) of the designated sites listed in Table 1.1.

Table 1.2. Statutory sites designated on the basis of ornithological interest features

Site name	Type	Ornithological interest features
The Swale	SPA	Supports populations of European importance of the following species listed on Annex I of the Directive: During the breeding season: Avocet, 103 pairs representing at least 17.5% of the breeding population in Great Britain (RBBP 1996). Marsh Harrier, 24 pairs representing at least 15.0% of the breeding population in Great Britain (Count, as at 1995). Mediterranean Gull, 12 pairs representing at least 120.0% of the breeding population in Great Britain (RBBP 1996). Over winter: Avocet, 89 individuals representing at least 7.0% of the wintering population in Great Britain (5 year peak mean 1991/2 - 1995/6).

Site name	Type	Ornithological interest features
		Bar-tailed Godwit, 542 individuals representing at least 1.0% of the wintering population in Great Britain (Count as at 91/92-95/96). Golden Plover, 2,862 individuals representing at least 1.1% of the wintering population in Great Britain (5 year peak mean 1991/2 - 1995/6). Hen Harrier, 23 individuals representing at least 3.1% of the wintering population in Great Britain (Count as at 1996/8). Supports populations of European importance of the following migratory species: On passage: Ringed Plover, 683 individuals representing at least 1.4% of the Europe/Northern Africa - wintering population (5 year peak mean 1991/2 - 1995/6). Over winter: Black-tailed Godwit, 1,755 individuals representing at least 2.5% of the wintering Iceland - breeding population (5 year peak mean 1991/2 - 1995/6). Grey Plover, 2,021 individuals representing at least 1.3% of the wintering Eastern Atlantic - wintering population (5 year peak mean 1991/2 - 1995/6). Knot, 5,582 individuals representing at least 1.6% of the wintering North-eastern Canada/Greenland/Iceland/North-western Europe population (Count as at 91/92-95/96). Pintail, 966 individuals representing at least 1.6% of the wintering North-western Europe population (5 year peak mean 1991/2 - 1995/6). Redshank, 1,640 individuals representing at least 1.1% of the wintering Eastern Atlantic - wintering population (5 year peak mean 1991/2 - 1995/6). Shoveler, 471 individuals representing at least 1.2% of the wintering North-western/Central Europe population (5 year peak mean 1991/2 - 1995/6). Supports an internationally important assemblage of wintering waterbirds (65,390 waterbirds, 5 year peak mean 1991/2 - 1995/6).
Medway Estuary and Marshes	SPA	Supports populations of European importance of the following species listed on Annex I of the Directive: During the breeding season: Avocet, 28 pairs representing at least 4.7% of the breeding population in Great Britain (5 year mean, 1988-1992). Little Tern, 28 pairs representing at least 1.2% of the breeding population in Great Britain (5 year mean, 1991-1995). Over winter; Avocet, 314 individuals representing at least 24.7% of the wintering population in Great Britain (5 year peak mean 1991/2 - 1995/6). Supports populations of European importance of the following migratory species: On passage; Ringed Plover, 1,337 individuals representing at least 2.7% of the

Site name	Type	Ornithological interest features
		Europe/Northern Africa - wintering population (5 year peak mean 1991/2 - 1995/6). Over winter; Black-tailed Godwit, 957 individuals representing at least 1.4% of the wintering Iceland - breeding population (5 year peak mean 1991/2 - 1995/6). Brent Goose (Dark-bellied), 3,205 individuals representing at least 1.1% of the wintering Western Siberia/Western Europe population (5 year peak mean 1991/2 - 1995/6). Dunlin, 25,936 individuals representing at least 1.9% of the wintering Northern Siberia/Europe/Western Africa population (5 year peak mean 1991/2 - 1995/6). Grey Plover, 3,406 individuals representing at least 2.3% of the wintering Eastern Atlantic - wintering population (5 year peak mean 1991/2 - 1995/6). Pintail, 697 individuals representing at least 1.2% of the wintering North-western Europe population (5 year peak mean 1991/2 - 1995/6). Redshank, 3,690 individuals representing at least 2.5% of the wintering Eastern Atlantic - wintering population (5 year peak mean 1991/2 - 1995/6). Ringed Plover, 768 individuals representing at least 1.5% of the wintering Europe/Northern Africa - wintering population (5 year peak mean 1991/2 - 1995/6). Shelduck, 4,465 individuals representing at least 1.5% of the wintering North-western Europe population (5 year peak mean 1991/2 - 1995/6). Supports an internationally important assemblage of wintering waterbirds (65,274 waterbirds, 5 year peak mean 1991/2 - 1995/6).
The Swale	Ramsar	Supports assemblages of international importance: Species with peak counts in winter: 77,501 waterfowl (5 year peak mean 1998/99-2002/2003) Supports species occurring at levels of international importance. Species with peak counts in spring/autumn: Redshank, 1712 individuals, representing an average of 1.4% of the GB population (5 year peak mean 1998/9-2002/3). Species with peak counts in winter: Brent Goose (Dark-bellied), 1633 individuals, representing an average of 1.6% of the GB population (5 year peak mean 1998/9-2002/3). Grey Plover, E Atlantic/W Africa – wintering 2098 individuals, representing an average of 3.9% of the GB population (5 year peak mean 1998/9-2002/3). Species/populations identified subsequent to designation for possible future consideration. Species with peak counts in spring/autumn: Ringed Plover, Europe/Northwest Africa 917 individuals, representing an average of 1.2% of the population (5 year peak mean 1998/9-2002/3)

Site name	Type	Ornithological interest features
		Species with peak counts in winter: Wigeon, NW Europe 15296 individuals, representing an average of 1% of the population (5 year peak mean 1998/9-2002/3). Pintail, NW Europe 763 individuals, representing an average of 1.2% of the population (5 year peak mean 1998/9-2002/3). Shoveler, NW & C Europe 483 individuals, representing an average of 1.2% of the population (5 year peak mean 1998/9- 2002/3). Black-tailed Godwit, Iceland/W Europe 1504 individuals, representing an average of 4.2% of the population (5 year peak mean 1998/9-2002/3). Species currently occurring at levels of national importance: Species regularly supported during the breeding season: Mediterranean Gull, Europe 13 apparently occupied nests, representing an average of 12% of the GB population (Seabird 2000 Census). Black-headed Gull, N & C Europe 3835 apparently occupied nests, representing an average of 2.9% of the GB population (Seabird 2000 Census). Little Tern, W Europe 20 apparently occupied nests, representing an average of 1% of the GB population (Seabird 2000 Census). Species with peak counts in spring/autumn: Little Egret, West Mediterranean 29 individuals, representing an average of 1.7% of the GB population (5 year peak mean 1998/9-2002/3). Whimbrel, Europe/Western Africa 98 individuals, representing an average of 3.2% of the GB population (5 year peak mean 1998/9-2002/3 - spring peak). Curlew, Europe (breeding) 1779 individuals, representing an average of 1.2% of the GB population (5 year peak mean 1998/9-2002/3). Spotted Redshank, Europe/W Africa 60 individuals, representing an average of 44.1% of the GB population (5 year peak mean 1998/9-2002/3). Greenshank, Europe/W Africa 49 individuals, representing an average of 8.2% of the GB population (5 year peak mean 1998/9-2002/3). Species with peak counts in winter: Little Grebe, Europe to E Urals, NW Africa 147 individuals, representing an average of 1.8% of the GB population (5 year peak mean 1998/9-2002/3). White-fronted Goose, NW Europe 973 individuals, representing an average of 16.8% of the GB population (5 year peak mean for 1996/7-2000/01). Shelduck, NW Europe 2437 individuals, representing an average of 3.1% of the GB population (5 year peak mean 1998/9-2002/3). Teal, NW Europe 3610 individuals, representing an average of 1.8% of the GB population (5 year peak mean 1998/9- 2002/3). Oystercatcher, Europe & NW Africa – wintering 4609 individuals, representing an average of 1.4% of the GB population (5 year peak mean 1998/9-2002/3). Avocet, Europe/Northwest Africa 380 individuals, representing an average of 11.1% of the GB population (5 year peak mean 1998/9-2002/3). Golden Plover, Iceland & Faroes/E Atlantic 7522 individuals, representing an average of 3% of the GB population (5 year peak mean

Site name	Type	Ornithological interest features
		1998/9-2002/3). Lapwing, Europe - Breeding 15129 individuals, representing an average of 1% of the GB population (5 year peak mean 1998/9-2002/3). Knot, W & Southern Africa (wintering) 3004 individuals, representing an average of 1% of the GB population (5 year peak mean 1998/9-2002/3). Dunlin, W Siberia/W Europe 9017 individuals, representing an average of 1.6% of the GB population (5 year peak mean 1998/9-2002/3). Ruff, Europe/W Africa 53 individuals, representing an average of 7.5% of the GB population (5 year peak mean 1998/9-2002/3)
Medway Estuary and Marshes	Ramsar	Assemblages of international importance: Species with peak counts in winter: 47,637 waterfowl (5 year peak mean 1998/99-2002/2003) Species occurring at levels of international importance. Species with peak counts in spring/autumn: Grey Plover, E Atlantic/W Africa –wintering 3103 individuals, representing an average of 1.2% of the population (5 year peak mean 1998/9-2002/3). Redshank, 3709 individuals, representing an average of 1.4% of the population (5 year peak mean 1998/9-2002/3). Species with peak counts in winter: Brent Goose (Dark-bellied), 2575 individuals, representing an average of 1.1% of the population (5 year peak mean 1998/9-2002/3). Shelduck, NW Europe 2627 individuals, representing an average of 3.3% of the GB population (5 year peak mean 1998/9-2002/3). Pintail, NW Europe 1118 individuals, representing an average of 1.8% of the population (5 year peak mean 1998/9-2002/3). Ringed Plover, Europe/Northwest Africa 540 individuals, representing an average of 1.6% of the GB population (5 year peak mean 1998/9-2002/3). Knot, W & Southern Africa (wintering) 3021 individuals, representing an average of 1% of the GB population (5 year peak mean 1998/9-2002/3). Dunlin, W Siberia/W Europe 8263 individuals, representing an average of 1.4% of the GB population (5 year peak mean 1998/9-2002/3). Species identified subsequent to designation for possible future consideration. Species with peak counts in spring/autumn: Black-tailed Godwit, Iceland/W Europe 721 individuals, representing an average of 2% of the population (5 year peak mean 1998/9-2002/3). Species currently occurring at levels of national importance: Species regularly supported during the breeding season: Mediterranean Gull, Europe 10 apparently occupied nests, representing an average of 9.2% of the GB population (Seabird 2000 Census). Black-headed Gull, N & C Europe 7050 apparently occupied nests, representing an average of 5.5% of the GB population (Seabird 2000 Census). Sandwich Tern, W Europe 333 apparently occupied nests, representing

Site name	Type	Ornithological interest features
		an average of 3.1% of the GB population (Seabird 2000 Census). Common Tern, N & E Europe 228 apparently occupied nests, representing an average of 2.2% of the GB population (Seabird 2000 Census). Little Tern, W Europe 28 pairs, representing an average of 1.4% of the GB population (5 year mean 1991-1995). Species with peak counts in spring/autumn: Cormorant, NW Europe 271 individuals, representing an average of 1.1% of the GB population (5 year peak mean 1998/9-2002/3). Little Egret, West Mediterranean 125 individuals, representing an average of 7.5% of the GB population (5 year peak mean 1998/9-2002/3). Avocet, Europe/Northwest Africa 645 individuals, representing an average of 18.9% of the GB population (5 year peak mean 1998/9-2002/3). Whimbrel, Europe/Western Africa 49 individuals, representing an average of 1.6% of the GB population (5 year peak mean 1998/9-2002/3). Curlew, Europe (breeding) 3575 individuals, representing an average of 2.4% of the GB population (5 year peak mean 1998/9-2002/3). Greenshank, Europe/W Africa 68 individuals, representing an average of 11.3% of the GB population (5 year peak mean 1998/9-2002/3). Turnstone, NE Canada, Greenland/W Europe & NW Africa 600 individuals, representing an average of 1.2% of the GB population (5 year peak mean 1998/9-2002/3). Species with peak counts in winter: Shoveler, NW & C Europe 214 individuals, representing an average of 1.4% of the GB population (5 year peak mean 1998/9-2002/3). Oystercatcher, Europe & NW Africa – wintering 3632 individuals, representing an average of 1.1% of the GB population (5 year peak mean 1998/9-2002/3). Golden Plover, Iceland & Faroes/E Atlantic 4500 individuals, representing an average of 1.8% of the GB population (5 year peak mean 1998/9-2002/3).
The Swale	SSSI	The area is particularly notable for the internationally important numbers of wintering and passage wildfowl and waders, and there are also important breeding populations of a number of bird species. Large numbers of waders and wildfowl use the area in winter, and during autumn and spring migration. Several species: Wigeon, Teal and Grey Plover regularly overwinter in numbers of international importance. Others, including Shoveler, Knot, Dunlin and Spotted Redshank are regularly present in winter in nationally significant numbers. Commoner breeding terrestrial birds include Skylark, Meadow Pipit and Yellow Wagtail, and among the wetland birds Mallard, Shelduck, Coot, Moorhen, Lapwing and Redshank. Scarcer breeding birds include Teal, Gadwall, Shoveler and Pochard. Garganey, Pintail, Ruff and Black-tailed Godwit have bred, or attempted to do so.
Medway Estuary and Marshes	SSSI	The area holds internationally important populations of wintering and passage birds and is also of importance for its breeding birds. The Medway Estuary is believed to be the most important area in North

Site name	Type	Ornithological interest features
		Kent for wintering wildfowl with Shelduck, Brent Goose (Dark-bellied), Grey Plover, Ringed Plover, Pintail, Dunlin and Redshank occurring in numbers of international significance. Also present in numbers of national significance are Turnstone, Black-tailed Godwit, Curlew, Great Crested Grebe, Shoveler, Teal, Wigeon and White-fronted Goose. Passage migrants include Ruff, Whimbrel and Avocet. The Chetney Peninsula is among the most important wildfowl breeding areas in Kent. Breeding species include Avocet, Shelduck, Shoveler, Pochard, Mute Swan, Tufted Duck, Teal and Gadwall. The saltmarsh, serves as a roosting area for waders at high tide, and supports breeding birds such as Redshank, Black-headed Gull and Common Tern. The grazing marsh holds both breeding and wintering birds of interest; the former include Lapwing, Redshank, Pochard, Mallard and Gadwall, while in winter large flocks of many wildfowl and wader species are present.
Elmley	NNR	Supports large numbers of wintering wildfowl and breeding waders.

2 METHODS

Marsh Harrier roost survey

2.1 Two surveys per month were undertaken between January to March and October to December 2016, of a known reedbed roosting site for Marsh Harrier, with 12 survey visits in total undertaken. Surveys began approximately one and a half hours before dusk and continued until dark.

2.2 The roost area was defined as the reedbed habitat within the northern half of the survey area. The reedbed was observed from a suitable vantage point, minimising disturbance to the birds entering the roost.

2.3 On each visit, registrations of Marsh Harrier flights entering the roosting area were recorded directly into ESRI Arcpad GIS software loaded onto handheld PDA devices, with a 1:10,000 scale Ordnance Survey base map of the study area (and adjacent land). A fresh map was used for each survey.

Breeding bird survey

2.4 The 2016 breeding bird survey was a repeat of the methods used by RPS during pre-application breeding bird surveys in 2009 (RPS, 2009). The breeding bird survey was undertaken based on a standard territory mapping methodology as outlined in Gilbert *et al*. (1998) and Bibby *et al*. (2000).

2.5 This method is based on the principle that many species during the breeding season are territorial. This is particularly the case amongst passerines, where territories are often marked by conspicuous song, display and periodic disputes with neighbouring individuals.

2.6 All bird species were recorded and mapped across the whole site.

2.7 The survey area was walked at a slow pace in order to locate and identify all individual birds. Visits were undertaken early in the morning, finishing before midday. The whole survey area was covered in each visit, using suitable optical equipment to observe bird behaviour. All areas of the site were approached to within 50-100m where possible. Survey routes were mapped and the direction walked alternated on each visit, to ensure that all areas were covered at various times of day across the duration of the survey. All species encountered within the survey area were recorded and mapped.

2.8 Surveys for breeding birds were undertaken between March and June 2016 with a total of six survey visits taking place. The survey visits and ornithologists undertaking the survey were as follows:

- Visit 1: 18th March 2016; Alan Bull
- Visit 2: 8th April 2016; Andrew Seth
- Visit 3: 29th April 2016; Alan Bull

- Visit 4: 12th May 2016; Alan Bull
- Visit 5: 25th May 2016; Andrew Seth
- Visit 6: 3rd June 2016; Andrew Seth

2.9 On each visit, registrations were recorded directly into ESRI Arcpad GIS software loaded onto handheld PDA devices, with a 1:10,000 scale Ordnance Survey base map of the study area (and adjacent land). A fresh map was used for each survey. Registrations of birds were recorded using standard British Trust for Ornithology (BTO) two letter species codes (BTO 2009). Specific codes were also used to denote singing, calling, movement between areas, flight, carrying food, nest building, aggressive encounters and other behaviour.

2.10 The expected outcome is that mapped registrations fall into clusters, approximately coinciding with territories. A cluster is generally a spatially distinct group of registrations that represent the activity of not more than one pair. Ideally, clusters include registrations of territorial behaviour across all visits and are clearly demarcated from adjacent clusters by simultaneous recording of neighbouring birds. Where a species exhibits high territory density, the mapping of simultaneously singing birds becomes essential. Territory boundaries are assumed to be between such birds.

2.11 Territory mapping methods produce analysis maps of non-overlapping ellipses encircling clusters of records thought to relate to separate pairs of breeding birds. These ellipses may not show the entire extent of the pairs' actual breeding territory which may be significantly larger; however, they are likely to show those areas in which the pair is most active.

2.12 On completion of the six surveys, analysis maps were produced for each species, consisting of all registrations recorded during the survey. From these species maps, the number of territories was calculated by identifying the number of territories or clusters present.

2.13 For late-arriving migrants, e.g. Spotted Flycatcher *Muscicapa striata,* for which fewer potential contacts are possible, only one registration is required to form a territory cluster. A number of species are not territorial and are dealt with appropriately, e.g. Linnet *Carduelis cannabina*, where data represent aggregations or loose colonies.

2.14 Standard registration mapping techniques were also used to record non-breeding species.

2.15 The following definitions have been used to identify the breeding status of the species recorded:

- confirmed breeding: Includes species for which territories were positively identified as a result of the number of registrations, the location of an active nest, and the presence of recently fledged young or downy young.
- probable breeding: Includes a pair observed in suitable nesting habitat in breeding season, or agitated behaviour / anxiety calls from adults suggesting probable presence of nest or young nearby. Behaviour was observed on insufficient occasions to confirm the presence of a territory.
- possible breeding: Includes species observed in breeding season in suitable nesting habitats, or singing male present (or breeding calls heard) in breeding season in suitable breeding habitat.

- non-breeding: Fly-over species observed but suspected to be on migration, or species observed but suspected to be summering non-breeder.

Assessment criteria

2.16 The assessment of the breeding bird community at Kemsley includes a focus on species that are afforded special statutory protection or those included on one, or more, of the lists of species of conservation interest. These include:

- species listed on Annex 1 of the EC Birds Directive (Directive 2009/147/EC) or species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended 1985);
- species included in the Birds of Conservation Concern (BoCC) Red and Amber Lists (Eaton *et al.*, 2015), and priority species within the UK Biodiversity Action Plan (UKBAP) (Anon, 2008) or Kent Local BAP (KBAP) (Kent BAP, 2009); and
- those occurring in nationally, regionally or locally important numbers.

2.17 Annex 1 species are those for which the UK Government are required to take special measures, including the designation of Special Protection Areas, to ensure the survival and reproduction of these species throughout their area of distribution.

2.18 The NERC list of Species of Principal Importance is used to guide decision-makers such as public bodies, including local and regional authorities, in implementing their duty under section 40 of the Natural Environment and Rural Communities Act 2006; under section 40 every public authority (e.g. a local authority or local planning authority) must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity. In addition, with regard to those species on the list of Species of Principal Importance prepared under section 41, the Secretary of State must:

"(a) take such steps as appear to the Secretary of State to be reasonably practicable to further the conservation of the living organisms and types of habitat included in any list published under this section, or

(b) promote the taking by others of such steps."

2.19 Species listed on the BoCC Red List are those that have declined in numbers by 50% over the last 25 years, those that have shown an historical population decline between 1800 and 1995 and species that are of global conservation concern. The 67 species on the Red List are of the most urgent conservation concern.

2.20 Species listed on the BoCC Amber List, of which there are currently 96, include those that have shown a moderate decline in numbers (25%-49%) over the last 25 years and those with total populations of less than 300 breeding pairs. Also included are those species which represent a significant proportion (greater than 20%) of the European breeding or wintering population, those for which at least 50% of the British population is limited to 10 sites or less, and those of unfavourable conservation status in Europe.

2.21 The remaining species are placed on the Green List, indicating that they are of low conservation priority. These species still receive full protection through the provisions of the Wildlife and Countryside Act 1981, as amended.

2.22 The UKBAP was launched in 1994 and established a framework and criteria for identifying species and habitat types of conservation concern. From this list, action plans for priority species of conservation concern were published, and have subsequently been amended and updated.

2.23 Species listed as priority bird species on the Kent BAP have also been considered for assessment.

Limitations

2.24 Since survey information was collected in 2009, the area of vegetation and scrub within the southern half of the survey area has been reduced due to habitat clearance. All else being equal, this change in habitat availability is likely to affect the comparison of the datasets for 2009 and 2016. One would expect a reduction in the number of territories of scrub-dependent species.

Intertidal waterbird survey

2.25 The aim of the intertidal survey was to undertake two surveys at low tide and two surveys at high tide each month. Each survey covered a six hour period (three hours either side of high/low tide).

2.26 A total of 44 survey visits were undertaken across all months in 2016, bar June. The survey dates and tide details are tabulated in Table 2.1

Table 2.1. Intertidal waterbird survey dates, tide times and observers

Date	Time of low tide	Tide Height (m)	Time of high tide	Tide Height (m)	Observer
22nd January 2016			11:00	5.5	Andrew Seth
25th January 2016			13:20	5.8	Andrew Seth
1st February 2016	11:19	1.3			Andrew Seth
2nd February 2016	12:14	1.5			Andrew Seth
15th February 2016	11:30	0.8			Alan Bull
16th February 2016	12:17	1.1			Andrew Seth
22nd February 2016			12:35	5.7	Alan Bull
23rd February 2016			13:13	5.8	Alan Bull
2nd March 2016	11:35	1.4			Andrew Seth
10th March 2016			13:30	6.2	Andrew Seth
17th March 2016	13:00	1.4			Alan Bull
22nd March 2016			12:30	5.7	Alan Bull
5th April 2016			11:45	5.7	Andrew Seth
11th April 2016	10:30	0.4			Alan Bull
18th April 2016			11:15	5.3	Andrew Seth
29th April 2016	11:30	1.3			Alan Bull
10th May 2016	10:00	0.5			Alan Bull

Date	Time of low tide	Tide Height (m)	Time of high tide	Tide Height (m)	Observer
16th May 2016			09:30	5.0	Andrew Seth
23rd May 2016			14:25	5.7	Andrew Seth
24th May 2016	09:00	0.8			Andrew Seth
14th July 2016	14:20	1.7			Andrew Seth
18th July 2016			12:20	5.5	Andrew Seth
20th July 2016			13:50	5.7	Andrew Seth
25th July 2016	11:00	0.9			Andrew Seth
10th August 2016	11:44	1.4			Andrew Seth
16th August 2016			11:55	5.4	Andrew Seth
24th August 2016	11:30	1.0			Andrew Seth
31st August 2016			12:46	5.7	Andrew Seth
14th September 2016			11:26	5.4	Chas Holt
22nd September 2016	11:05	0.9			Alan Bull
28th September 2016			11:41	5.5	Andrew Seth
29th September 2016			12:30	5.7	Andrew Seth
6th October 2016	10:05	1.1			Andrew Seth
10th October 2016	13:00	1.7			Andrew Seth
14th October 2016			11:44	5.3	Andrew Seth
27th October 2016			11:15	5.6	Andrew Seth
9th November 2016	12:57	1.4			Andrew Seth
15th November 2016			12:30	6.2	Andrew Seth
21st November 2016	11:25	1.1			Andrew Seth
29th November 2016			12:26	5.6	Andrew Seth
7th December 2016	11:11	1.2			Andrew Seth
8th December 2016	12:15	1.2			Andrew Seth
13th December 2016			11:30	5.9	Andrew Seth
14th December 2016			12:20	6.0	Andrew Seth

2.27 Observations during the survey were made from the sea wall, which provided a suitable vantage point to observe all birds without causing undue disturbance. An experienced ornithologist, equipped with binoculars and telescope of appropriate magnification, walked slowly along the seawall ensuring the entire area was surveyed hourly. Observers retraced their route of the first count during the second count, the procedure thereafter repeated for the remaining counts of the survey. As the site was a linear area with good visibility, birds could be observed from distance to avoid disturbance and minimise risk of double-counting.

2.28 The location and extent of flocks and individual waterbirds were recorded directly into ESRI Arcpad GIS Software on handheld PDA devices, with a 1:10,000 scale Ordnance Survey base map of the study area (and adjacent land). The distance from the recorder to birds was assessed through the use of landmarks present in the landscape and on the base map, which

could be scaled as desired in the field. Birds were either plotted as individual counts at a location or as a flock, the extent of which could be plotted electronically directly onto the base map on the hand held PDAs. The observers were proficient in the use of this method and equipment having undertaken such surveys on numerous occasions previously across the UK at coastal, estuarine and inland wetland sites. This is considered to be a robust and reliable method for recording birds and plotting their distribution.

2.29 The collected data, contained on flash memory cards, were then downloaded into ESRI ArcGIS software and distribution maps produced.

2.30 In addition to the waterbirds recorded along the intertidal areas, any observations of high tide wader roosts or raptors (such as harriers and owls) on the surrounding terrestrial areas were also recorded.

Definitions

2.31 The definition of waterbirds used in this study is in accordance with the Ramsar convention upon which the SPA citation was based, i.e. "birds ecologically dependent on wetlands". At the broad level of taxonomic order this is as follows (prior to surveys, species groups in bold were considered likely to be present in the proximity of the Kemsley site):

- penguins: *Sphenisciformes*.
- **divers**: *Gaviiformes*;
- **grebes**: *Podicipediformes*;
- wetland related pelicans, **cormorants**, darters and allies: *Pelecaniformes*;
- **herons**, bitterns, storks, ibises and spoonbills: *Ciconiiformes*;
- flamingos: *Phoenicopteriformes*:
- screamers, **swans**, **geese** and **ducks** (wildfowl): *Anseriformes*;
- wetland related **raptors**: *Accipitriformes* and *Falconiformes*;
- wetland related cranes, **rails** and allies: *Gruiformes*;
- Hoatzin: *Opisthocomiformes*;
- wetland related jacanas, **waders** (or shorebirds), **gulls**, skimmers and **terns**: *Charadriiformes*;
- coucals: *Cuculiformes*; and
- wetland related owls: *Strigiformes*;

2.32 For the purposes of this analysis, the term ‘spring’ is used to indicate the period March to May; ‘autumn’ to indicate the period of July to October and ‘winter’ includes the data collected in January-February 2016 and November-December 2016. Within this assessment, data has been collected during the latter period of winter 2015/2016 and early period of winter 2016/2017.

2.33 No surveys were undertaken in June as little to no passage of waterbirds occurs in this month and was therefore considered as being of little relevance when assessing waterbirds in the context of wintering and passage birds on The Swale SPA. No SPA citation breeding species were identified within the whole survey area in 2016.

2.34 A standard survey and analysis of waterbirds over the winter period would encompass November to February of a single winter but, due to the late commencement of surveys in January 2016, this was not possible. However, the weather in the early winter period (January-February) of 2016 was similar to that in the late period (November-December) of 2016. Therefore, all else being equal, data from a 'split' winter in a calendar, rather than biological year is considered as being representative of a typical winter period.

2.35 For the purposes of the analysis, the tidal cycle is divided into two periods. The term 'low tide' is used to indicate the period three hours either side of low tide, 'high tide' the period three hours either side of high tide.

3 RESULTS

Marsh Harrier roost survey

3.1 The peak count of Marsh Harrier observed entering the roost was 13 birds in January 2016. Table 3.1 shows the peak monthly counts of Marsh Harrier observed roosting in the reedbed at Kemsley in 2016.

Table 3.1. Peak counts of roosting Marsh Harrier recorded in 2016

January	February	March	October	November	December
13	2	2	0	6	0

3.2 Observations were also recorded of Marsh Harriers showing interest in the roost site but did not always enter the reedbed to roost and moved off elsewhere. These additional records are not shown in Table 3.1.

Breeding bird survey

3.3 A total of 43 species were recorded during the survey of breeding birds at Kemsley between March and June 2016. Of these species, 24 were confirmed to be breeding and six species were considered to be probably / possibly breeding, resulting in a breeding bird assemblage of 30 species. Records relating to the remaining 13 species were considered to be of non-breeding individuals.

3.4 One other species, Peregrine, was recorded outside of the survey area and was considered to probably be breeding on the Paper Mill chimney stacks.

3.5 A summary of the breeding and conservation status of the 43 species recorded during the course of the survey, with the numbers of territories identified (or estimated in the case of probable and possible records) is provided in Table 3.2.

Table 3.2. The breeding and conservation status of species recorded during the breeding bird survey at Kemsley, March – June 2016

Species	Breeding status	Number of territories (where applicable)	Conservation Status					
			Annex 1 of the EU Birds Directive	Schedule 1 of WCA	UK BAP priority species	Species of Principal Importance	Kent BAP	Birds of Conservation Concern 4
Little Egret	NB		●					
Shelduck	NB							
Mallard	NB							Amber
Marsh Harrier	Confirmed	1	●	●				Amber
Sparrowhawk	NB							
Buzzard	NB							

Species	Breeding status	Number of territories (where applicable)	Conservation Status					
			Annex 1 of the EU Birds Directive	Schedule 1 of WCA	UK BAP priority species	Species of Principal Importance	Kent BAP	Birds of Conservation Concern 4
Peregrine	Probable (outside of survey area)	(1)	●	●				
Pheasant	NB							
Water Rail	Possible							
Moorhen	Possible							
Stock Dove	NB							Amber
Woodpigeon	Confirmed	P						
Cuckoo	Confirmed	1			●	●	●	Red
Swallow	NB							
House Martin	NB							Amber
Wren	Confirmed	19						
Dunnock	Confirmed	10			●	●		Amber
Robin	Confirmed	3						
Nightingale	Confirmed	1						Red
Redstart	NB							Amber
Blackbird	Confirmed	6						
Song Thrush	Probable	1			●	●		Red
Cetti's Warbler	Confirmed	7		●				
Sedge Warbler	Confirmed	1						
Reed Warbler	Confirmed	10						
Lesser Whitethroat	Confirmed	1						
Whitethroat	Confirmed	5						
Blackcap	Confirmed	2						
Chiffchaff	Confirmed	4						
Willow Warbler	NB							Amber
Bearded Tit	Probable	(1)		●				
Long-tailed Tit	Confirmed	3						
Blue Tit	Confirmed	3						
Great Tit	Confirmed	3						
Jay	Possible							
Magpie	Confirmed	●						
Carrion Crow	Confirmed	●						
Starling	NB				●	●		Red

Species	Breeding status	Number of territories (where applicable)	Conservation Status					
			Annex 1 of the EU Birds Directive	Schedule 1 of WCA	UK BAP priority species	Species of Principal Importance	Kent BAP	Birds of Conservation Concern 4
Chaffinch	Possible							
Greenfinch	Confirmed	1						
Goldfinch	Confirmed	2						
Linnet	Confirmed	1			•	•		Red
Reed Bunting	Confirmed	1			•	•	•	Amber

Notes on Table 3.2: NB – Non-breeding;

3.6 A total of 24 species were confirmed as breeding within the Kemsley survey area in 2016.

3.7 There were six species considered to be probably / possibly breeding within the survey area in 2016. These were Water Rail, Moorhen, Song Thrush, Bearded Tit, Jay and Chaffinch. The Water Rail, Moorhen and Bearded Tit were heard calling within the reedbed on a single occasion. These species tend to be elusive and frequently non-vocal, so their breeding could potentially go un-detected within the reedbed area. Song Thrush were recorded throughout the survey period, but their behaviour was not wholly indicative of breeding on site and therefore could not be confirmed. The Jay and Chaffinch registrations were not wholly indicative of behaviour that enabled confirmation of breeding on site.

3.8 Three species (Little Egret, Marsh Harrier and Peregrine), afforded special statutory protection under Annex 1 of the EU Birds Directive (Directive 2009/147/EC), were recorded during the survey, but of these, only Marsh Harrier was considered as breeding within the survey area. Peregrine was considered to be breeding outside the survey area on the Paper Mill.

3.9 Four species (Marsh Harrier, Peregrine, Cetti's Warbler and Bearded Tit) recorded during surveys are listed on Schedule 1 of the Wildlife and Countryside Act 1981. All but Peregrine were considered to be breeding or potentially breeding within the survey area.

3.10 Of the 30 species considered to be breeding or possibly breeding on site, five species are listed as a priority species in the UK BAP and as Species of Principal Importance under Section 41 of the NERC Act, two species are listed on the Kent BAP, four species are included on the BoCC Red List and three species are included on the BoCC Amber List. These species and their relevant statutory protection or list of conservation importance are shown in Table 3.2.

3.11 Thirteen species were recorded on migration or flying over the site and did not display any signs of breeding activity.

3.12 The locations of territories of species confirmed as breeding on site and listed on Schedule 1 of the Wildlife & Countryside Act (1981) are shown in Figure 3.1.

Intertidal waterbird survey

Abundance of waterbirds

3.13 A total of 55 species of waterbirds were recorded using the intertidal study area in 2016. Table 3.3 summarises the peak counts by month and season for each species recorded.

3.14 The peak seasonal waterbird counts on an individual count visit were as follows:

- winter (January-February and November-December) - 4640;
- spring (March-May) - 1880; and
- autumn (July-October) - 2096.

Table 3.3. Peak counts of all waterbird species recorded during intertidal surveys in 2016

Species	Winter		Spring			Autumn				Winter	
	Jan	Feb	Mar	Apr	May	Jul	Aug	Sep	Oct	Nov	Dec
Avocet	81	94	98	24	9	16	0	17	103	57	125
Bar-tailed Godwit	5	34	5	0	0	0	1	33	14	22	19
Black-headed Gull	554	653	534	197	181	684	807	617	556	625	330
Black-tailed Godwit	570	564	476	54	0	10	18	19	120	550	427
Brent Goose (Dark-bellied)	0	0	4	0	0	0	0	0	11	0	1
Canada Goose	0	0	0	0	0	4	0	0	0	3	0
Common Gull	18	16	18	0	0	1	3	1	6	18	30
Common Sandpiper	0	0	0	1	1	2	3	3	0	0	0
Common Scoter	0	0	0	0	0	0	0	0	0	2	4
Common Tern	0	0	0	1	4	4	1	0	0	0	0
Coot	10	12	2	0	0	0	0	1	2	3	4
Cormorant	0	3	1	2	1	2	4	9	31	22	13
Curlew	118	89	42	14	2	17	33	50	96	81	54
Dunlin	1252	2209	598	1	0	0	1	2	256	2325	2129
Egyptian	0	0	0	1	0	0	0	0	0	0	0

Species	Winter		Spring			Autumn				Winter	
	Jan	Feb	Mar	Apr	May	Jul	Aug	Sep	Oct	Nov	Dec
Goose											
Gadwall	2	1	1	2	3	0	0	0	0	0	1
Great Black-backed Gull	0	3	2	1	0	2	0	1	2	2	2
Great Crested Grebe	5	7	7	6	4	3	0	1	0	9	9
Great Northern Diver	1	0	0	0	0	0	0	0	0	0	0
Greenshank	1	1	1	1	1	2	4	2	6	2	2
Grey Heron	0	0	0	0	0	2	1	2	4	3	1
Grey Plover	75	29	19	2	0	0	1	6	83	85	87
Greylag Goose	0	0	0	2	0	13	0	0	0	0	0
Guillemot	0	1	0	0	0	0	0	0	0	0	
Herring Gull	22	30	21	13	49	39	39	43	41	70	20
Knot	10	6	85	0	0	0	0	0	0	93	130
Lapwing	228	144	1	0	0	67	29	4	6	411	958
Lesser Black-backed Gull	4	4	5	5	22	67	125	52	21	6	0
Little Egret	0	1	1	1	1	27	37	54	29	11	7
Little Grebe	9	6	2	1	0	1	0	1	5	29	28
Little Ringed Plover	0	0	0	0	2	0	0	0	0	0	0
Little Tern	0	0	0	0	1	0	0	0	0	0	0
Long-tailed Duck	0	0	0	0	0	0	0	0	0	0	1
Mallard	10	9	9	7	10	9	14	11	14	8	7
Mediterranean Gull	0	6	2	0	1	1	0	1	0	1	0
Moorhen	4	4	3	4	2	2	4	4	6	3	2
Mute Swan	0		0	2	2	0	0	0	0	1	6
Oystercatcher	570	354	166	41	18	152	519	462	604	1006	883
Pintail	2		18	0	0	0	0	0	0	0	0
Pochard	0	1	12	4	4	1	5	0	1	0	0

Species	Winter		Spring			Autumn				Winter	
	Jan	Feb	Mar	Apr	May	Jul	Aug	Sep	Oct	Nov	Dec
Red-breasted Merganser	0	1	3	0	0	0	0	0	0	0	0
Redshank	223	110	110	110	1	241	492	515	421	230	182
Red-throated Diver	0	0	0	1	0	0	0	0	0	0	0
Ringed Plover	3	1	7	0	0	0	0	48	8	14	19
Sandwich Tern	0	0	0	0	1	0	0	5	0	0	0
Shelduck	21	42	28	9	12	11	15	6	61	131	141
Snipe	17	18	21	1	0	0	0	0	2	10	7
Spotted Redshank	0	0	0	0	0	0	1	5	15	0	0
Teal	130	152	192	57	0	0	21	58	177	314	527
Tufted Duck	10	4	21	8	7	4	12	4	4	1	2
Turnstone	24	17	22	2	0	0	13	4	133	90	56
Velvet Scoter	0	0	0	0	0	0	0	0	0	14	0
Whimbrel	0	0	0	3	11	5	4	0	0	0	0
Wigeon	347	233	180	0	0	0	0	0	299	213	282
Yellow-legged Gull	0	0	0	0	0	0	0	3	0	0	0
Peak visit count[1]	**2671**	**2900**	**1880**	**406**	**213**	**942**	**1418**	**1439**	**2096**	**4640**	**4030**
Total assemblage[2]	**4326**	**4859**	**2717**	**578**	**350**	**1389**	**2207**	**2041**	**3137**	**6465**	**6496**

Notes on Table 3.3: 1. Peak visit count represents the greatest number of waterbirds observed in a single count; and 2. Total assemblage represents the total waterbird assemblage, the sum of the species peak numbers.

3.15 Summation of the individual species maxima during a season, irrespective of the count or date on which they occurred, provides a total waterbird assemblage for the season. This represents the minimum number of individual waterbirds using the area seasonally during the survey period. The peak waterbird assemblage, as recorded by the surveys in winter, spring and autumn were 7637, 2793 and 3783 waterbirds respectively.

3.16 The peak counts of all waterbirds recorded at Kemsley in 2016 and the month within which their numbers peaked is included in Table 3.4.

Table 3.4. Peak counts of all waterbird species recorded during intertidal surveys in 2016

Species	Winter	Spring	Autumn
Avocet	125 (Dec)	98 (Mar)	103 (Oct)
Bar-tailed Godwit	34 (Feb)	5 (Mar)	33 (Sep)
Black-headed Gull	653 (Feb)	534 (Mar)	807 (Aug)
Black-tailed Godwit	570 (Jan)	476 (Mar)	120 (Oct)
Brent Goose (Dark-bellied)	1 (Dec)	4 (Mar)	11 (Oct)
Canada Goose	3 (Nov)	0	4 (Jul)
Common Gull	30 (Dec)	18 (Mar)	6 (Oct)
Common Sandpiper	0	1 (May)	3 (Sep)
Common Scoter	4 (Dec)	0	0
Common Tern	0	4 (May)	4 (Jul)
Coot	12 (Feb)	2 (Mar)	2 (Oct)
Cormorant	22 (Nov)	2 (Apr)	31 (Oct)
Curlew	118 (Jan)	42 (Mar)	96 (Oct)
Dunlin	2325 (Nov)	598 (Mar)	256 (Oct)
Egyptian Goose	0	1 (Apr)	0
Gadwall	2 (Jan)	3 (May)	0
Great Black-backed Gull	3 (Feb)	2 (Mar)	2 (Oct)
Great Crested Grebe	9 (Nov & Dec)	7 (Mar)	3 (Jul)
Great Northern Diver	1 (Jan)	0	0
Greenshank	2 (Nov & Dec)	1 (Mar, Apr & May)	6 (Oct)
Grey Heron	3 (Nov)	0	4 (Oct)
Grey Plover	87 (Dec)	19 (Mar)	83 (Oct)
Greylag Goose	0	2 (Apr)	13 (Jul)
Guillemot	1 (Feb)	0	0
Herring Gull	70 (Nov)	49 (May)	43 (Sep)
Kingfisher	2 (Dec)	0	0
Knot	130 (Dec)	85 (Mar)	0
Lapwing	958 (Dec)	1 (Mar)	67 (Jul)
Lesser Black-backed Gull	6 (Nov)	22 (May)	125 (Aug)

Species	Winter	Spring	Autumn
Little Egret	11 (Nov)	1 (Mar, Apr & May)	54 (Sep)
Little Grebe	29 (Nov)	2 (Mar)	5 (Oct)
Little Ringed Plover	0	2 (May)	0
Little Tern	0	1 (May)	0
Long-tailed Duck	1 (Dec)	0	0
Mallard	10 (Jan)	10 (May)	14 (Aug & Oct)
Mediterranean Gull	6 (Feb)	2 (Mar)	1 (Jul & Sep)
Moorhen	4 (Jan & Feb)	4 (Apr)	6 (Oct)
Mute Swan	6 (Dec)	2 (Apr & May)	0
Oystercatcher	1006 (Nov)	166 (Mar)	604 (Oct)
Pintail	2 (Jan)	18 (Mar)	0
Pochard	1 (Feb)	12 (Mar)	5 (Aug)
Red-breasted Merganser	1 (Feb)	3 (Mar)	0
Redshank	230 (Nov)	110 (Mar & Apr)	515 (Sep)
Red-throated Diver	0	1 (Apr)	0
Ringed Plover	14 (Dec)	7 (Mar)	48 (Sep)
Sandwich Tern	0	1 (May)	5 (Sep)
Shelduck	141 (Dec)	28 (Mar)	61 (Oct)
Snipe	18 (Feb)	21 (Mar)	2 (Oct)
Spotted Redshank	0	0	15 (Oct)
Teal	527 (Dec)	192 (Mar)	177 (Oct)
Tufted Duck	10 (Jan)	21 (Mar)	12 (Aug)
Turnstone	90 (Nov)	22 (Mar)	133 (Oct)
Velvet Scoter	14 (Nov)	0	0
Whimbrel	0	11 (May)	5 (Jul)
Wigeon	347 (Jan)	180 (Mar)	299 (Oct)
Yellow-legged Gull	0	0	3 (Sep)

Spatial and temporal distribution of intertidal waterbirds

3.17 Detailed accounts are given in this section for species which were recorded during surveys and which meet one of the following three criteria:

- A waterbird species cited as part of the interest feature of The Swale SPA (JNCC, 2006) over winter or on passage. These are Avocet, Bar-tailed Godwit, Ringed Plover, Black-tailed Godwit, Grey Plover, Knot, Pintail and Redshank.

- A waterbird species cited as part of the interest feature of The Swale Ramsar site (JNCC, 2008) occurring at levels of international or national importance in spring/autumn or winter. These species (in addition to those already mentioned above) are: Brent Goose (Dark-bellied), Curlew, Dunlin, Greenshank, Lapwing, Little Egret, Little Grebe, Oystercatcher, Spotted Redshank, Teal, Shelduck, Whimbrel and Wigeon,

- Those waterbird species that were considered part or wholly ecologically dependent upon the intertidal habitat where their numbers exceeded a peak of 25 birds. This peak count was chosen for consistency with previous reporting of the intertidal waterbirds at Kemsley (RPS, 2010). These species (in addition to those already mentioned) are Black-headed Gull, Common Gull, Cormorant, Herring Gull and Lesser Black-backed Gull.

3.18 For 26 target species, seasonal spatial distribution maps are presented for high and low tidal survey periods during which birds were recorded (see Figures 3.2-3.80).

3.19 The high water maps have been plotted using the maximum species count occurring in each of the grid squares from the surveys. Therefore they do not represent a total of individuals across the site but the peak usage of each 100 m x 100 m grid square by the target species. The maps show the spatial distribution of the individual target species. They are expected to highlight areas that are important to the target species as roosting areas in each season.

3.20 The low water maps have been plotted using the peak summed counts of each low water period (three hours either side of low tide) occurring in each of the grid squares from the surveys. Therefore they do not represent a total of individuals across the site but the peak of the total number of bird hours of use of each 100 m x 100 m grid square by the target species per period of maximum tidal flat exposure. The maps show the spatial distribution of the individual target species. They are expected to highlight areas that are important to the target species as foraging areas in each season.

Avocet

3.21 Avocet was present within the survey area during the majority of surveys and was recorded during both tidal states with greater numbers present during periods of high tide. Numbers reached a peak of 125 birds at low tide in December.

3.22 During periods of high tide, records of Avocet in winter were distributed across the survey area with notable counts of pre-roost congregations on the western bank of the survey area and around Elmley Hills. In spring, an even distribution of birds was noted across the survey area with congregations noted within the bay at Elmley and opposite the Lillies. Autumn high tide counts tended to be dominated by records between the Lillies and Elmley Bay, with the majority of birds recorded in the latter.

3.23 During periods of low tide in winter and spring, birds were widely distributed over the areas of exposed mud, with notable concentrations on the eastern lower intertidal flats of Elmley. Autumn records were few, with those larger numbers of Avocet recorded north of the Lillies on the eastern bank of the Swale.

Bar-tailed Godwit

3.24 Bar-tailed Godwit were present within the survey area in all months bar April - July and were recorded sporadically on both tidal states, but peaked at high tide with 34 birds in February 2016 when birds congregated amongst other roosting waders around Elmley Hills.

Black-headed Gull

3.25 Black-headed Gull was recorded within the survey area in all surveyed months of 2016 and was recorded during both tidal states, peaking at 807 birds at low tide in August.

3.26 Distribution of birds was well spread across the survey area, but congregations of birds were notable on the intertidal areas adjacent to the waste management plant, north of the Knauf jetty, where birds gathered to forage and rest.

Black-tailed Godwit

3.27 Black-tailed Godwit was present within the survey area during all months bar May and was recorded during both tidal states. Greater numbers were present in the winter months and during periods of high tide, reaching a peak of 570 birds at high tide in January 2016.

3.28 During periods of high tide, records of Black-tailed Godwit in winter were concentrated on the eastern bank of the survey area where birds congregated to roost on Elmley Hills. In spring and autumn, birds were more widely spread across the survey area. At low tide throughout 2016, birds were widely distributed over the areas of exposed mud.

Brent Goose (Dark-bellied)

3.29 Dark-bellied Brent Goose was recorded on three survey visits in 2016. Four birds were present after high water in March, eleven birds were recorded at low tide in October, and a single was recorded after low water in December.

Common Gull

3.30 Common Gull was recorded throughout 2016 in all months bar April and May, with noticeable concentrations on the intertidal areas adjacent to the waste management plant, north of the Knauf jetty, where birds gathered to forage and rest amongst Black-headed Gulls.

Cormorant

3.31 Cormorant was present throughout 2016 in all months bar January, with numbers peaking at 31 birds at high tide in October.

3.32 The distribution of Cormorant in 2016 showed no discernible pattern, but for favoured areas along Elmley Reach and The Swale.

Curlew

3.33 Curlew was present within the survey area during the majority of surveys in 2016. This species was recorded during all tidal states with greater numbers present during periods of high tide, reaching a peak of 118 birds at high tide in January.

3.34 Distribution of birds was well spread across the survey area and during periods of high tide, records of Curlew in winter were concentrated on the eastern bank of the survey area where birds congregated to roost on Elmley Hills. During periods of low tide, birds were widely distributed over the areas of exposed mud.

Dunlin

3.35 Dunlin was recorded in all months in 2016, bar May and July, with the highest counts of Dunlin around the high tide period in winter, when birds were recorded feeding on the intertidal mudflats on the eastern bank of The Swale, peaking at 2325 birds in November.

3.36 Distribution of birds was widespread across the survey area during both tidal cycles and all seasons, with notable concentrations on the exposed mud to the east and south of Elmley hills.

Greenshank

3.37 Single Greenshank were recorded during all tidal states between January and May, with numbers increasing after July owing to autumn passage and peaking at six birds in October before falling to two wintering birds in November and December. The majority of these records were in the south of the survey area, towards Milton Creek.

Grey Plover

3.38 Grey Plover was recorded in all months bar May and July, with moderate numbers recorded, peaking at 87 birds on the high tide count in December. Highest concentrations of birds were recorded on the eastern bank of the Swale, near Elmley Hills during both tidal states in winter.

3.39 In spring and autumn, birds were well distributed across the survey area during spring and autumn counts.

Herring Gull

3.40 Herring Gull was present within the survey area throughout 2016 and was recorded during both tidal states, peaking at 70 birds at low tide in November.

3.41 Distribution of birds was well spread across the survey area, but congregations of birds were notable on the intertidal areas adjacent to the waste management plant, north of the Knauf jetty and along the eastern bank of The Swale (nearest Elmley bay), where birds gathered to forage and rest with other species of gull.

Knot

3.42 Knot were recorded in low (<10) numbers within the survey area between January and March 2016, but peaked at 85 birds on the low tide count in March, before winter numbers peaked in December with 130 birds recorded at low tide.

3.43 At high tide in winter, birds were recorded in the Elmley bay or the southern creek within the survey area and low (<10) numbers in Milton Creek at high tide in spring. At low tide, the majority of birds were recorded around The Lilies in winter and spring.

Lapwing

3.44 Lapwing was recorded on both tidal cycles in 2016 with the majority of records in autumn and winter, peaking at 958 birds at low tide in December. Winter records were of birds recorded utilising the intertidal mudflats on the Elmley side of The Swale, especially the rocky areas exposed at low tide. Autumn records were more evenly distributed across the survey area.

Lesser Black-backed Gull

3.45 Lesser Black-backed Gull was present within the survey area throughout 2016 in all months bar December and was recorded during both tidal states, peaking at 125 birds at low tide in August.

3.46 Distribution of birds was well spread across the survey area, but congregations of birds were notable on the intertidal areas adjacent to the waste management plant, north of the Knauf jetty and along the eastern bank of The Swale (nearest Elmley bay), where birds gathered to forage and rest with other species of gull.

Little Egret

3.47 Little Egret were present during both tidal states and no clear pattern associated with tidal state is discernible. Numbers were low throughout winter and spring, with clear increases noted in autumn when numbers peaked at 54 birds in September. During periods of both tidal states in autumn, the records of Little Egret were widely distributed across the survey area and in winter and spring were more sporadic.

Little Grebe

3.48 Little Grebe was more abundant during winter months, peaking at 29 birds in November (with 28 in December), and lower (<10) numbers during other months.

3.49 This species is an aquatic forager and therefore records of Little Grebe were from birds on water with site usage during the low water period concentrated within the stretch of the Elmley Reach immediately adjacent to the proposed development. Birds were also noted away from the estuary on the pools at the sewage works north of the proposed development site.

Oystercatcher

3.50 Oystercatcher were present within the survey area during all survey counts and during both tidal states with greater numbers present during periods of high tide when birds congregated to roost on Elmey Hills. Numbers peaked at 1006 birds at high tide in November.

3.51 During other periods of the tidal cycle, birds were well distributed across the survey area.

Pintail

3.52 Pintail were recorded during both tidal states between January - March, with a notable increase in records in March when numbers peaked at 18 birds at low tide along the eastern banks of The Swale.

Redshank

3.53 Redshank was recorded throughout the survey period and tidal cycle, peaking at 515 birds at high tide in September. Redshank were widely distributed across the intertidal mudflats over low water, with birds used the intertidal flats for feeding right up until inundation by water. Roosting birds were recorded on any exposed saltmarsh islands around the fringes of the survey area and on the saltmarsh islands, The Lilies over high water.

Ringed Plover

3.54 Ringed Plover were recorded in low numbers within the survey area between January and March, peaking at 3 birds on the high tide count in January and 7 birds on the low tide count in March. No Ringed Plover were then recorded until September when numbers peaked at 48 birds at high tide and were then recorded during both tidal states until December.

3.55 Birds were concentrated on the eastern bank of the Swale, near Elmley Hills, with no records on the western banks nearest the development and just a single record in Milton Creek during autumn.

Shelduck

3.56 Shelduck were present within the survey area during all survey counts and during both tidal states with greater numbers present during periods of high tide with numbers peaking at 141 birds at high tide in December.

3.57 Numbers were widely distributed across the survey area at high and low tide, with the greatest concentrations noted around the eastern bank of the Swale and around The Lilies.

Spotted Redshank

3.58 Spotted Redshank were recorded in autumn only, rising from a peak of one bird in August, to 15 birds in October. The majority of records were of birds in Milton Creek and south of the Lilies.

Teal

3.59 Teal were recorded in the survey area in all months bar May and July and during both tidal states, peaking at 527 birds at low tide in December.

3.60 Teal made widespread use of the survey area's intertidal areas throughout the tidal cycle, with notable concentrations along Milton Creek and in the creek to the west of the Knauf jetty.

Wigeon

3.61 Wigeon were recorded within the survey area on both tidal states between January – March and October to December, peaking in January on the high tide count, with 347 birds.

3.62 Concentrations of birds were noted in the northern half of the survey area and around the Lilies at both high and low tide.

Whimbrel

3.63 Whimbrel were not recorded in winter, but were recorded during both tidal states between Apri and July, peaking at 11 birds at high tide in May.

3.64 The majority of records were distributed within the southern half of the survey area, from The Lilies down to Milton Creek.

4 EVALUATION

Marsh Harrier roost survey

4.1 A peak count of 13 birds was recorded entering the reedbed roost site in January 2016. This is a reduction of numbers from the peak count of 50 birds recorded roosting within this reedbed in 2010 / 2011 (RPS, 2012).

4.2 Marsh Harrier is cited as an interest feature of The Swale SPA, with 24 pairs during the breeding season (JNCC, 2006).

4.3 No national wintering population data is available for Marsh Harrier, but the national breeding population, based on a five-year mean and reported in the Rare Breeding Bird Panel (RBBP) report, is estimated to be 341 breeding pairs (Holling *et. al.*, 2016). The county population, when working out the five-year mean from the most recent RBBP reports (2010-2014) places the Kent population at 74 breeding pairs, although it is acknowledged in each annual report that this figure is likely to be an under-estimate. Based on atlas data, the Kent population is likely to number up to 100 pairs (Holling et. al., 2016). If a county population of 74 breeding pairs is used, the 13 Marsh Harrier recorded roosting in 2016 represents approximately 3.8% of the national population and 17.6% of the individual county population. However if a maximum potential county population of 200 Marsh Harriers is used, the 13 birds recorded roosting in 2016 would represent approximately 6.5% of the Kent population.

4.4 The information used for The Swale SPA citation is dated and thus reliable evaluations cannot be made against the figure of 24 breeding pairs, which is now considered to be much higher.

4.5 In consideration of all reported data on Marsh Harriers, the roost site is considered of no more than county importance.

Breeding bird survey

4.6 This section considers the changes in breeding assemblage at Kemsley between surveys undertaken in 2009 (RPS, 2009) and surveys in 2016. In evaluating the data, consideration is made for changes in on-site habitat availability as well as national and local bird population trends.

4.7 Pertinently, since baseline survey information was collected in 2009, the area of scrub and grassland vegetation within the survey area has approximately halved due to habitat clearance. Therefore, direct comparisons of the datasets for 2009 and 2016 are difficult for the majority of bird species present on site.

4.8 The breeding assemblage at Kemsley in 2016 was 30 species and in 2009 was 35 species. Of this assemblage, 24 species were confirmed as breeding in 2016 and 30 species were confirmed as breeding in 2009. A single Marsh Harrier territory was recorded, but no waterbird species listed as SPA interest features were recorded as breeding or potentially breeding in the study area, either during the breeding bird surveys or anecdotally during the intertidal bird surveys.

4.9 Table 4.1. details species which were confirmed as breeding at Kemsley in either 2009 or 2016, together with the change in territory numbers between years, and species' conservation status. Where a species appears as "present" in the table, it is assumed that no change in territories has occurred. Where a species appears as "possible" or "probable", the change in territories has been estimated based on the number of "possible"/"probable" territories recorded.

Table 4.1. The number of breeding bird territories recorded in 2016 and previous surveys

Species	Number of breeding territories in 2009	Number of breeding territories in 2016	Change (+ , -) in territories 2009 – 2016	Conservation status
Marsh Harrier	1	1	No change	Annex 1, Sched 1, Amber
Pheasant	1	0	-1	
Woodpigeon	7	Present	No change	
Turtle Dove	1 - 2	0	-1-2	NERC, UKBAP, KBAP, Red
Cuckoo	Possible	1	+1	NERC, UKBAP, KBAP, Red
Skylark	1	0	-1	NERC, UKBAP, Red
Meadow Pipit	1	0	-1	Amber
Wren	17	19	+2	
Dunnock	14	10	-4	NERC, UKBAP, Amber
Robin	2	3	+1	
Nightingale	1	1	No change	Red
Blackbird	7	6	-1	
Song Thrush	7	Probable	-6	NERC, UKBAP, Red
Cetti's Warbler	6	7	+1	Sched 1
Sedge Warbler	7	1	-6	
Reed Warbler	22	10	-12	
Lesser Whitethroat	1	1	No change	
Whitethroat	15	5	-10	
Garden Warbler	1	0	-1	
Blackcap	1	2	+1	
Chiffchaff	0	4	+4	
Bearded Tit	2	Probable	-1	Sched 1
Long-tailed Tit	Possible	3	+2	
Blue Tit	5	3	-2	
Great Tit	3	3	No change	
Magpie	3	Present	No change	
Carrion Crow	1	Present	No change	
Starling	1	0	-1	NERC, UKBAP, Red
Chaffinch	3	Possible	-2	
Greenfinch	1	1	No change	
Goldfinch	2	2	No change	

Species	Number of breeding territories in 2009	Number of breeding territories in 2016	Change (+ , -) in territories 2009 – 2016	Conservation status
Linnet	7	1	-6	NERC, UKBAP, Red
Reed Bunting	5	1	-4	NERC, UKBAP, KBAP, Red

4.10 Of the 33 species identified as breeding or possibly breeding (Table 4.1), 13 are covered by one or more of the criteria listed in section 2.16.

Species Accounts

4.11 The following species accounts relate to those species confirmed as breeding within the survey area in either 2009 or 2016 that are listed on Schedule 1 of the Wildlife & Countryside Act 1981, as a NERC Species of Principal Importance, the Birds of Conservation Concern Red List, or as a UK BAP Priority Species. Therefore, these species are regarded as being of high conservation importance. Where the data are available, the number of territories recorded during surveys is compared to the species' regional and national status. National and regional status is derived from the reports of the Rare Breeding Birds Panel (RBBP), where appropriate (Holling *et al.*, 2016).

4.12 Any breeding population identified within the survey area is considered to be of national importance if it exceeded 1% of the national population. No breeding population of any species within the survey area approaches the 1% level of the national population.

4.13 At county level, a Local Wildlife Site in Kent can be designated on the basis of regularly holding at least 2.5% of the Kent breeding population for any particular species (Kent Wildlife Trust, 2006).

Specially Protected Species

4.14 One species (Marsh Harrier), which is afforded special protection, due to its inclusion on Annex 1 of the EU Birds Directive and three species (Marsh Harrier, Cetti's Warbler and Bearded Tit) afforded special statutory protection under or Schedule 1 of the Wildlife and Countryside Act, were found to be breeding within the Kemsley survey area.

Marsh Harrier

4.15 One Marsh Harrier territory was recorded in the reedbed area to the north of the survey area. This species was recorded on four of the six survey visits, with a pair observed and a male carrying nesting material on the second survey visit.

4.16 In 2009, a single pair of Marsh Harrier was recorded within the same reedbed area. Therefore, there has been no change in the number of Marsh Harrier territories between 2009 and 2016.

4.17 The national and county populations, based on a five-year mean reported in the RBBP (Holling *et. al.*, 2016), is estimated to be 341 breeding pairs, with a county population of 74 breeding

pairs in Kent. Therefore, a single Marsh Harrier territory represents 0.3% of the estimated national population and 1.4% of the Kent population.

4.18 Marsh Harrier is cited as an interest feature of The Swale SPA, with 24 pairs representing at least 15.0% of the breeding population in Great Britain. Therefore, the single pair within the reedbed area at Kemsley represents 4.2% of The Swale SPA population.

4.19 The single pair of Marsh Harrier breeding within the reedbed is considered to be of importance within the context of The Swale SPA, with a population approaching that of county importance based on breeding information as reported by the RBBP (Holling *et. al.,* 2016).

Cetti's Warbler

4.20 Cetti's Warblers were recorded singing during every survey visit. Cetti's Warbler is a secretive species to observe, inhabiting damp scrub and reedbed. The seven Cetti's Warbler territories were located in the northern section of the breeding bird survey area, in scrub bordering the reedbed area.

4.21 In 2009, six Cetti's Warbler territories were recorded from the scrub bordering the reedbed area. Seven territories were identified within the survey area in 2016, within the same area as previously recorded. Therefore, Cetti's Warbler has shown a small increase in the number of territories present on site, but no distributional changes on the site.

4.22 The national and county populations, based on a five-year mean reported in the RBBP (Holling *et. al.*, 2016), is estimated to be 1,622 breeding territories, with a county population of 62 territories in Kent. However, this county figure is considered to be a gross underestimate and is more likely to be between 500-1,000 territories (Holling *et. al.,* 2012). Hence, seven Cetti's Warbler territories would represent 0.4% of the estimated national population and 11.3% of the Kent population if the county population is considered as 62 territories – or 1.4% if the county population is, more realistically, considered as 500 territories.

4.23 Therefore, the seven territories of Cetti's Warbler is considered to be of no more than local importance based on breeding information as reported by RBBP (Holling et. al., 2016).

Bearded Tit

4.24 Two Bearded Tits were recorded calling from the reedbed area during the first survey visit in March. Bearded Tit is a difficult species to determine breeding activity owing to its often secretive nature within reedbeds and lack of song which makes it difficult to observe. Therefore, it was strongly suspected that this species was likely to be breeding within the reedbed owing to the presence of birds within the breeding season and the availability of suitable habitat. However, this species is treated as probably breeding within this assessment.

4.25 Two Bearded Tit were confirmed as breeding within the reedbed area in 2009, but were only considered as probably breeding within this area in 2016.

4.26 The national and county populations, based on a five-year mean reported in the RBBP (Holling et. al., 2016), is estimated to be 609 breeding pairs, with a county population of 86 breeding pairs in Kent. Therefore, a single Bearded Tit territory represents 0.2% of the estimated national population and 1.2% of the Kent population.

4.27 Therefore, the single territory of Bearded Tit, if confirmed, would be considered to be of local importance based on breeding information as reported by the RBBP (Holling et. al., 2016).

Other Species of Conservation Concern

4.28 Since surveys were undertaken in 2009, the 2016 surveys indicate that Turtle Dove, Skylark, Meadow Pipit, Garden Warbler and Starling have been lost on site as breeding species and that numbers of Song Thrush, Whitethroat, Linnet and Reed Bunting have all declined markedly. The majority of these species have shown nationwide declines in recent years, so all else being equal it is likely that some species would have declined or been lost as breeding species irrespective of habitat clearance on site. This is particularly the case for Turtle Dove which declined by 91% across England between 1995 and 2013 (Harris *et al.* 2015). Other species which supported a single territory on the site in 2009 (e.g. Starling, Skylark, Meadow Pipit, Garden Warbler) are also likely to have been declining in the area over the longer term.

4.29 The on-site habitat reduction is likely to be a contributory factor in declines of some species however. A suite of species is likely to have been affected by clearance of scrub vegetation between the two survey periods; illustrated by the degree of change in territory numbers. Reduction of extent of open, lower scrub regeneration is likely to have exacerbated declines of Whitethroat (15 to 5 territories) and Linnet (7 to 1 territory). Loss of areas of mixed-age scrub will have been detrimental for Song Thrush (7 territories to 'probable'), as well as potentially contributed to loss of Garden Warbler and Turtle Dove. Changes to habitat quality of reedy ditches adjacent to scrub vegetation may have impacted Reed Bunting (5 to 1 territory).

4.30 The loss of open and grassland habitats would be contributory in the decline of Meadow Pipit and Skylark; both absent as breeding species in 2016 (one territory of each having been registered in 2009).

4.31 The reduction in numbers of Sedge and Reed Warbler is harder to explain as these species were restricted to the reedbed area which has not been affected by on-site vegetation clearance. As for Reed Bunting, any changes to habitat quality of ditches adjacent to scrub vegetation may have impacted Sedge Warbler.

4.32 Five of the species recorded as breeding or probably breeding within the survey area in 2016 (Cuckoo, Dunnock, Song Thrush, Linnet and Reed Bunting) are listed in Section 41 of the NERC Act 2006 as being of principal importance for the conservation of biodiversity in England.

4.33 Four of the species recorded as breeding or probably/possibly breeding (Cuckoo, Nightingale, Song Thrush and Linnet) are included on the BoCC Red List. Reasons for Red list status are given below:

- Cuckoo. Severe (>50%) decline in UK breeding population over last 25 years. Severe (>50%) long-term decline in UK breeding population during the entire period used for assessments since the first BoCC review in 1969.
- Nightingale. Severe (>50%) decline in UK breeding population over last 25 years. Severe (>50%) long-term decline in UK breeding population during the entire period used for assessments since the first BoCC review in 1969.

- Song Thrush. Severe (>50%) long-term decline in UK breeding population during the entire period used for assessments since the first BoCC review in 1969.
- Linnet. Severe (>50%) long-term decline in UK breeding population during the entire period used for assessments since the first BoCC review in 1969.

4.34 Three of the species recorded as breeding or probably/possibly breeding (Marsh Harrier, Dunnock and Reed Bunting) are included on the BoCC Amber List. Reasons for Amber list status are given below:

- Marsh Harrier. UK wintering population of less than 900 pairs. At least 50% of the UK breeding population found in 10 or fewer sites.
- Dunnock. Moderate (25-49%) decline in UK breeding population over last 25 years.
- Reed Bunting. Moderate (25-49%) decline in UK breeding range over last 25 years.

Breeding assemblage

4.35 The number of species recorded in an area is a simple measure of diversity that can indicate its importance at each season of the year. Fuller (1980) gives the following breeding diversity criteria which are presented in Table 4.2.

Table 4.2. Breeding diversity criteria

National	Regional	County	Local
85+	0-84	50-69	25-49

4.36 Based on Fuller's criteria, the breeding bird assemblage of the survey area in 2016 is of Local importance. However, it should be noted that Fuller's analysis was developed in the 1970's. Since then species diversity has declined significantly (Eaton *et al*., 2015). As a result, Fuller's thresholds are too high for today's breeding bird populations. However, despite these changes in bird populations, and whilst also giving consideration to the number of species of conservation interest, it is still considered most likely that the breeding bird assemblage at the site is of no more than of Local importance.

4.37 Further to Fuller's criteria, the guidelines for selection of Biological SSSIs (JNCC, 2015) provide a scoring system for habitats based on the breeding presence of certain key species characteristic of the habitat, and give a threshold value for SSSI selection. Each species listed is given an index of abundance from 0 to 6, which refers to the current total number of breeding pairs in Britain.

4.38 The threshold score for SSSI selection is 44.5 for lowland open water and its margins and 14 for lowland scrub. The breeding bird assemblage present at the Kemsley scores 19.5 for lowland open water and its margins and 9.5 for scrub. This further confirms the assessment of the breeding bird community as being of local importance.

4.39 When comparing with the assessment of the breeding assemblage made in 2009 (RPS, 2009), there has been no change in the site's importance for breeding birds. The loss of several species as breeding species (and associated effect on overall assemblage) is probably

attributable to wider population declines of the species concerned, whereas scrub clearance on site has probably affected total numbers of territories rather than species' presence/absence. Further removal of scrub may lead to disappearance of these species however.

Intertidal waterbird survey

4.40 The study area lies within The Swale SPA, where the SPA citation species are within the protection of the EU Birds Directive. It is therefore appropriate to consider the importance to birds of the study area as a whole in the context of the SPA waterbird assemblage.

Winter waterbird populations

4.41 Table 4.3 summarises the maximum winter counts recorded for key species which were either cited as part of The Swale SPA and/or The Swale Ramsar site (in italics); were considered ecologically dependent upon the intertidal habitat whose numbers exceeded a peak of 25 birds; or were frequently recorded (during at least 50% of survey visits). Data are also provided for the 1% threshold criteria, and the latest 5-year peak means for the SPA. The 1% criterion is used to assess the importance of wetlands. A wetland is considered internationally important if it regularly supports 1% of a species biogeographic (in this case NW Europe) population (Wetlands International 2016). A wetland in Britain is considered of national importance for a species' biogeographic population if it regularly supports 1% of the total numbers in Britain (Frost *et al*. 2016).

4.42 The waterbird data presented in The Swale SPA citation originate from the WeBS monthly coordinated 'core' counts made during high tide periods, principally from September to March. WeBS is a joint scheme run by the British Trust for Ornithology (BTO), Royal Society for the Protection of Birds (RSPB) and Joint Nature Conservation Committee (JNCC) in association with the Wildfowl & Wetlands Trust (WWT) to monitor non-breeding waterbirds in the UK. The scheme aims to assess population sizes, determine trends in numbers and distribution, and identify important sites for waterbirds (Frost *et al*. 2016).

4.43 For the majority of waterbirds, 1% thresholds for identifying wetland sites of national importance in Britain are only available for wintering populations. Due to the respective species phenologies, it is appropriate to apply these same thresholds in the assessment of wetlands of national importance using autumn count data for all waterbirds with the exception of waders (Frost *et al*. 2016). In many wader species, substantial passage of birds occurs through Britain which may comprise different subspecies or biogeographical populations to that of the wintering population. For a small number of wader species, e.g. Ringed Plover, 1% thresholds had previously been derived and published for this passage period. However, recent information from WeBS and the statutory agencies, as published in Frost *et al*. (2016), no longer provides separate 1% passage threshold criteria for any species. Therefore for all wader species, the following evaluation uses the 1% national thresholds cited for wintering populations.

4.44 A total of 44 species of waterbirds were recorded using the intertidal study site during the surveyed winter months in 2016. Of these, 19 species were of conservation importance due to being listed as wintering and/or passage interest features on The Swale SPA and/or Ramsar designations. These species are (SPA species in italics): *Avocet*, *Bar-tailed Godwit*, *Black-tailed Godwit*, Curlew, Brent Goose (Dark-bellied), Dunlin, Greenshank, *Grey Plover*, *Knot*, Lapwing,

Little Egret, Little Grebe, Oystercatcher, *Pintail*, *Redshank*, *Ringed Plover*, Shelduck, Teal and Wigeon.

Table 4.3. Comparison of peak winter waterbird counts 2016, with SPA population estimates and 1% thresholds for national and international importance

Species	Peak winter count in 2016		5yr peak mean for SPA (2010/11-2014/15)[1]	Great Britain 1% Threshold[2]	International 1% Threshold[3]
	Number of birds	% of SPA population			
Avocet[4]	*125*	*26.5*	*472 (Feb)*	*75*	*730*
Bar-tailed Godwit	*34*	*4.1*	*831 (Jan)*	*380*	*1200*
Black-headed Gull	653	23.9	2729 (May)	22000	20000
Black-tailed Godwit	*570*	*38.4*	*1484 (Oct)*	*430*	*610*
Brent Goose (Dark-bellied)	1	0.04	2355 (Jan)	950	2400
Common Gull	30	56.6	53 (Sep)	7000	16400
Coot	12	1.8	681 (Nov)	1800	17500
Cormorant	22	14.6	151 (Oct)	350	1200
Curlew	118	10.4	1137 (Jan)	1400	8400
Dunlin	2325	34.7	6703 (Jan)	3500	13300
Great Crested Grebe	9	20	45 (Nov)	190	3500
Greenshank	2	8.0	25 (Oct)	6	2300
Grey Plover	*87*	*7.1*	*1223 (Jan)*	*430*	*2500*
Herring Gull	70	24.8	282 (Feb)	7300	10200
Knot	*130*	*5.5*	*2374 (Feb)*	*3200*	*4500*
Lapwing	958	14.7	6529 (Jan)	6200	20000
Lesser Black-backed Gull	6	14.6	41 (Feb)	1200	10200
Little Egret	11	9.2	120 (Oct)	45	1300
Little Grebe	29	46.8	62 (Jan)	160	3900

Species	Peak winter count in 2016		5yr peak mean for SPA (2010/11-2014/15)[1]	Great Britain 1% Threshold[2]	International 1% Threshold[3]
	Number of birds	% of SPA population			
Mallard	10	0.9	1111 (Sep)	6800	45000
Oystercatcher	1006	19.4	5185 (Jan)	3200	8200
Redshank	*230*	*20.5*	*1120 (Nov)*	*1200*	*2400*
Ringed Plover	*14*	*4.4*	*318 (Jan)*	*340*	*730*
Shelduck	141	14.5	974 (Jan)	610	3000
Snipe	18	37.5	48 (Jan)	10000	20000
Teal	152	14.1	3746 (Mar)	2100	5000
Tufted Duck	10	6.8	146 (Jan)	1100	12000
Turnstone	90	26.1	345 (Jan)	480	1400
Wigeon	347	3.2	10893 (Nov)	4400	15000

Notes on Table 4.3: 1. Frost *et al.* (2016); 2. Musgrove *et al.* (2013); 3. Wetlands International (2012); 4. The Swale SPA citation species are shown in italic.

Spring waterbird populations

4.45 Table 4.4 summarises the maximum spring counts recorded for key species which were either cited as part of The Swale SPA and/or The Swale Ramsar site (in italics); were considered ecologically dependent upon the intertidal habitat whose numbers exceeded a peak of 25 birds; or were frequently recorded (during at least 50% of survey visits). Data are also provided for the 1% threshold criteria, and the latest 5-year peak means for the SPA.

4.46 A total of 46 species of waterbirds were recorded using the intertidal study site in spring 2016. Of these, 20 species were of conservation value due to being species listed as wintering and/or passage interest features on The Swale SPA and/or Ramsar designations. These species are (SPA species in italics): *Avocet*, *Bar-tailed Godwit*, *Black-tailed Godwit*, Brent Goose (Dark-bellied), Curlew, Dunlin, Greenshank, *Grey Plover*, *Knot*, Lapwing, Little Egret, Little Grebe, Oystercatcher, *Pintail*, *Redshank*, *Ringed Plover*, Shelduck, Teal, Whimbrel and Wigeon.

Table 4.4. Comparison of peak waterbird counts in spring 2016 with SPA population estimates and 1% thresholds for national and international importance

Species	Peak spring count in 2016		5yr peak mean for SPA (2010/11-2014/15)[1]	Great Britain 1% Threshold[2]	International 1% Threshold[3]
	Number of birds	% of SPA population			
Avocet[4]	*98*	*20.8*	*472 (Feb)*	*75*	*730*
Bar-tailed Godwit	*5*	*0.6*	*831 (Jan)*	*380*	*1200*
Black-headed Gull	534	19.6	2729 (May)	22000	20000
Black-tailed Godwit	*476*	*32.1*	*1484 (Oct)*	*430*	*610*
Brent Goose (Dark-bellied)	4	0.2	2355 (Jan)	950	2400
Common Gull	18	34.0	53 (Sep)	7000	16400
Common Tern	4	25.0	16 (May)	-[5]	1800
Cormorant	2	1.3	151 (Oct)	350	1200
Curlew	42	3.7	1137 (Jan)	1400	8400
Dunlin	598	8.9	6703 (Jan)	3500	13300
Great Crested Grebe	7	15.6	45 (Nov)	190	3500
Greenshank	1	4	25 (Oct)	6	2300
Grey Plover	*19*	*1.6*	*1223 (Jan)*	*430*	*2500*
Herring Gull	49	0.4	282 (Feb)	7300	10200
Knot	*85*	*3.6*	*2374 (Feb)*	*3200*	*4500*
Lapwing	1	0.02	6529 (Jan)	6200	20000
Lesser Black-backed Gull	22	2.4	41 (Feb)	1200	10200
Little Egret	1	0.8	120 (Oct)	45	1300
Little Grebe	2	1.6	62 (Jan)	160	3900
Mallard	10	0.1	1111 (Sep)	6800	45000

Species	Peak spring count in 2016		5yr peak mean for SPA (2010/11-2014/15)[1]	Great Britain 1% Threshold[2]	International 1% Threshold[3]
	Number of birds	% of SPA population			
Oystercatcher	166	3.2	5185 (Jan)	3200	8200
Pintail	*18*	*5.9*	*303 (Jan)*	*290*	*600*
Pochard	12	8.8	136 (Jan)	380	3000
Redshank	*110*	*9.8*	*1120 (Nov)*	*1200*	*2400*
Ringed Plover	*7*	*2.2*	*318 (Jan)*	*340*	*730*
Shelduck	28	2.9	974 (Jan)	610	3000
Teal	192	5.1	3746 (Mar)	2100	5000
Tufted Duck	21	14.4	146 (Jan)	1100	12000
Turnstone	22	6.4	345 (Jan)	480	1400
Whimbrel	11	78.6	14 (Aug)	+[6]	6700
Wigeon	180	1.7	10893 (Nov)	4400	15000

Notes on Table 4.4: 1. Frost et al. (2016); 2. Musgrove et al. (2013); 3. Wetlands International (2016); 4. The Swale SPA citation species are shown in italic; 5. '-' no data available; 6. '+' population too small for meaningful figure to be obtained.

Autumn waterbird populations

4.47 Table 4.5 summarises the maximum autumn counts recorded for key species which were either cited as part of The Swale SPA and/or The Swale Ramsar site (in italics); were considered ecologically dependent upon the intertidal habitat whose numbers exceeded a peak of 25 birds; or were frequently recorded (during at least 50% of survey visits). Data are also provided for the 1% threshold criteria, and the latest 5-year peak means for the SPA.

4.48 A total of 40 species of waterbird were recorded using the intertidal study site during autumn 2016. Of these, 21 species were of conservation value due to being species listed as wintering and/or passage interest features on The Swale SPA and/or Ramsar designations. These species are (SPA species in italics): *Avocet*, *Bar-tailed Godwit*, *Black-tailed Godwit*, Brent Goose (Dark-bellied), Curlew, Dunlin, Greenshank, *Grey Plover*, *Knot*, Lapwing, Little Egret, Little Grebe, Oystercatcher, *Pintail*, *Redshank*, *Ringed Plover*, Shelduck, Spotted Redshank, Teal, Whimbrel and Wigeon.

Table 4.5. Comparison of peak waterbird counts in autumn 2016 with SPA population estimates and 1% thresholds for national and international importance

Species	Peak autumn count in 2016		5yr peak mean for SPA (2010/11-2014/15)[1]	Great Britain 1% Threshold[2]	International 1% Threshold[3]
	Number of birds	% of SPA population			
Avocet[4]	*103*	*21.8*	*472 (Feb)*	*75*	*730*
Bar-tailed Godwit	*33*	*4.0*	*831 (Jan)*	*380*	*1200*
Black-headed Gull	653	23.9	2729 (May)	22000	20000
Black-tailed Godwit	*120*	*8.1*	*1484 (Oct)*	*430*	*610*
Brent Goose (Dark-bellied)	11	0.5	2355 (Jan)	950	2400
Common Gull	6	11.3	53 (Sep)	7000	16400
Cormorant	31	20.5	151 (Oct)	350	1200
Curlew	96	8.4	1137 (Jan)	1400	8400
Dunlin	256	3.8	6703 (Jan)	3500	13300
Greenshank	6	24	25 (Oct)	6	2300
Grey Plover	*83*	*6.8*	*1223 (Jan)*	*430*	*2500*
Herring Gull	43	15.2	282 (Feb)	7300	10200
Lapwing	67	1.1	6529 (Jan)	6200	20000
Lesser Black-backed Gull	125	304.9	41 (Feb)	1200	10200
Little Egret	54	45	120 (Oct)	45	1300
Little Grebe	5	8.1	62 (Jan)	160	3900
Mallard	14	1.3	1111 (Sep)	6800	45000
Oystercatcher	519	10	5185 (Jan)	3200	8200
Pochard	5	3.7	136 (Jan)	380	3000
Redshank	*515*	*46*	*1120 (Nov)*	*1200*	*2400*
Ringed Plover	*48*	*15.1*	*318 (Jan)*	*340*	*730*

Species	Peak autumn count in 2016		5yr peak mean for SPA (2010/11-2014/15)[1]	Great Britain 1% Threshold[2]	International 1% Threshold[3]
	Number of birds	% of SPA population			
Shelduck	61	6.3	974 (Jan)	610	3000
Spotted Redshank	15	115.4	13 (Oct)	+[6]	600-1200
Teal	177	4.7	3746 (Mar)	2100	5000
Tufted Duck	12	8.2	146 (Jan)	1100	12000
Turnstone	133	38.6	345 (Jan)	480	1400
Whimbrel	5	35.7	14 (Aug)	+[6]	6700
Wigeon	299	2.7	10893 (Nov)	4400	15000

Notes on Table 4.5: 1. Frost et al. (2016); 2. Musgrove et al. (2013); 3. Wetlands International (2016); 4. The Swale SPA citation species are shown in italic; 5. '-' no data available; 6. '+' population too small for meaningful figure to be obtained.

The importance of the study area as a discrete wetland habitat for internationally and nationally important waterbird populations in winter

4.49 During the winter months of 2016, no species at Kemsley were recorded in numbers approaching those considered as being of international importance. Owing to a data processing error, the previous RPS report on the intertidal waterbirds recorded at Kemsley in January – May 2016 (RPS, 2016) incorrectly stated that numbers of Black-tailed Godwit were recorded in numbers considered as being of international importance.

4.50 Two species (Avocet and Black-tailed Godwit) recorded within the Kemsley intertidal survey area represented 1% or more of the national population estimates for Great Britain.

The importance of the intertidal study area as a discrete wetland habitat for internationally and nationally important waterbird populations in spring

4.51 None of the waterbird species recorded during spring 2016 within the Kemsley intertidal survey area represented 1% or more of the international population estimates.

4.52 Two species (Avocet and Black-tailed Godwit) recorded during spring 2016 within the Kemsley intertidal survey area represented 1% or more of the national population estimates for Great Britain.

The importance of the intertidal study area as a discrete wetland habitat for internationally and nationally important waterbird populations in autumn

4.53 None of the waterbird species recorded during autumn 2016 within the Kemsley intertidal survey area represented 1% or more of the international population estimates.

4.54 Three species (Avocet, Greenshank and Little Egret) recorded during spring 2016 within the Kemsley intertidal survey area represented 1% or more of the national population estimates for Great Britain.

The importance to birds of the study area in the context of The Swale SPA in winter

4.55 The peak count of Avocet recorded in the survey area in winter 2016 (125) equates to 26.5% of The Swale SPA population, using the five-year peak mean as derived from the latest available WeBS data (2010/11 to 2014/15).

4.56 The peak count of Bar-tailed Godwit recorded in the survey area in winter 2016 (34) equates to 4.1% of The Swale SPA population, using the five-year peak mean as derived from the latest available WeBS data (2010/11 to 2014/15).

4.57 The peak count of Black-tailed Godwit recorded in the survey area in winter 2016 (570) equates to 38.4% of The Swale SPA population, using the five-year peak mean as derived from the latest available WeBS data (2010/11 to 2014/15).

4.58 The peak count of Grey Plover recorded in the survey area in winter 2016 (87) equates to 7.1% of The Swale SPA population, using the five-year peak mean as derived from the latest available WeBS data (2010/11 to 2014/15).

4.59 The peak count of Knot recorded in the survey area in winter 2016 (130) equates to 5.5% of The Swale SPA population, using the five-year peak mean as derived from the latest available WeBS data (2010/11 to 2014/15).

4.60 The peak count of Redshank recorded in the survey area between January – February 2016 (230) equates to 20.5% of The Swale SPA population, using the five-year peak mean as derived from the latest available WeBS data (2010/11 to 2014/15).

4.61 The peak count of Ringed Plover recorded in the survey area in winter 2016 (14) equates to 4.4% of The Swale SPA population, using the five-year peak mean as derived from the latest available WeBS data (2010/11 to 2014/15).

4.62 The peak number of 20 other waterbird species of conservation interest or regularly recorded in the survey area in the surveyed winter months in 2016 was in excess of 1% of The Swale SPA population, representing between 56.6% (Common Gull) and 1.8% (Coot), as estimated by the most recent WeBS five-year peak mean (2010/11 to 2014/15). For other species the proportion occurring within the study area is less than 1% of the SPA population in winter.

4.63 Considering the total waterbird assemblage, the survey area at the Kemsley site supported a winter peak of 7637 birds in 2016. This represents 12.2% of the 62,449 individual waterbirds for The Swale SPA as estimated by the most recent WeBS five-year peak mean (2009/10 to 2013/14).

The importance to birds of the study area in the context of The Swale SPA in spring

4.64 The peak count of Avocet recorded in the survey area in spring 2016 (98) equates to 20.8% of The Swale SPA population, using the five-year peak mean as derived from the latest available WeBS data (2010/11 to 2014/15).

4.65 The peak count of Bar-tailed Godwit recorded in the survey area in spring 2016 (5) equates to 0.6% of The Swale SPA population, using the five-year peak mean as derived from the latest available WeBS data (2010/11 to 2014/15).

4.66 The peak count of Black-tailed Godwit recorded in the survey area in spring 2016 (476) equates to 32.1% of The Swale SPA population, using the five-year peak mean as derived from the latest available WeBS data (2010/11 to 2014/15).

4.67 The peak count of Grey Plover recorded in the survey area in spring 2016 (19) equates to 1.6% of The Swale SPA population, using the five-year peak mean as derived from the latest available WeBS data (2010/11 to 2014/15).

4.68 The peak count of Pintail recorded in the survey area in spring 2016 (18) equates to 5.9% of The Swale SPA population, using the five-year peak mean as derived from the latest available WeBS data (2010/11 to 2014/15).

4.69 The peak count of Redshank recorded in the survey area in spring 2016 (110) equates to 9.8% of The Swale SPA population, using the five-year peak mean as derived from the latest available WeBS data (2010/11 to 2014/15).

4.70 The peak count of Ringed Plover recorded in the survey area in spring 2016 (7) equates to 2.2% of The Swale SPA population, using the five-year peak mean as derived from the latest available WeBS data (2010/11 to 2014/15).

4.71 The peak number of 18 other waterbird species of conservation interest or regularly recorded in the survey area during spring 2016 was in excess of 1% of The Swale SPA population, represented between 78.6% (Whimbrel) and 1.6% (Little Grebe), as estimated by the most recent WeBS five-year peak mean (2010/2011 to 2014/2015). For all other species the proportion occurring within the study area is less than 1% of the SPA winter population.

4.72 Considering the total waterbird assemblage, the survey area at Kemsley supported a spring peak number of 2,793 birds in 2016. This represents 4.5% of the 62,449 individual waterbirds for The Swale SPA as estimated by the most recent WeBS five-year peak mean (2009/10 to 2013/14).

The importance to birds of the study area in the context of The Swale SPA in autumn

4.73 The peak count of Avocet recorded in the survey area in autumn 2016 (103) equates to 21.8% of The Swale SPA population, using the five-year peak mean as derived from the latest available WeBS data (2010/11 to 2014/15).

4.74 The peak count of Bar-tailed Godwit recorded in the survey area in autumn 2016 (33) equates to 4.0% of The Swale SPA population, using the five-year peak mean as derived from the latest available WeBS data (2010/11 to 2014/15).

4.75 The peak count of Black-tailed Godwit recorded in the survey area in autumn 2016 (120) equates to 8.1% of The Swale SPA population, using the five-year peak mean as derived from the latest available WeBS data (2010/11 to 2014/15).

4.76 The peak count of Grey Plover recorded in the survey area in autumn 2016 (83) equates to 6.8% of The Swale SPA population, using the five-year peak mean as derived from the latest available WeBS data (2010/11 to 2014/15).

4.77 The peak count of Redshank recorded in the survey area in autumn 2016 (515) equates to 46% of The Swale SPA population, using the five-year peak mean as derived from the latest available WeBS data (2010/11 to 2014/15).

4.78 The peak count of Ringed Plover recorded in the survey area in autumn 2016 (48) equates to 15.1% of The Swale SPA population, using the five-year peak mean as derived from the latest available WeBS data (2010/11 to 2014/15).

4.79 The peak number of 21 other waterbird species of conservation interest or regularly recorded in the survey area during autumn 2016 was in excess of 1% of The Swale SPA population, represented between 304.9% (Lesser Black-backed Gull) and 1.1% (Lapwing), as estimated by the most recent WeBS five-year peak mean (2010/2011 to 2014/2015). The representation of Lesser Black-backed Gull within the survey area is high, owing to the congregations of gulls around the 'Countryside Waste Management area' within the north of the survey area.

4.80 For all other species recorded within the survey area, the proportion occurring within the study area is less than 1% of the SPA winter population.

4.81 Considering the total waterbird assemblage, the survey area at Kemsley supported an autumn peak number of 3783 birds in 2016. This represents 6.1% of the 62,449 individual waterbirds for The Swale SPA as estimated by the most recent WeBS five-year peak mean (2009/10 to 2013/14).

WeBS Alerts/SPA population trends

4.82 The "WeBS Alerts" system provides a method of identifying changes in numbers of waterbirds; the WeBS Alerts report (Cook *et al.*, 2013) provides a review of the status of species on sites in the UK which are designated due to their conservation value for non-breeding waterbirds (including The Swale SPA). Species that have undergone changes in numbers are identified. Trends are assessed over the short-, medium-, and long-terms (5, 10 and up to 25 years respectively). Where declines exceed 50%, High-Alerts are issued, and where declines lie between 25% and 50% Medium-Alerts are issued.

4.83 For The Swale SPA, 21 species were evaluated for the site, with alerts triggered for nine species in relation to The Swale SPA (Cook *et al.*, 2013).

4.84 Of the 21 species evaluated for Webs Alerts, 18 were recorded within the Kemsley intertidal survey area and seven of the nine 'alert species' were recorded during the intertidal waterbird surveys at Kemsley in 2016. These were Shelduck, Little Grebe, Cormorant, Grey Plover, Lapwing, Dunlin and Redshank.

4.85 Fourteen species, of the 21 evaluated Webs Alerts species, were recorded at Kemsley in significant numbers (>5%) in 2016 in relation to international, national or SPA populations. Of these:

- Avocet have decreased by 4% in the short-term but have increased by 67% in the medium-term and 11,100% in the long-term;

- Black-tailed Godwit have increased by 37% in the short-term, 48% in the medium-term and 1,750% in the long-term;
- Cormorant have decreased by 14% in the short-term, 31% in the medium-term and 72% in the long-term (the medium term decline triggering a Medium-Alert and the long-term decline triggering a High-Alert);
- Curlew have increased by 37% in the short-term, 24% in the medium-term and 6% in the long-term;
- Dunlin have increased by 14% in the short-term, but decreased by 36% in the medium-term and 30% in the long-term (the long-term decline triggering a Medium-Alert);
- Grey Plover have decreased by 2% in the short-term, 44% in the medium term and by 14% in the long-term (the medium-term decline triggering a Medium-Alert);
- Knot have increased by 9% in the short-term, decreased by 3% in the medium term and increased by 11% in the long-term;
- Lapwing have decreased by 17% in the short-term, by 42% in the medium-term but increased by 52% in the long-term (the medium-term decline triggering a Medium-Alert);
- Little Grebe have decreased by 31% in the short-term, by 74% in the medium-term and by 48% in the long-term (the short-term and long-term declines triggering a Medium-Alert and the medium-term decline triggering a High-Alert);
- Oystercatcher have decreased by 1% in the short-term, 13% in the medium term and by 9% in the long-term;
- Pintail have decreased by 12% in the short-term and 12% in the medium-term, but increased by 111% in the long-term; and
- Redshank have decreased by 4% in the short-term, 36% in the medium-term and 43% in the long-term (the medium- and long-term declines triggering Medium-Alerts).
- Shelduck decreased by 15% in the short-term and 26% in the medium-term, but increased by 22% in the long-term (the medium-term decline triggering a Medium-Alert);
- Teal have increased by 20% in the short-term, 35% in the medium-term and 252% in the long-term.

4.86 In light of these population changes (Cook *et al.*, 2013) the SPA populations of Cormorant, Dunlin, Grey Plover, Lapwing, Little Grebe, Redshank and Shelduck might be considered more vulnerable than the other species to any impacts of development that might affect the overall estuarine waterbird assemblage.

4.87 Comparison of the dataset collected in 2016 with that relating to the study area in 2009-10 (RPS 2009, 2010) (Table 4.6) shows a very similar non-breeding waterbird assemblage present within the Kemsley survey area. In 2009/10, 53 species of waterbird were recorded and in 2016, 55 species of waterbird were recorded.

Table 4.6. The peak counts of waterbirds recorded at Kemsley in 2016 and previous surveys

Species	Peak winter count in 2009/10	Peak winter count in 2016	Peak spring count in 2009	Peak spring count in 2016	Peak autumn count in 2009	Peak autumn count in 2016
Avocet	80	125	60	98	46	103
Bar-tailed Godwit	11	34	1	5	5	33
Black-headed Gull	128	653	186	534	86	807
Black-tailed Godwit	1500	570	919	476	329	120
Black Tern	0	0	0	0	4	0
Brent Goose (Dark-bellied)	24	1	12	4	0	11
Canada Goose	4	3	0	0	0	4
Common Gull	9	30	2	18	10	6
Common Sandpiper	1	0	2	1	0	3
Common Tern	0	0	3	4	0	4
Coot	43	12	0	2	0	2
Cormorant	2	22	3	2	7	31
Curlew	51	118	156	42	49	96
Dunlin	1678	2325	1	598	537	256
Egyptian Goose	0	0	0	1	0	0
Gadwall	4	2	1	3	0	0
Goldeneye	2	0	0	0	0	0
Golden Plover	16	0	0	0	192	0
Great Black-backed Gull	3	3	1	2	3	2
Great Crested Grebe	6	9	9	7	5	3
Great Northern Diver	1	1	0	0	0	0
Greenshank	13	2	3	1	9	6
Green Sandpiper	2	0	0	0	3	0
Grey Heron	4	3	0	0	4	4
Grey Plover	62	87	27	19	98	83
Herring Gull	3	70	5	49	4	43
Kingfisher	2	2	0	0	2	0
Knot	940	130	10	85	67	0

Species	Peak winter count in 2009/10	Peak winter count in 2016	Peak spring count in 2009	Peak spring count in 2016	Peak autumn count in 2009	Peak autumn count in 2016
Lapwing	553	958	0	1	383	67
Lesser Black-backed Gull	3	6	1	22	1	125
Little Egret	3	11	2	1	23	54
Little Grebe	26	29	2	2	5	5
Little Ringed Plover	0	0	0	2	0	0
Little Tern	0	0	0	1	0	0
Long-tailed Duck	0	1	0	0	0	0
Mallard	5	10	4	10	13	14
Mediterranean Gull	0	6	2	2	0	1
Moorhen	19	4	0	4	16	6
Mute Swan	1	6	0	2	1	0
Oystercatcher	847	1006	240	166	583	604
Pintail	218	2	36	18	10	0
Pochard	1	1	0	12	0	5
Red-breasted Merganser	14	1	7	3	1	0
Redshank	357	230	210	110	463	515
Red-throated Diver	0	0	0	1	0	0
Ringed Plover	40	14	4	7	55	48
Sandwich Tern	0	0	0	1	0	0
Scaup	1	0	0	0	0	0
Shag	1	0	0	0	0	0
Shelduck	257	81	76	28	110	61
Shoveler	5	0	0	0	0	0
Snipe	28	18	24	21	1	2
Spotted Redshank	1	0	0	0	1	15
Teal	549	527	269	192	139	177
Tufted Duck	1	10	1	21	0	12
Turnstone	68	90	68	22	88	133
Velvet Scoter	0	14	0	0	0	0
Water Rail	1	0	0	0	0	0
Whimbrel	0	0	9	11	2	5

Species	Peak winter count in 2009/10	Peak winter count in 2016	Peak spring count in 2009	Peak spring count in 2016	Peak autumn count in 2009	Peak autumn count in 2016
Wigeon	766	347	72	180	216	299
Yellow-legged Gull	0	0	0	0	0	3

4.88 For most species, relatively small differences in seasonal maxima are apparent between the two survey periods. Larger differences in seasonal maxima (e.g. for Dunlin and Knot) may be attributable to movement of birds within the wider SPA, fluxes in passage, or responses to cold weather. Comparison of the seasonal peaks between data collected in 2009/2010 and 2016 is presented in Table 4.7.

Table 4.7. Seasonal peak counts of waterbird at Kemsley between 2009/10 and 2016

	Winter		Spring		Autumn	
	2009/10	2016	2009	2016	2009	2016
Peak visit count	4319	4640	1451	1880	2211	2096
Peak total assemblage	7475	6496	1947	2717	3467	3137

4.89 The peak seasonal visit counts and peak total assemblage counts show a very similar dataset and no real changes in the number of waterbirds present within the Kemsley survey area between 2009/10 and 2016 are discernible. However, it is not valid to draw any conclusions on trends specifically within the Kemsley survey area based on the two RPS datasets, or draw meaningful comparisons with the WeBS Alerts short-term trends.

5 CONCLUSIONS

Marsh Harrier roost survey

5.1 A peak count of 13 Marsh Harriers was recorded entering the roost site in January 2016, indicating the importance of this reedbed habitat for the species in winter.

5.2 Although the recorded peak number of Marsh Harriers entering the roost site in 2016 (13) is lower than previously recorded in 2010 / 2011 (50), the reasoning for this reduction in numbers is unclear as the reedbed is of similar size and habitat quality in 2016 to when previously surveyed in 2010 / 2011. With no data on the number of Marsh Harriers roosting in the reedbed in the intervening period, it is difficult to be sure of the driver of change.

5.3 Roosting birds may be more susceptible to increased disturbance and, where alternative roosting locations exist, have presumably chosen to utilise these. However, without supporting information regarding the use of other roost sites, this is purely speculative at this stage.

Breeding bird survey

5.4 The survey of breeding birds recorded a breeding assemblage of 30 species in 2016, compared with 35 species in 2009. Several species of conservation interest have declined; Turtle Dove is now absent. Marsh Harrier, Cuckoo, Cetti's Warbler and Nightingale have remained stable.

5.5 Site population changes are likely to be due to a combination of factors. Turtle Dove, Skylark, Meadow Pipit, Garden Warbler and Starling have been lost on site as a breeding species and numbers of Song Thrush, Whitethroat, Linnet and Reed Bunting have all declined markedly. The majority of these species have shown nationwide declines in recent years, so all else being equal it is likely that some species may have declined or been lost as breeding species irrespective of habitat clearance on site. This is particularly the case for Turtle Dove. Other species for which the site supported a single territory in 2009 (e.g. Starling, Skylark, Meadow Pipit, Garden Warbler) are also likely to have been declining in the area over the longer term.

5.6 On-site habitat reduction is likely to be a contributory factor in declines of some species. All else being equal, as evidenced by the territory numbers recorded, species that are likely to have been affected by the clearance of scrub vegetation between the two survey periods include Skylark, Meadow Pipit, Whitethroat, Linnet and Song Thrush.

5.7 Overall, the site contains a diversity of species and is of local importance as in 2009. The loss of several species as breeding species (and associated effect on overall assemblage) is probably attributable to wider population declines of those particular species, whereas scrub clearance on site has probably affected total numbers of bird territories rather than species' presence/absence.

5.8 All wild bird nests and their eggs are protected under the WCA. It is therefore a requirement that the development proposals avoid disturbance or harm to any birds breeding on the site. This can most easily be achieved by clearing habitats within the development area with the potential to support nesting birds outside of the breeding season (March – August inclusive).

Intertidal waterbird survey

5.9 In total, 54 species of waterbird were recorded using the intertidal survey area at Kemsley in 2016. Of these, 44 species were recorded using the intertidal survey area in winter; 46 species of waterbirds were recorded using the intertidal survey area in spring and 40 species were recorded using the intertidal survey area in autumn.

5.10 A total of 21 species of bird, considered as being of conservation importance due to being listed as wintering and/or passage interest features on The Swale SPA and/or Ramsar designations were recorded. These species are (SPA species in italics): *Avocet*, *Bar-tailed Godwit*, *Black-tailed Godwit*, Brent Goose (Dark-bellied), Curlew, Dunlin, Greenshank, *Grey Plover*, *Knot*, Lapwing, Little Egret, Little Grebe, Oystercatcher, *Pintail, Redshank*, *Ringed Plover*, Shelduck, Spotted Redshank, Teal, Whimbrel and Wigeon.

5.11 No peak counts of any species recorded within the Kemsley survey area in 2016 represented 1% or more of the international population estimate.

5.12 The peak counts of four species (Avocet, Black-tailed Godwit, Greenshank and Little Egret) recorded within the Kemsley survey area in 2016 represented 1% or more of the national population estimate for Great Britain.

5.13 Significant proportions (>5%) of The Swale SPA populations for seven of the cited wintering and/or passage waterbird species were recorded. In winter these were Avocet, Black-tailed Godwit, Grey Plover, Knot and Redshank; in spring these were Avocet, Black-tailed Godwit, Pintail and Redshank; and in autumn these were Avocet, Black-tailed Godwit, Grey Plover, Redshank and Ringed Plover.

5.14 Three species (Cormorant, Little Grebe, Redshank) have been identified within the WeBS Alerts system as showing declines on The Swale in the medium- and long-term that may suggest they are more vulnerable to negative impacts of the development. In light of these alerts, the SPA population of Dunlin, Grey Plover, Lapwing and Shelduck might also be considered more vulnerable than other species to any impacts of development that might affect the overall estuarine waterbird assemblage.

5.15 Waterbird distribution was evenly distributed across the survey area as a whole, but concentrations of waterbirds occurred on the east bank of The Swale around Elmley Hills, where roosting sites for Oystercatcher, Black-tailed Godwit, Avocet and other species in smaller numbers were recorded at high tide.

5.16 The number of species and assemblage of waterbird between surveys undertaken at Kemsley in 2009/10 and 2016 has shown no significant change between years.

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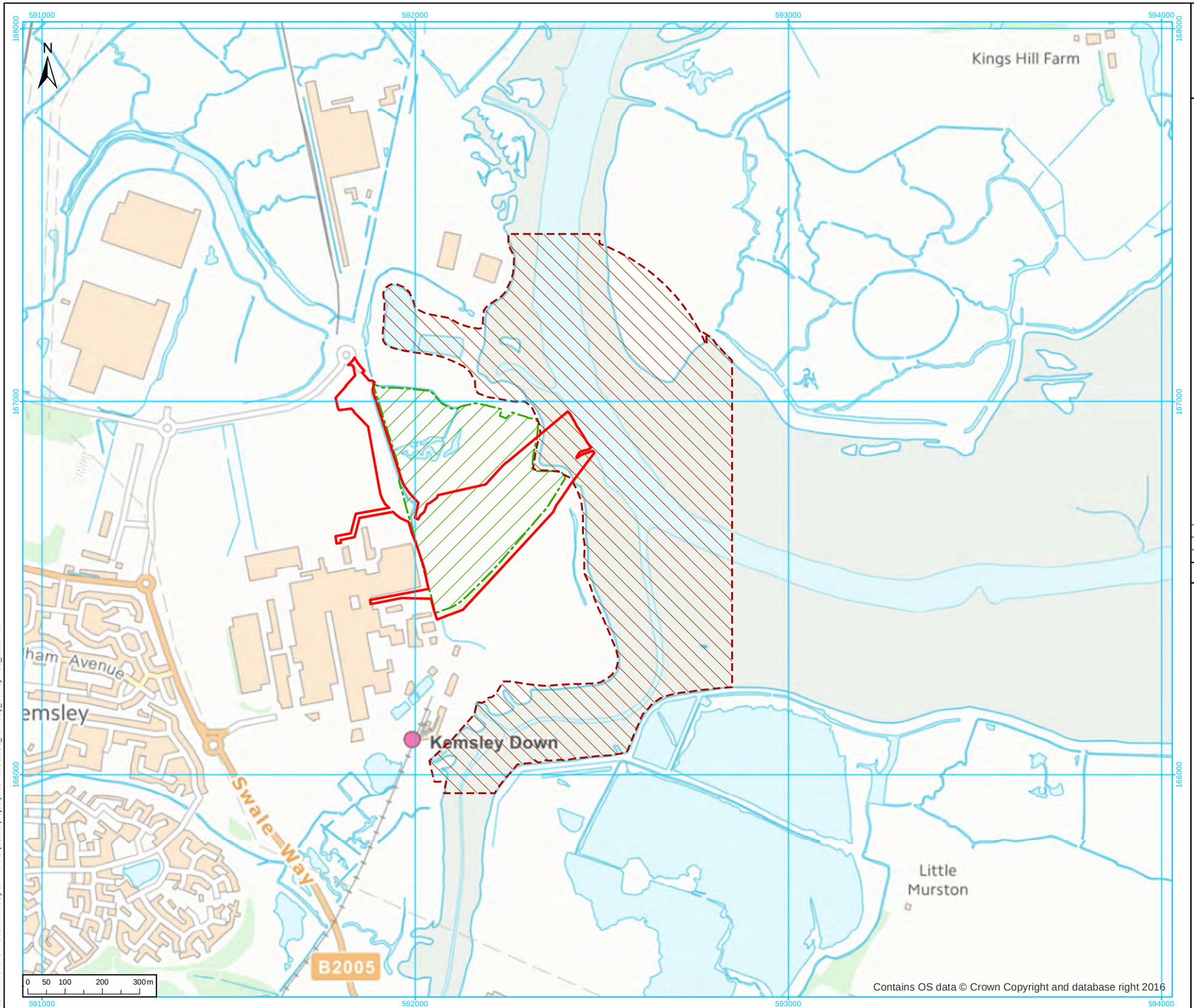
FIGURES

Figure 1.1. Survey areas for breeding birds and intertidal waterbirds



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Legend

- Application boundary
- Breeding bird survey area
- Intertidal survey area

Rev	Description	Date	Initial	Checked

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Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Survey areas for breeding birds and intertidal waterbirds

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:10,000	FEB 17
Drawing Number		**Rev**
Figure 1.1		A

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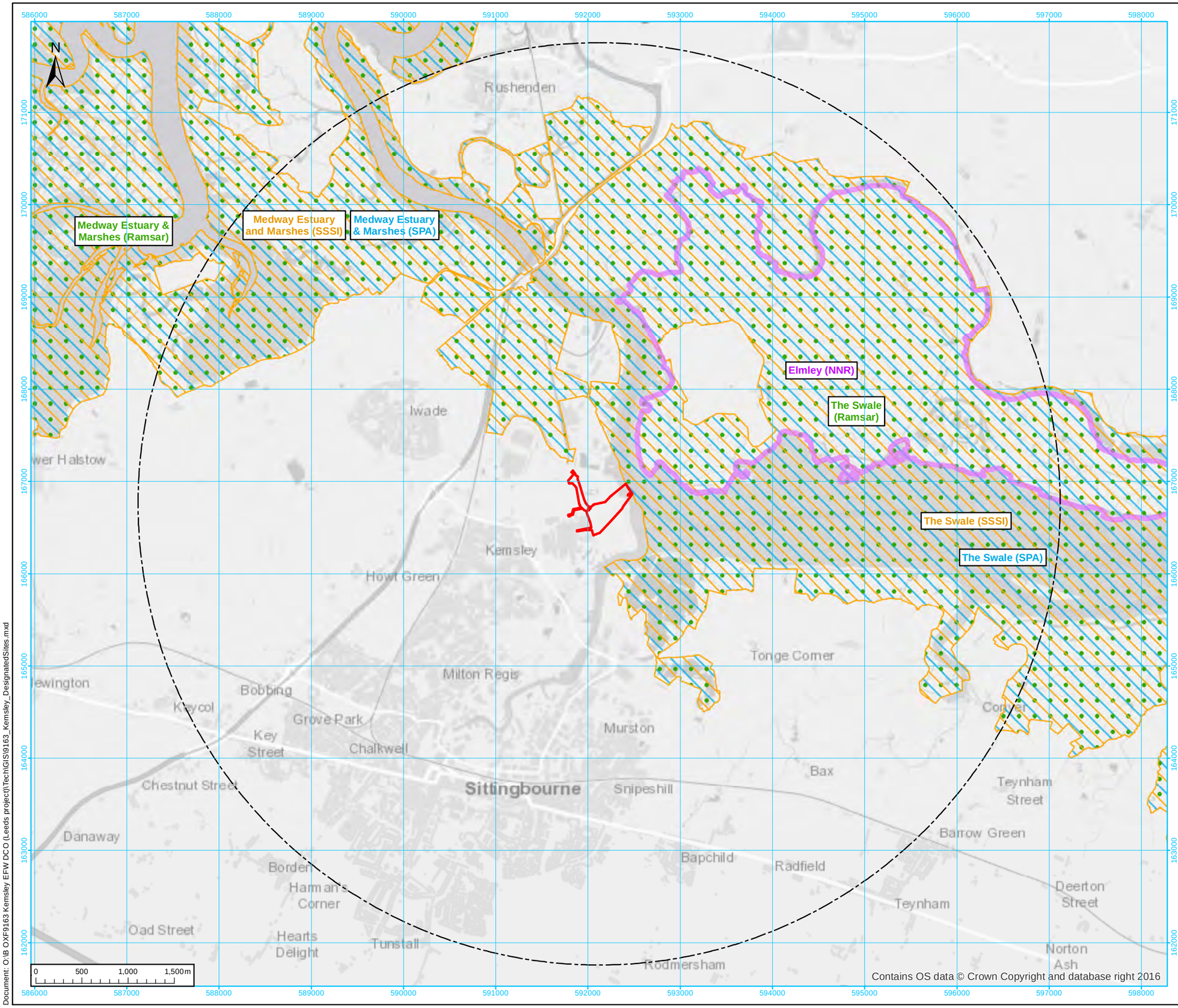
Document: O:\B OXF9163 Kemsley EFW DCO (Leeds project)\Tech\GIS\9163_Kemsley_SurveyArea_2016.mxd

Figure 1.2. Location of designated sites within 5km



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Legend

- Application boundary
- 5km search area
- Special Protection Area (SPA)
- Site of Special Scientific Interest (SSSI)
- Ramsar
- National Nature Reserve (NNR)

Rev	Description	Date	Initial	Checked

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Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Statutory sites within 5 km of the survey area

Status	Drawn By	PM/Checked By
DRAFT	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:40,000	FEB 17
Drawing Number		**Rev**
Figure 1.2		A

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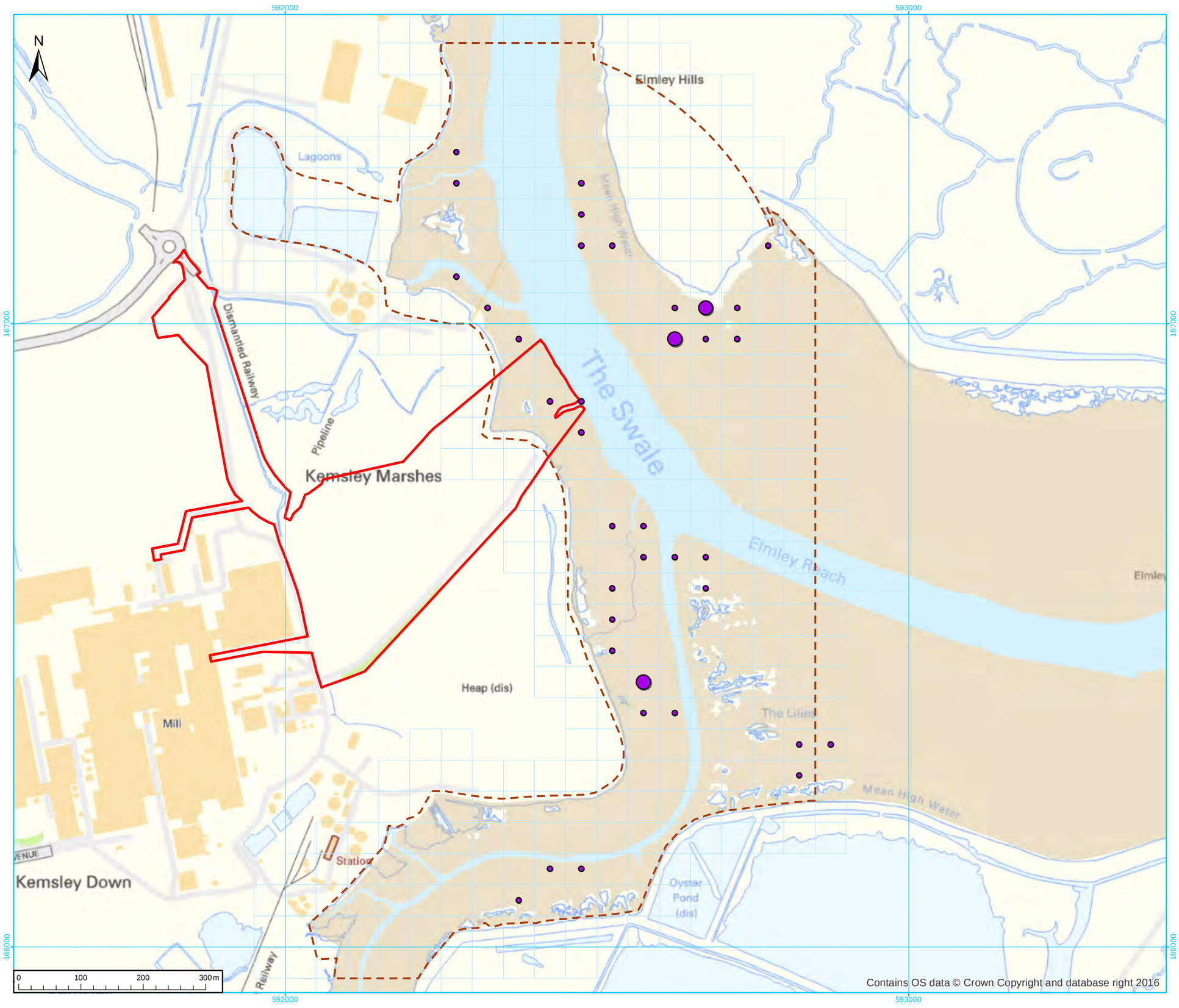
Figures 3.1. Location of Schedule 1 breeding bird territories in 2016

Figures 3.2-3.135 Distribution of key waterbird species at low and high tide in winter and spring



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Legend

- Application boundary
- Survey boundary

Avocet

Bird Numbers

- 1 - 10
- 11 - 30
- 31 - 95

Rev	Description	Date	Initial	Checked

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Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Avocet at High Tide, in Spring (Mar, Apr, May) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.2		A

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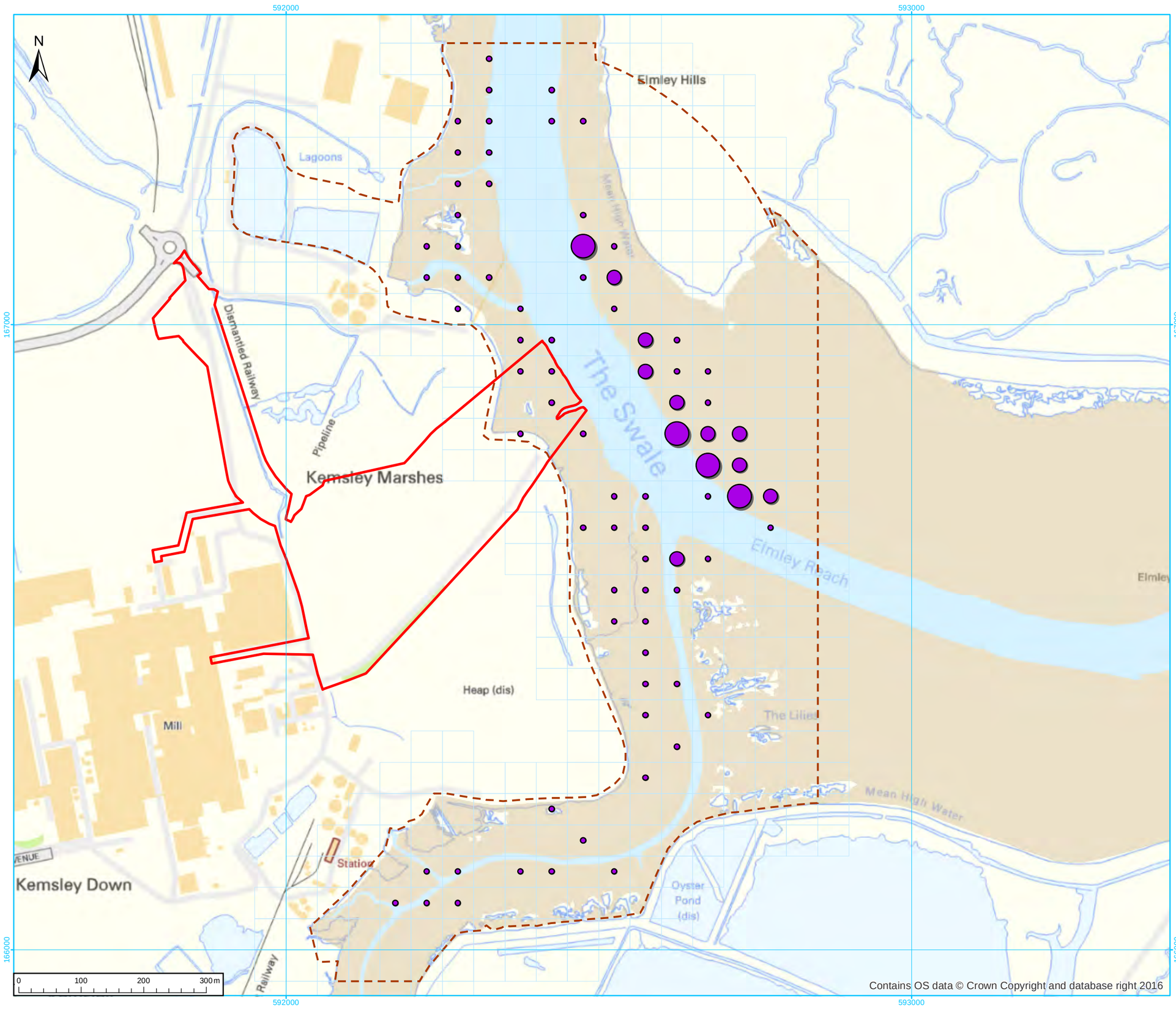

Notes

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Legend

- Application boundary
- Survey boundary

Avocet

Bird Numbers

- 1 - 10
- 11 - 30
- 31 - 95

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Avocet at Low Tide, in Spring (Mar, Apr, May) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.3		A

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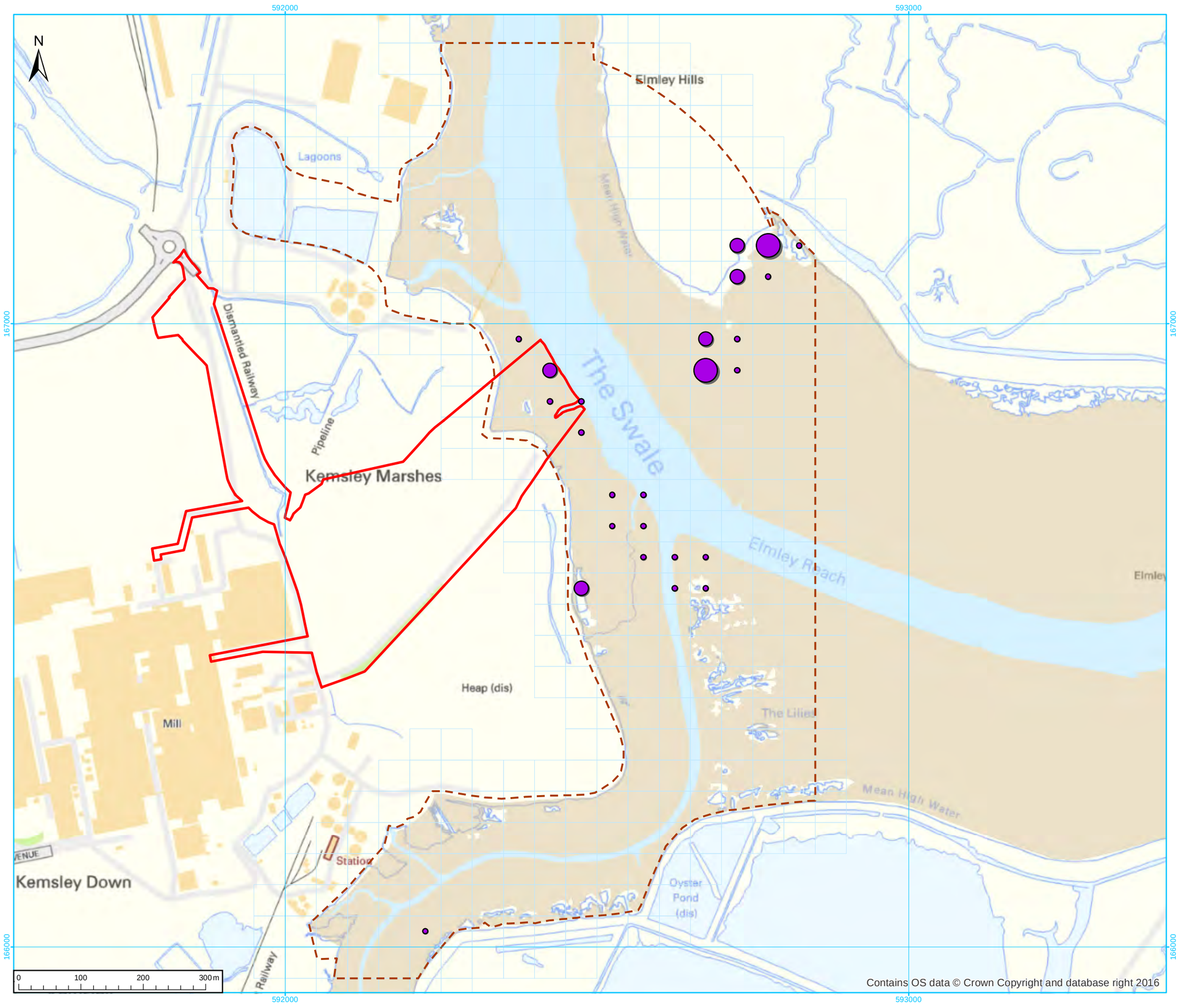

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Legend

- Application boundary
- Survey boundary

Avocet

Bird Numbers

- 1 - 10
- 11 - 30
- 31 - 95

Rev	Description	Date	Initial	Checked

RPS

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Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Avocet at High Tide, in Autumn (Jul, Aug, Sep, Oct) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.4		A

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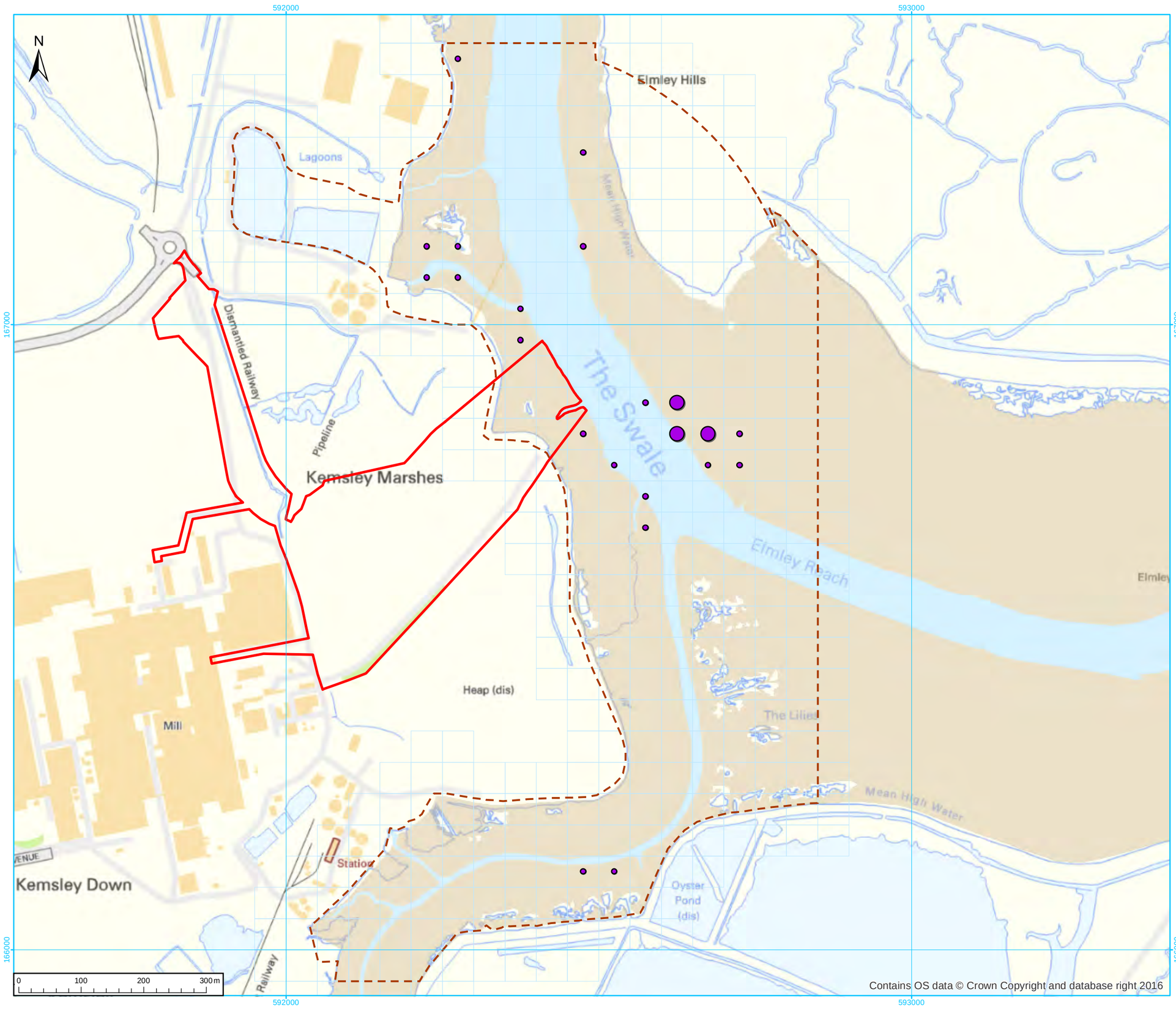

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Legend

- Application boundary
- Survey boundary

Avocet

Bird Numbers

- 1 - 10
- 11 - 30
- 31 - 95

Rev	Description	Date	Initial	Checked

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Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
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Drawing Number		**Rev**
Figure 3.5		A

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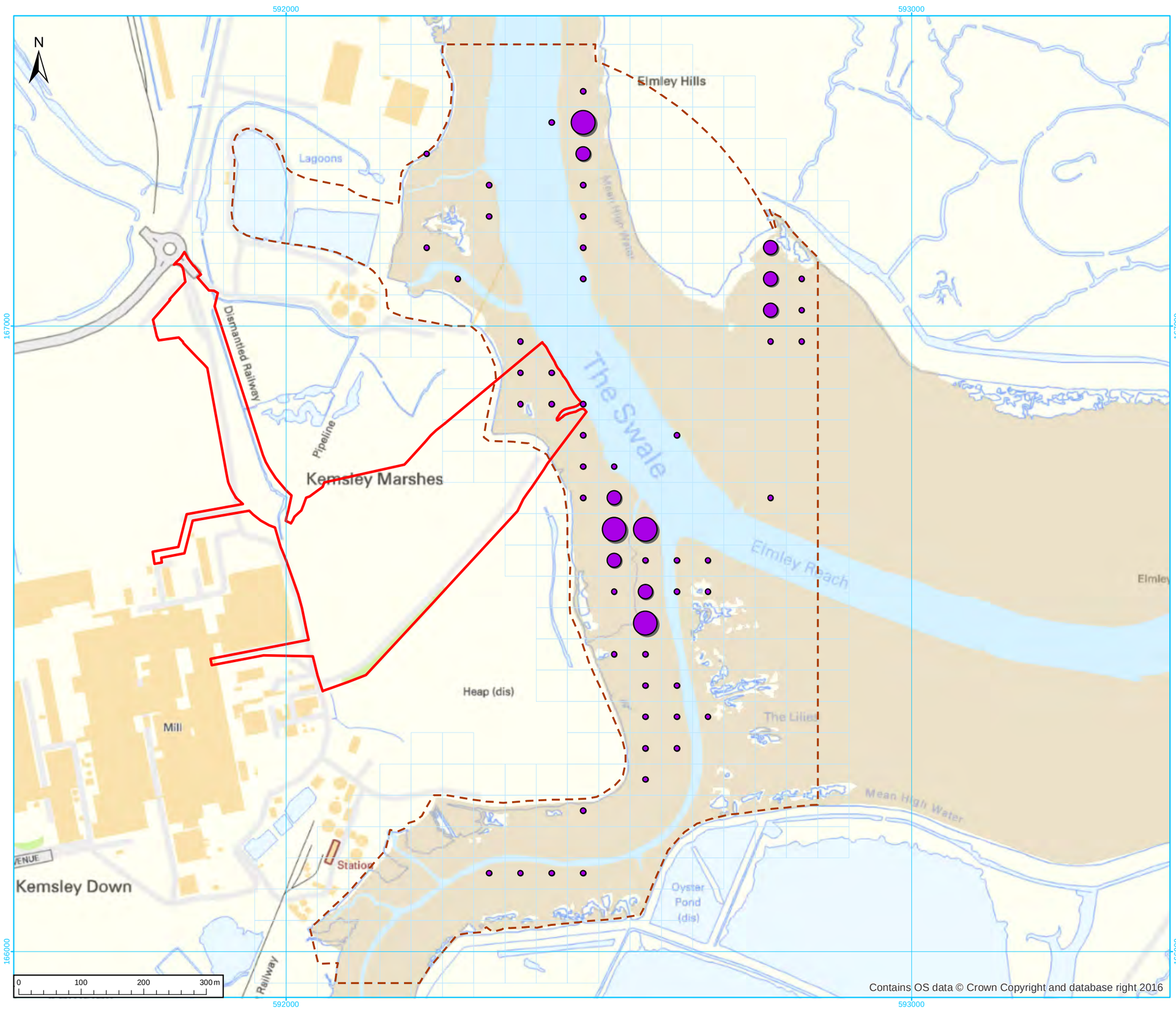

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- Application boundary
- Survey boundary

Avocet

Bird Numbers

- 1 - 10
- 11 - 30
- 31 - 95

Rev	Description	Date	Initial	Checked

RPS

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Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Avocet at High Tide, in Winter (Jan, Feb, Nov, Dec) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
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Drawing Number		**Rev**
Figure 3.6		A

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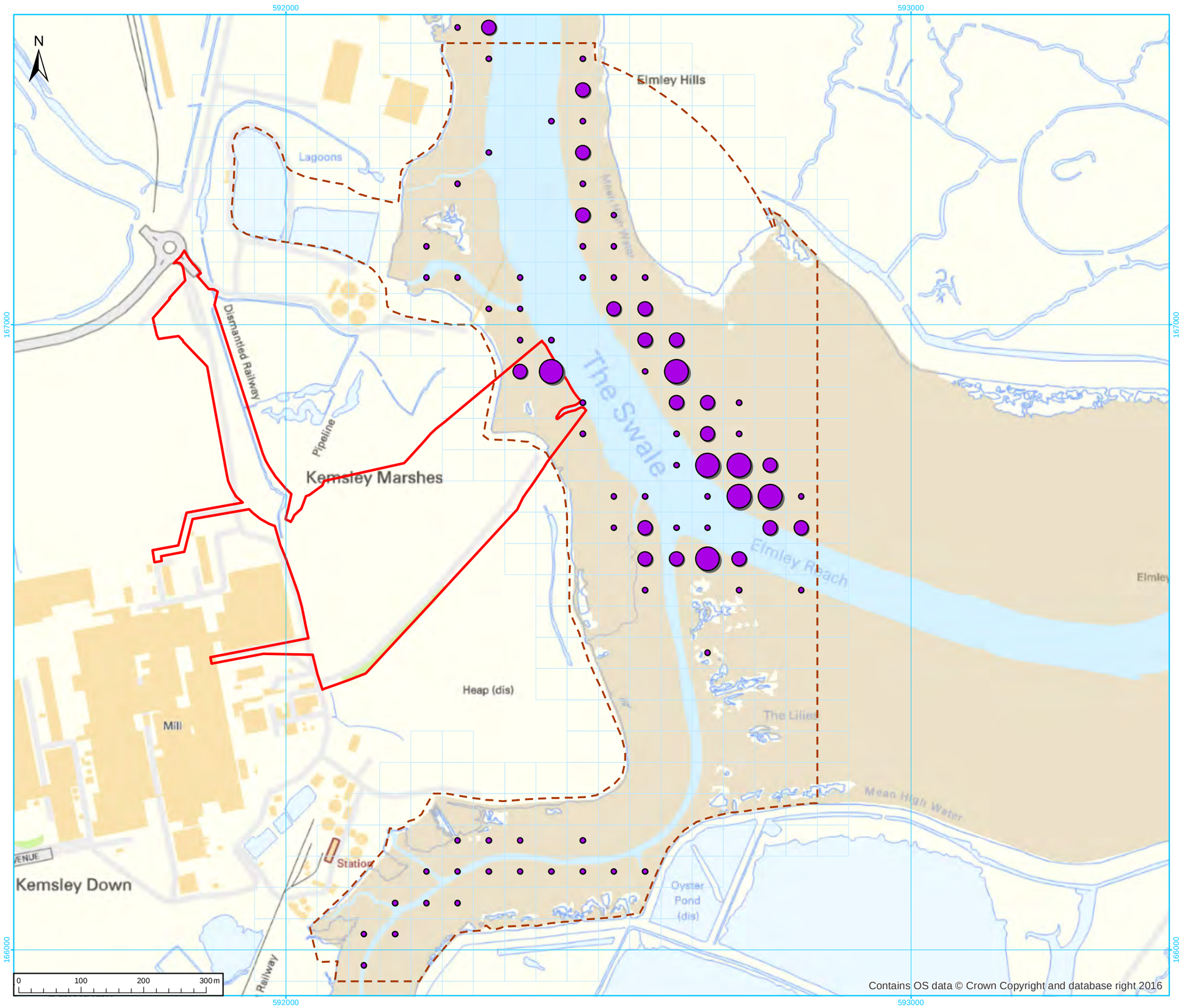

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- Survey boundary

Avocet

Bird Numbers

- 1 - 10
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- 31 - 95

Rev	Description	Date	Initial	Checked

RPS

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Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Avocet at Low Tide, in Winter (Jan, Feb, Nov, Dec) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
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Drawing Number		**Rev**
Figure 3.7		A

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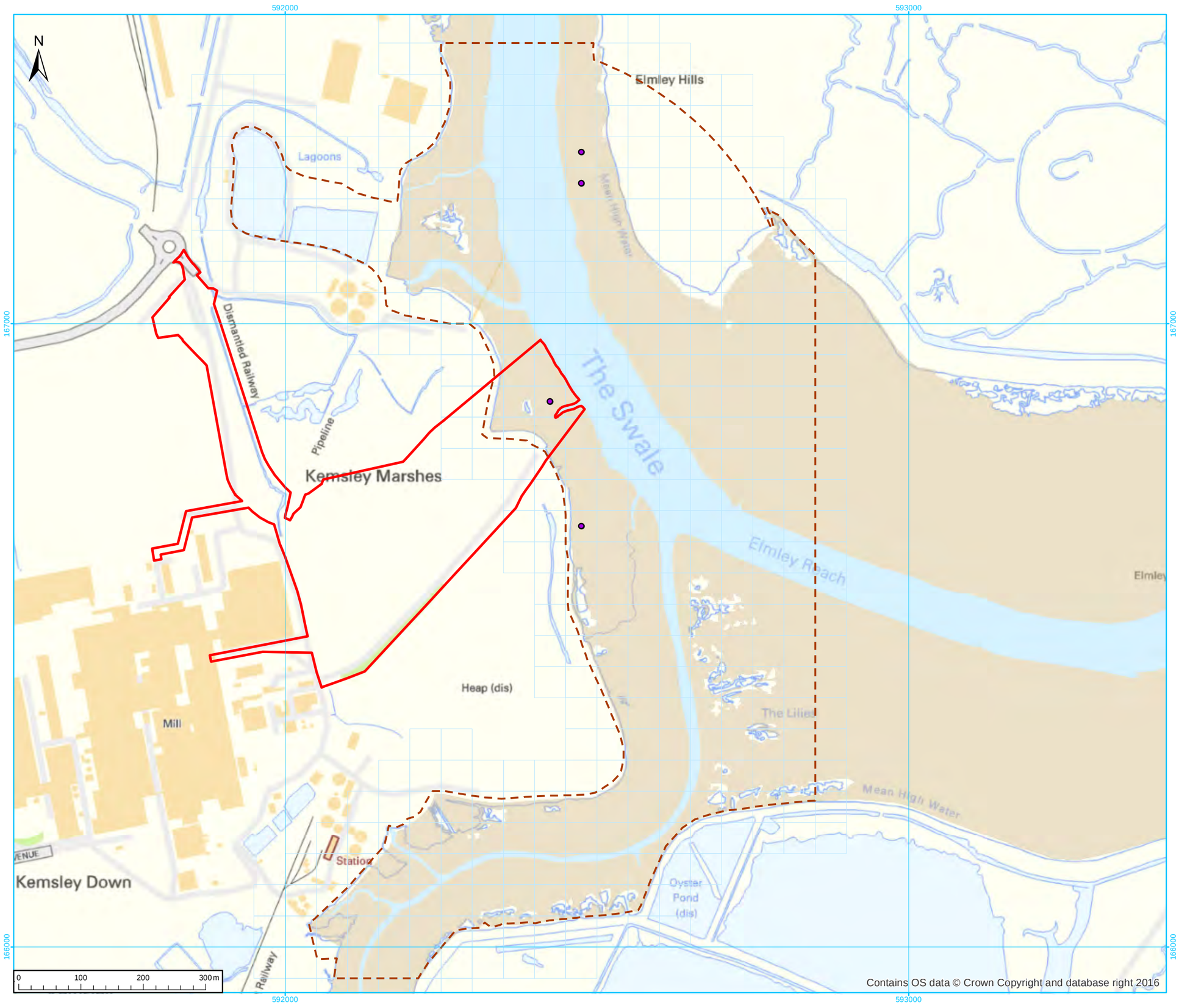

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Legend

- Application boundary
- Survey boundary

Bar-tailed Godwit

Bird Numbers

- 1 - 5
- 6 - 15
- 16 - 25

Rev	Description	Date	Initial	Checked

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T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Bar-tailed Godwit at High Tide, in Spring (Mar, Apr, May) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
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Drawing Number		**Rev**
Figure 3.8		A

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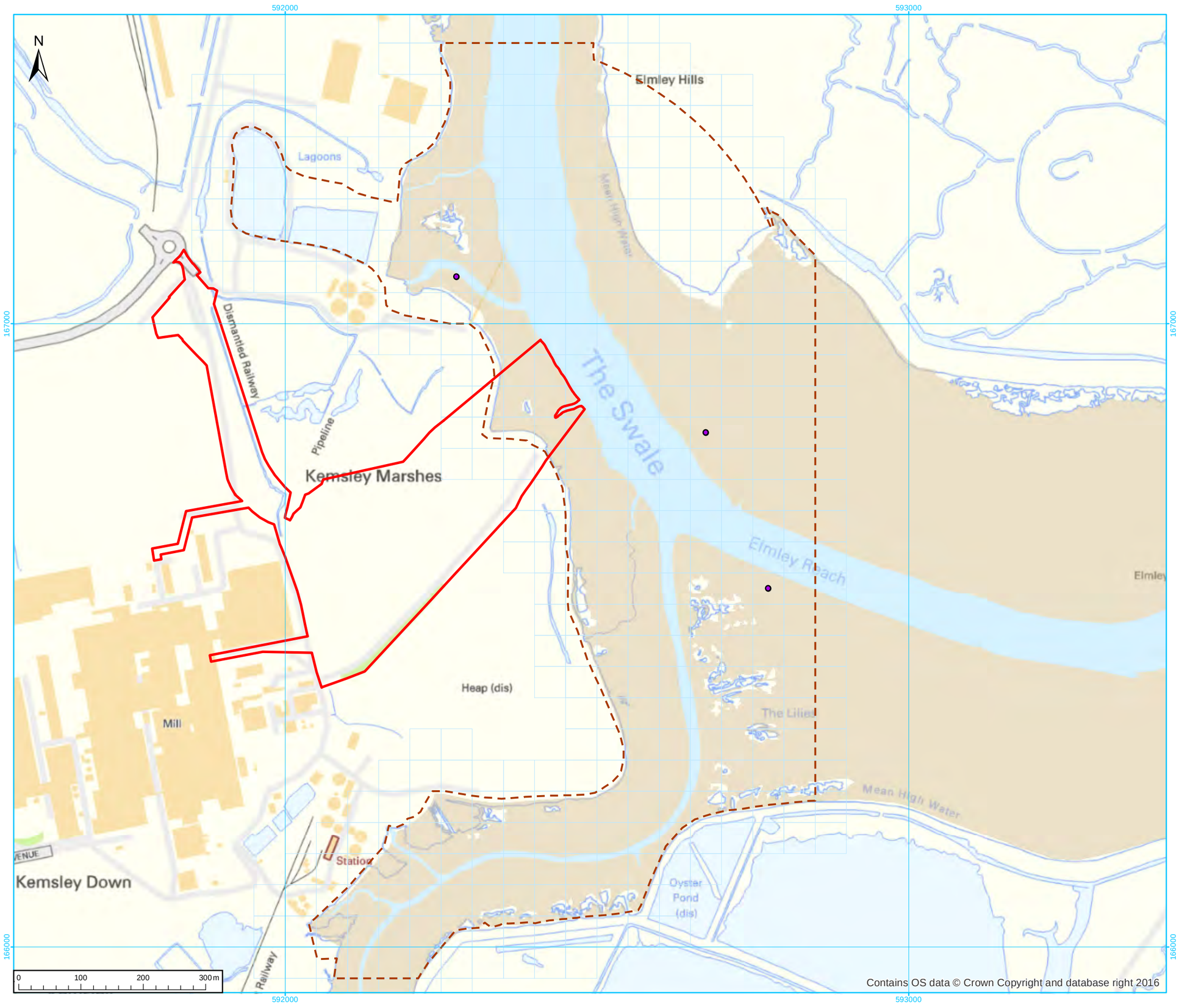

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Legend

- Application boundary
- Survey boundary

Bar-tailed Godwit

Bird Numbers

- 1 - 5
- 6 - 15
- 16 - 25

Rev	Description	Date	Initial	Checked

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T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Bar-tailed Godwit at Low Tide, in Spring (Mar, Apr, May) 2016

Status	Drawn By	PM/Checked By
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Job Ref	**Scale @ A3**	**Date**
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Drawing Number		**Rev**
Figure 3.9		A

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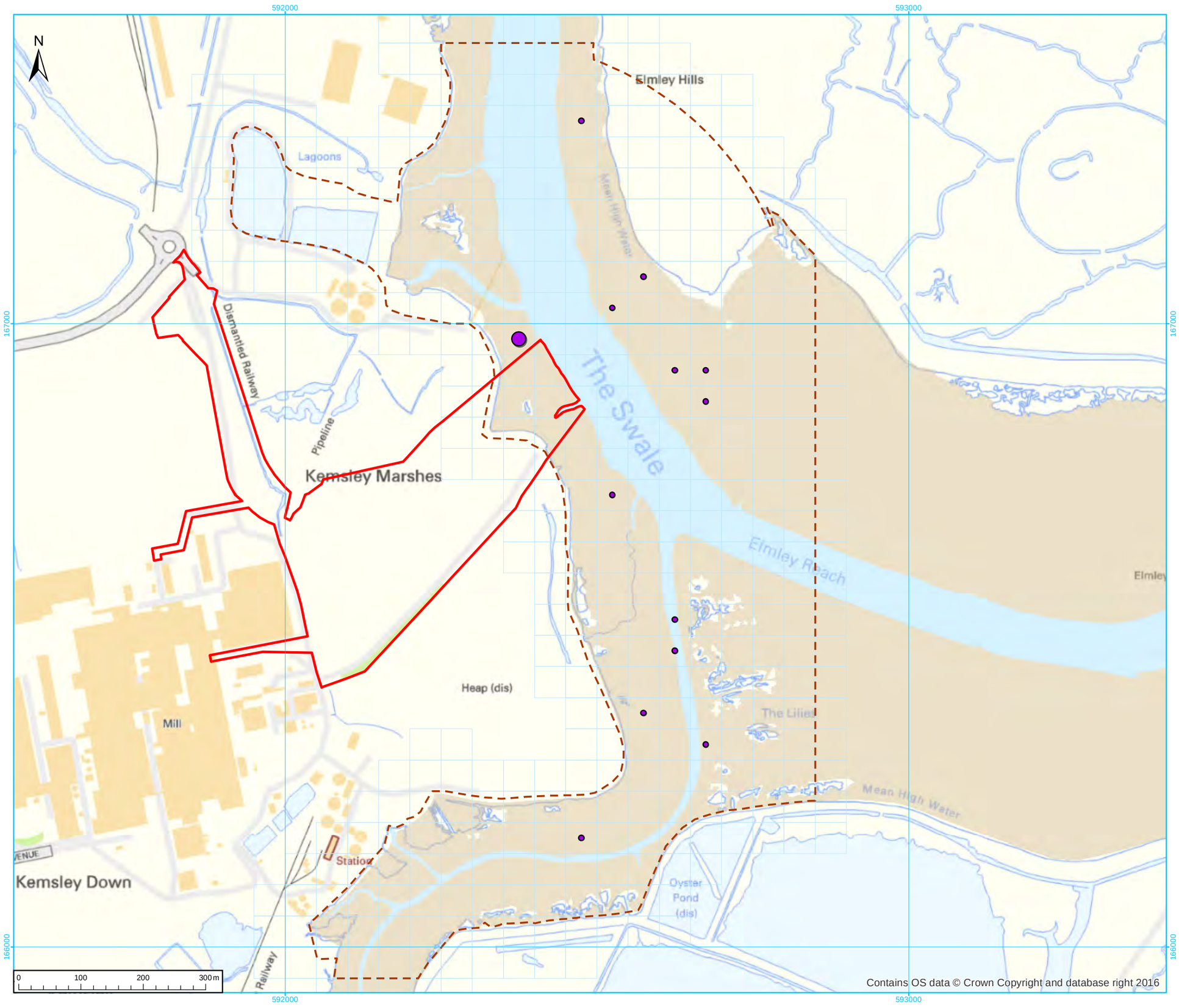

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Legend

- Application boundary
- Survey boundary

Bar-tailed Godwit

Bird Numbers

- 1 - 5
- 6 - 15
- 16 - 25

Rev	Description	Date	Initial	Checked

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Willow Mere House, Compass Point Business Park
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T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Bar-tailed Godwit at High Tide, in Autumn (Jul, Aug, Sep, Oct) 2016

Status	Drawn By	PM/Checked By
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Job Ref	**Scale @ A3**	**Date**
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Figure 3.10		A

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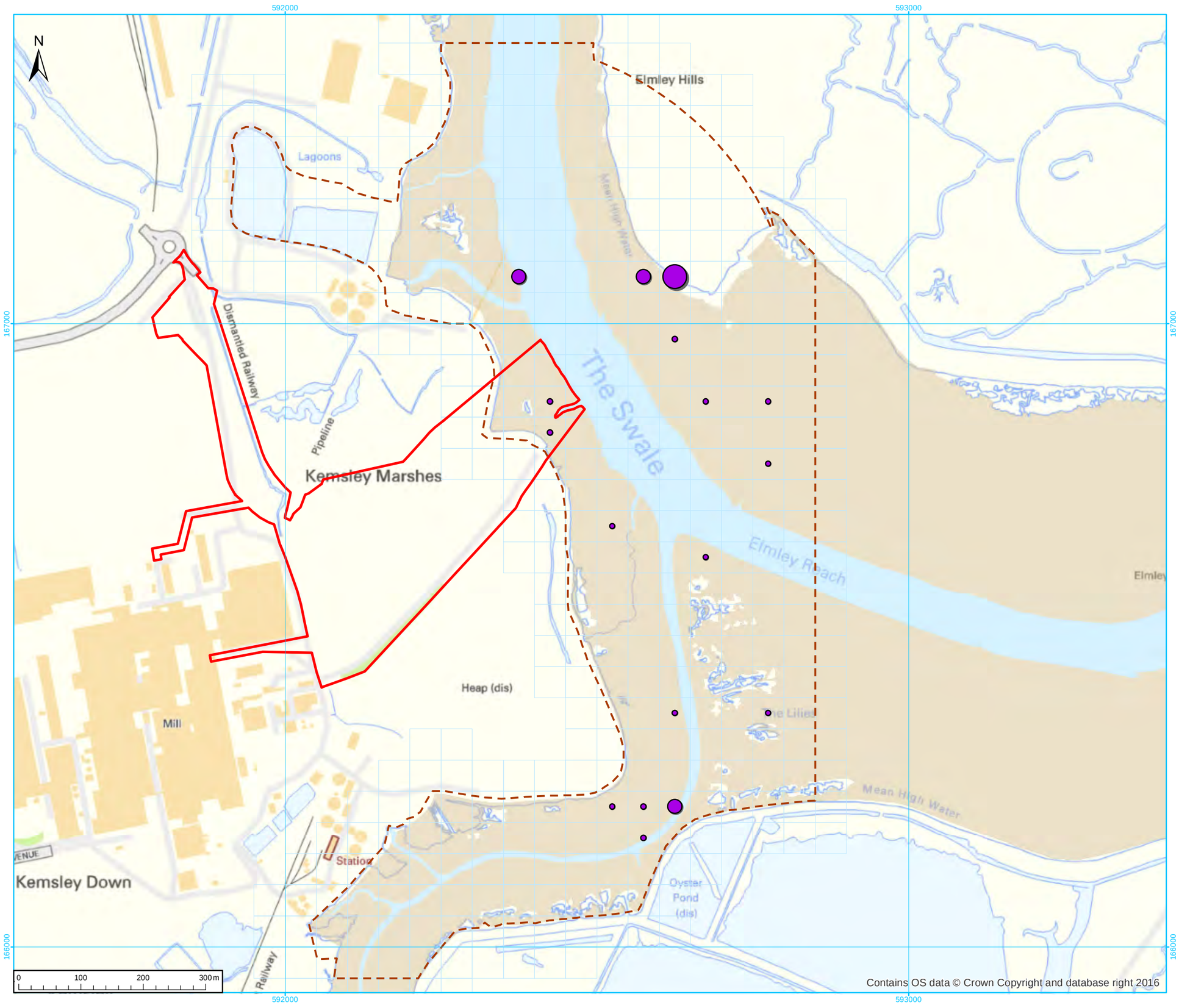

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Legend

- Application boundary
- Survey boundary

Bar-tailed Godwit

Bird Numbers

- 1 - 5
- 6 - 15
- 16 - 25

Rev	Description	Date	Initial	Checked

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T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

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Title: Distribution of Bar-tailed Godwit at Low Tide, in Autumn (Jul, Aug, Sep, Oct) 2016

Status	Drawn By	PM/Checked By
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Figure 3.11		A

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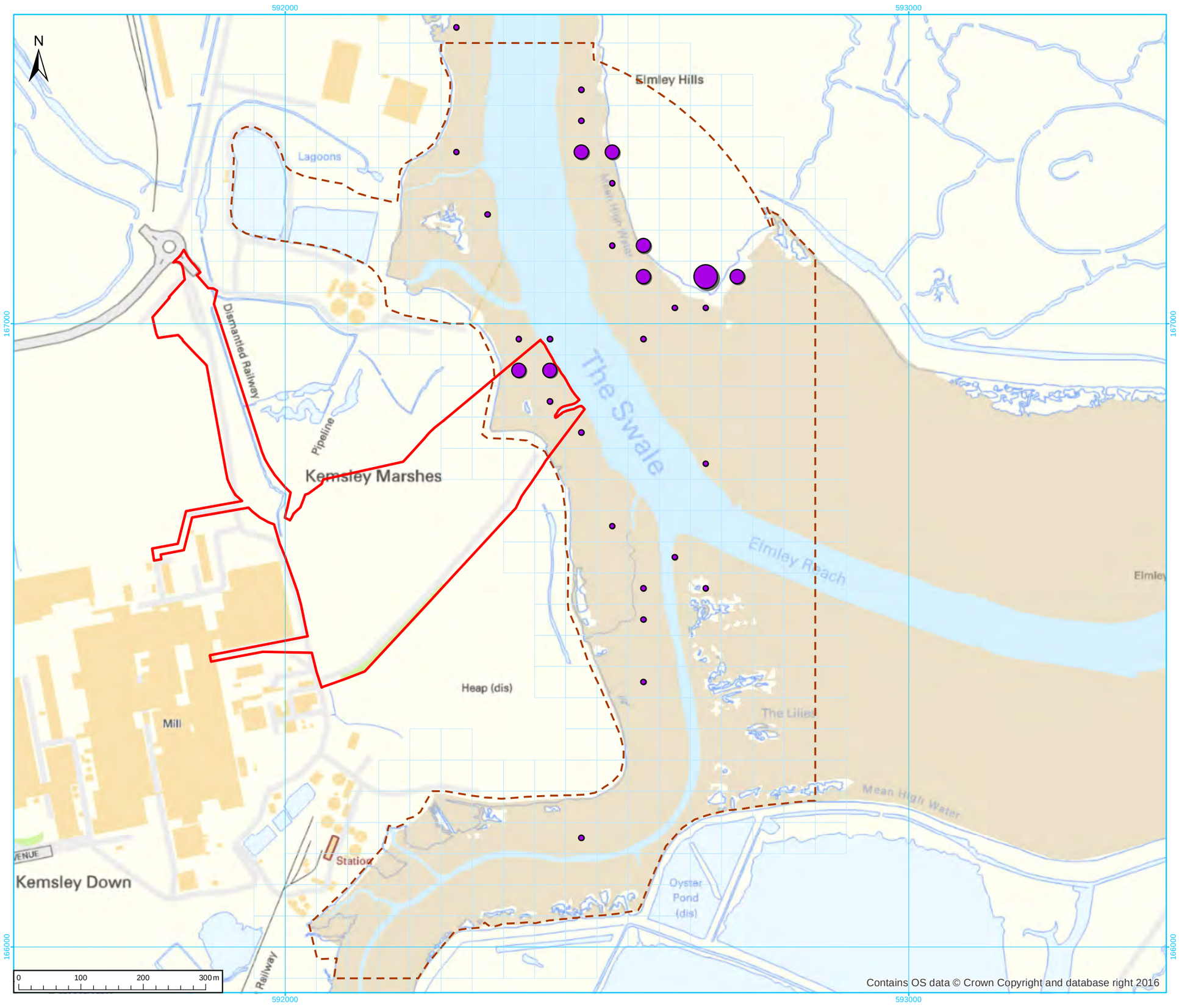

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Legend

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- Survey boundary

Bar-tailed Godwit

Bird Numbers

- 1 - 5
- 6 - 15
- 16 - 25

Rev	Description	Date	Initial	Checked

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T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Bar-tailed Godwit at High Tide, in Winter (Jan, Feb, Nov, Dec) 2016

Status	Drawn By	PM/Checked By
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Job Ref	**Scale @ A3**	**Date**
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Figure 3.12		A

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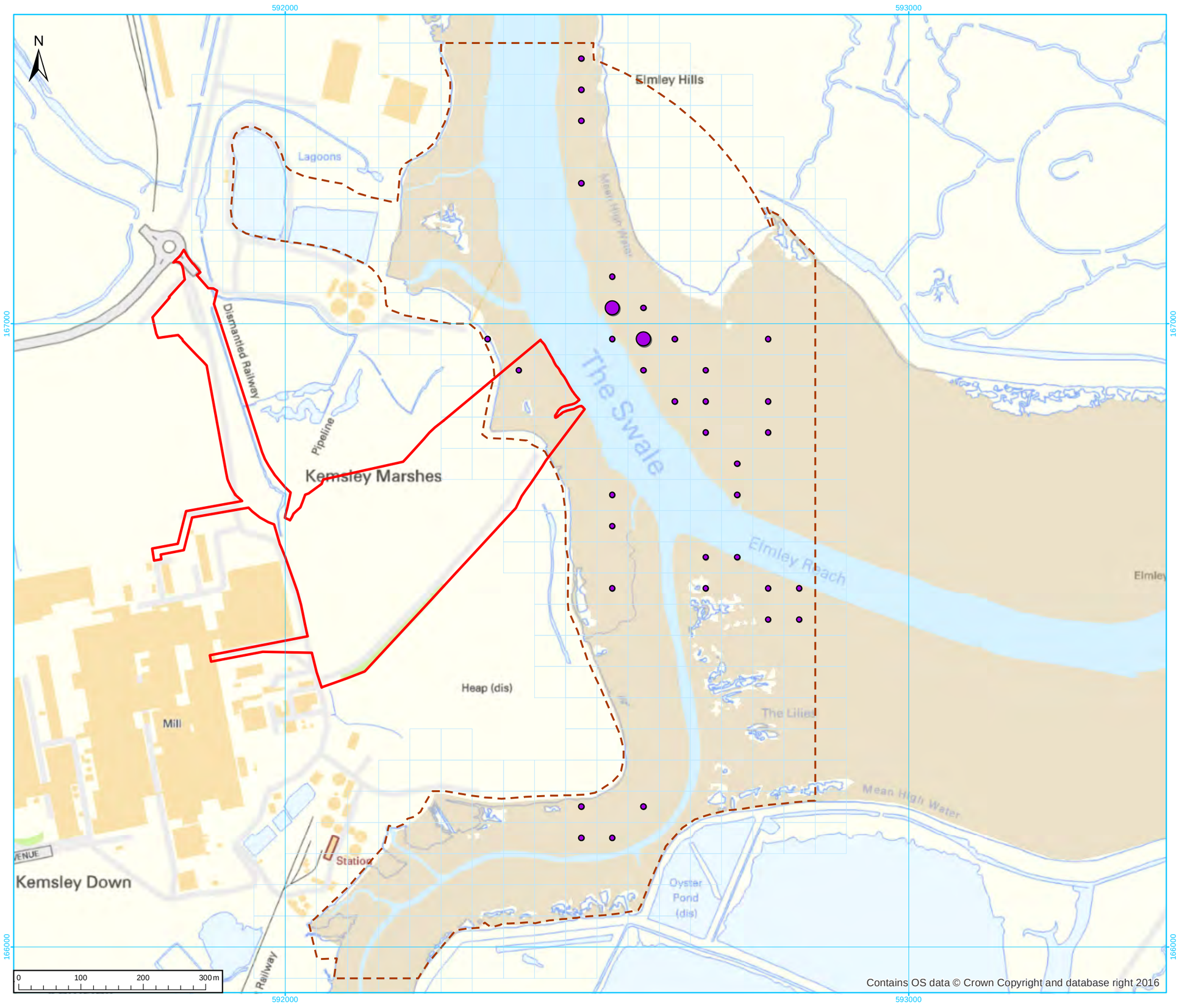

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Bar-tailed Godwit

Bird Numbers

- 1 - 5
- 6 - 15
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Figure 3.13		A

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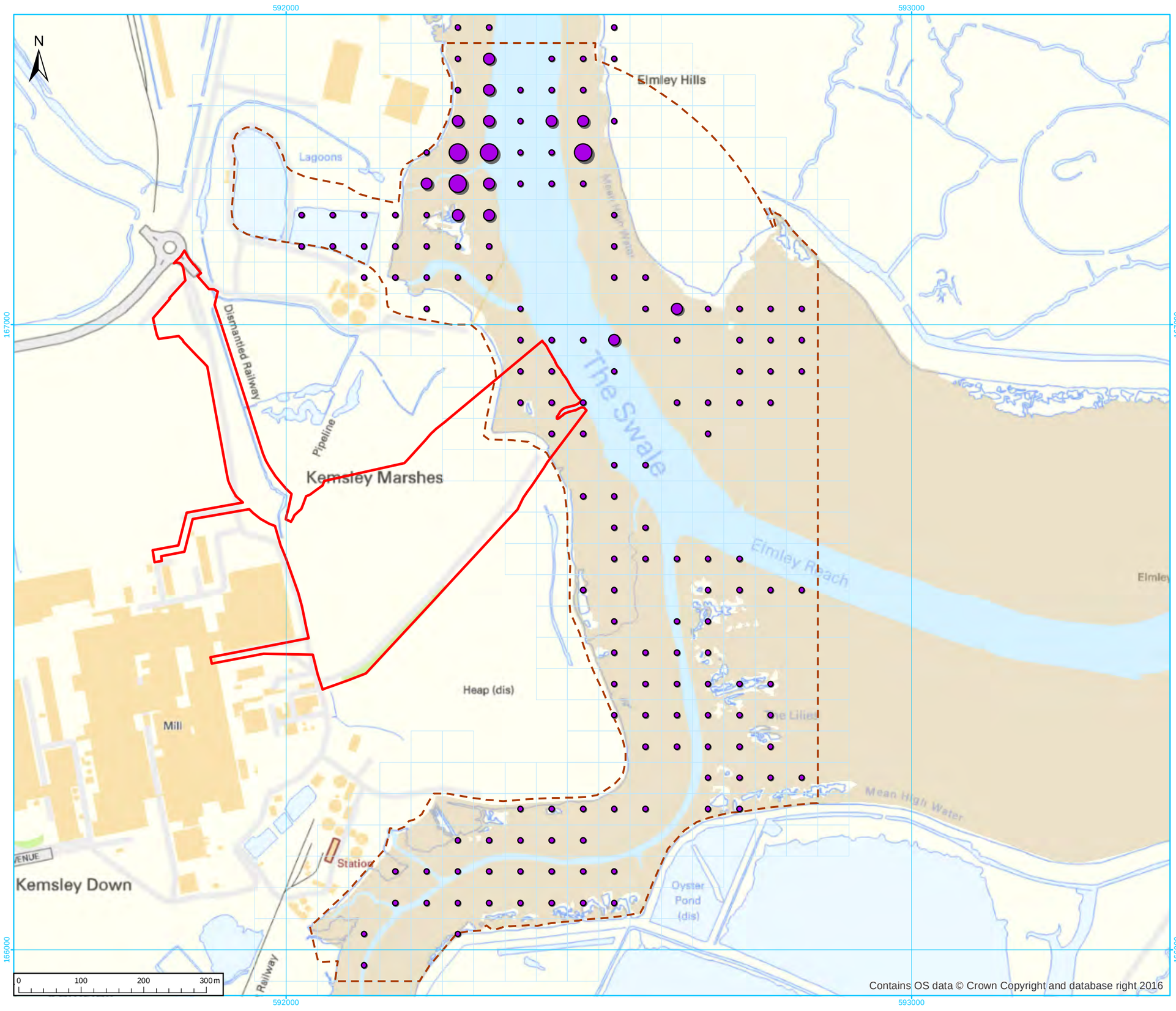

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Legend

- Application boundary
- Survey boundary

Black-headed Gull

Bird Numbers

- 1 - 25
- 26 - 100
- 101 - 175
- 176 - 360

Rev	Description	Date	Initial	Checked

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T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Black-headed Gull at High Tide, in Spring (Mar, Apr, May) 2016

Status	Drawn By	PM/Checked By
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Figure 3.14		A

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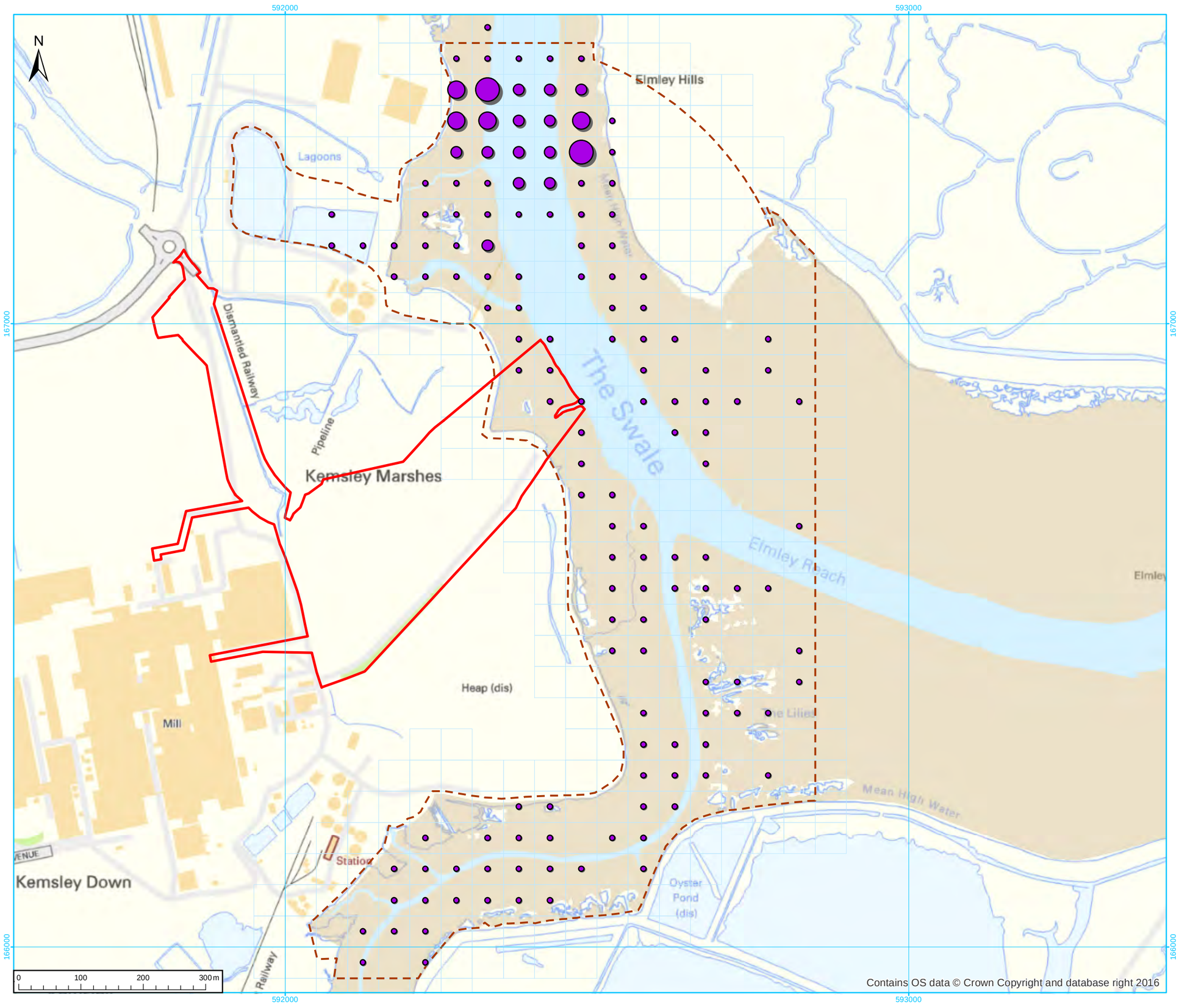

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Black-headed Gull

Bird Numbers

- 1 - 25
- 26 - 100
- 101 - 175
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Figure 3.15		A

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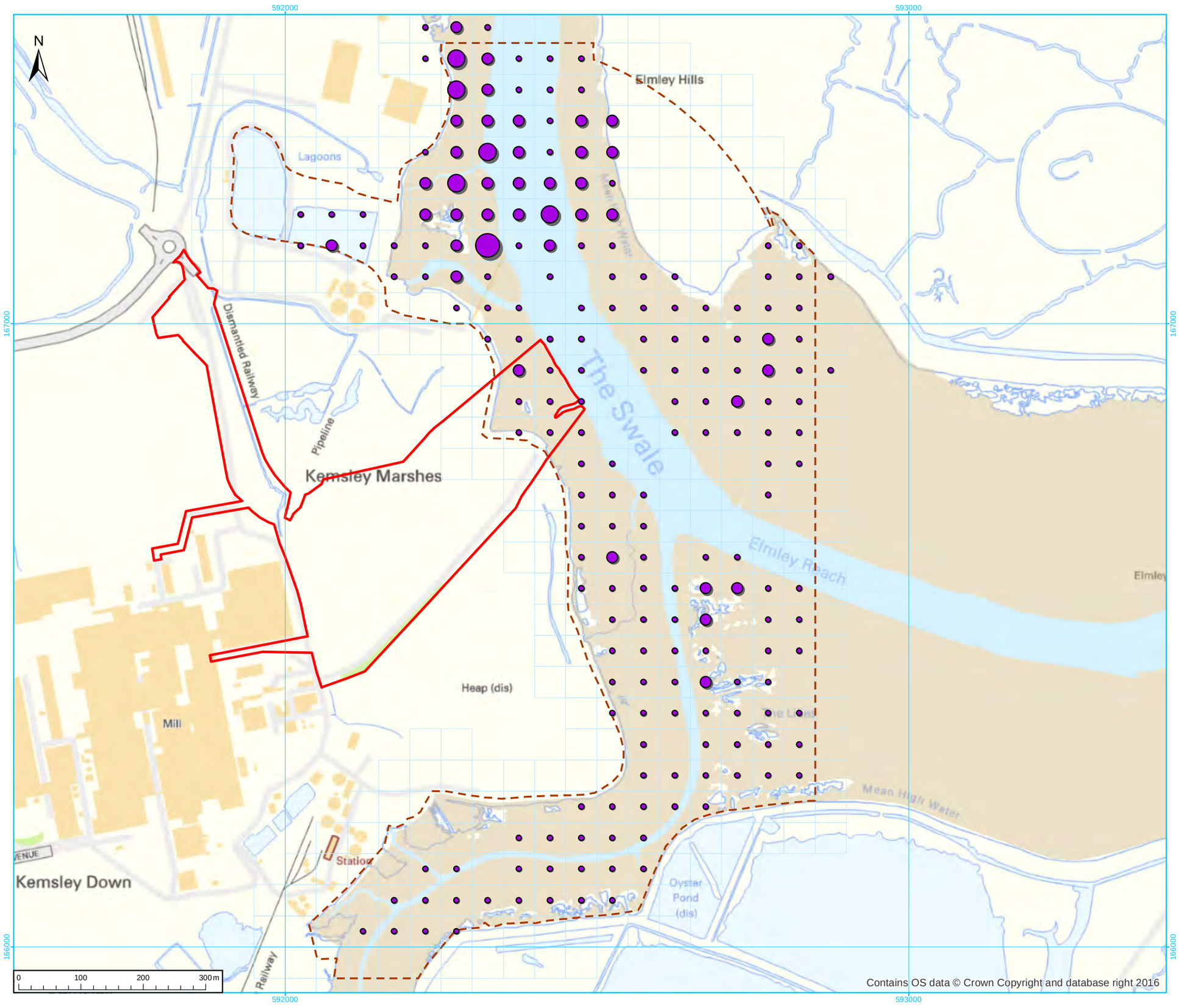

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Black-headed Gull

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Status	Drawn By	PM/Checked By
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Job Ref	**Scale @ A3**	**Date**
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Figure 3.16		A

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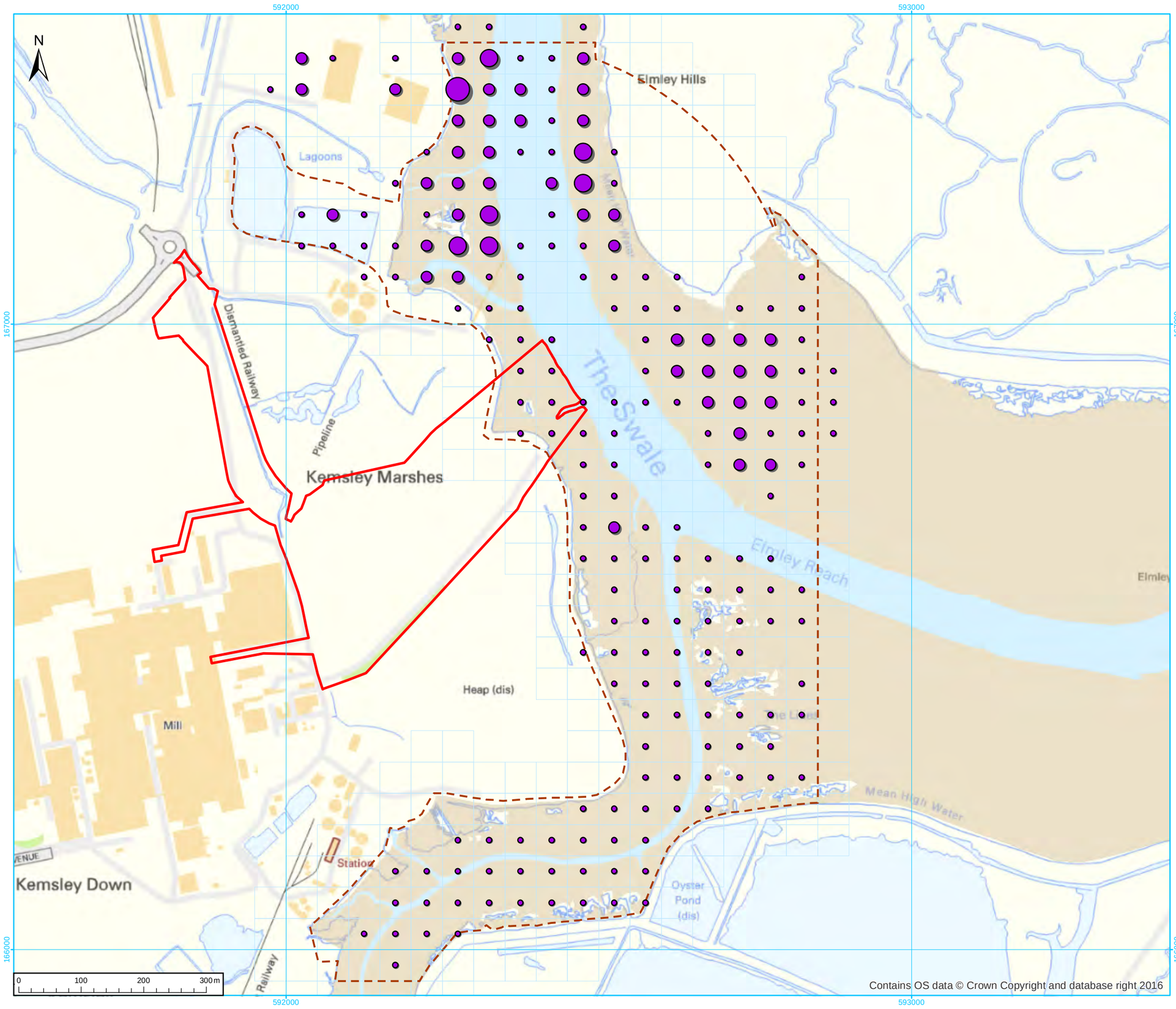

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Black-headed Gull

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Status	Drawn By	PM/Checked By
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Drawing Number		**Rev**
Figure 3.17		A

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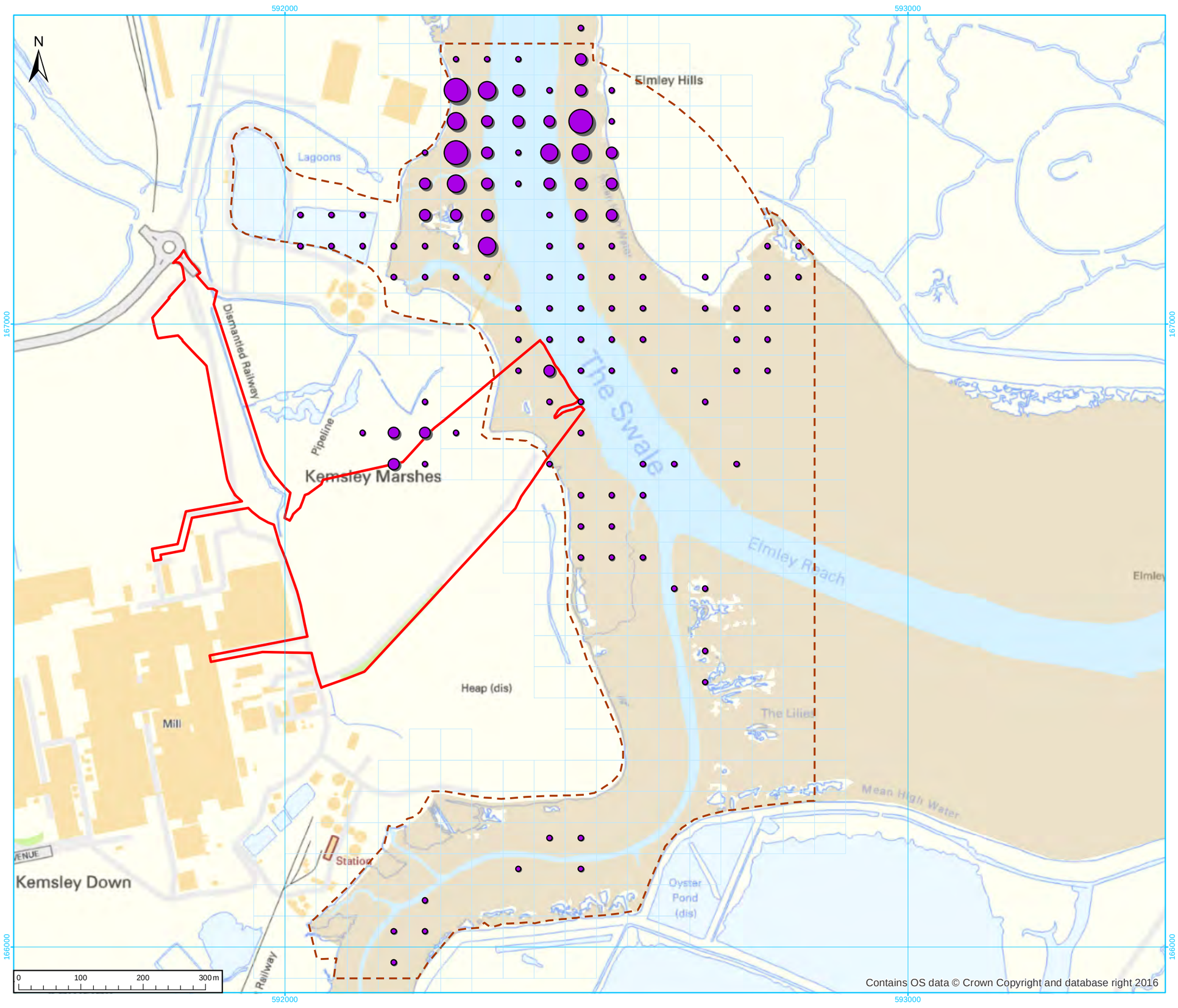

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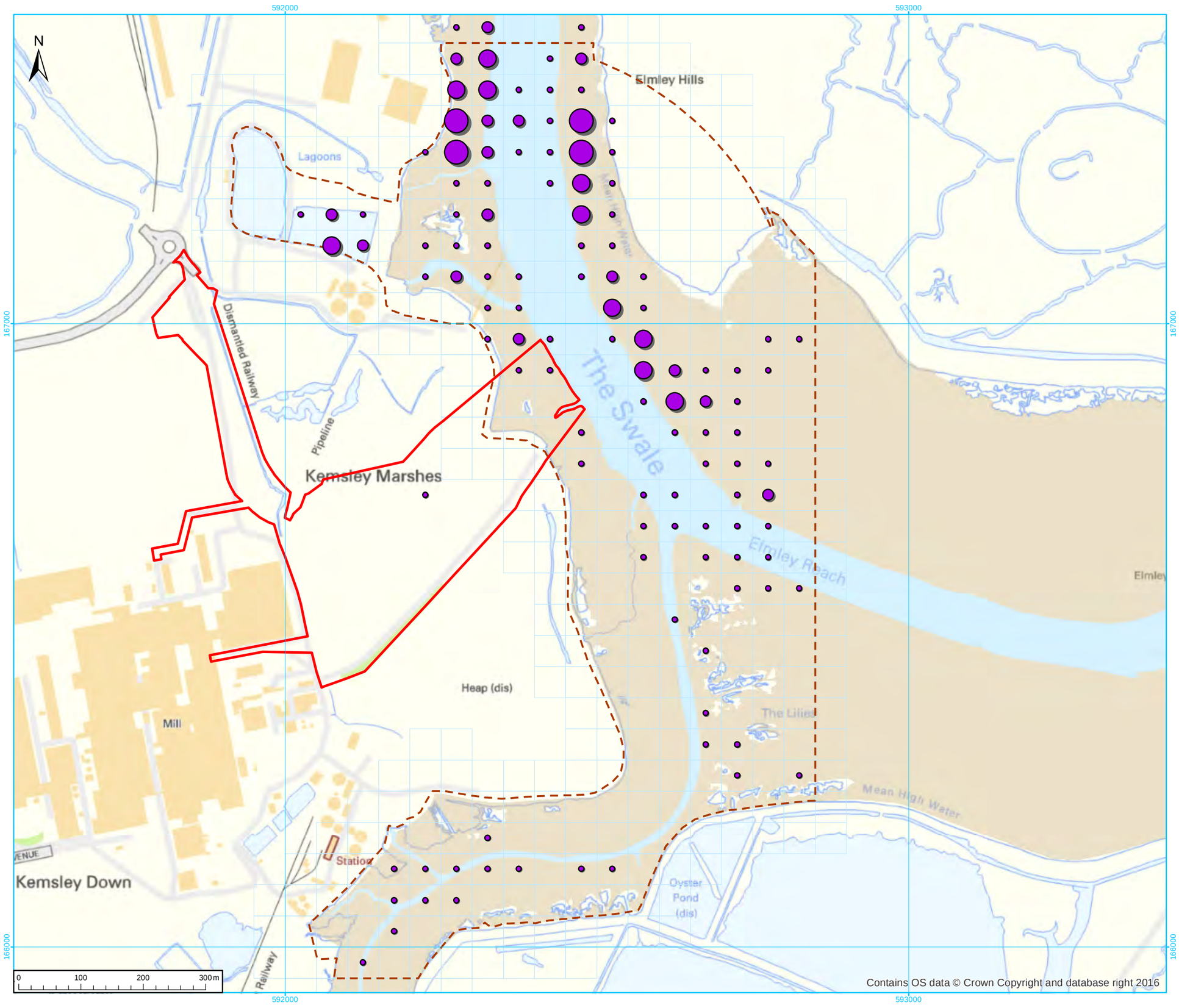

Notes

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Legend

- Application boundary
- Survey boundary

Black-headed Gull

Bird Numbers

- 1 - 25
- 26 - 100
- 101 - 175
- 176 - 360

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Black-headed Gull at Low Tide, in Winter (Jan, Feb, Nov, Dec) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.19		A

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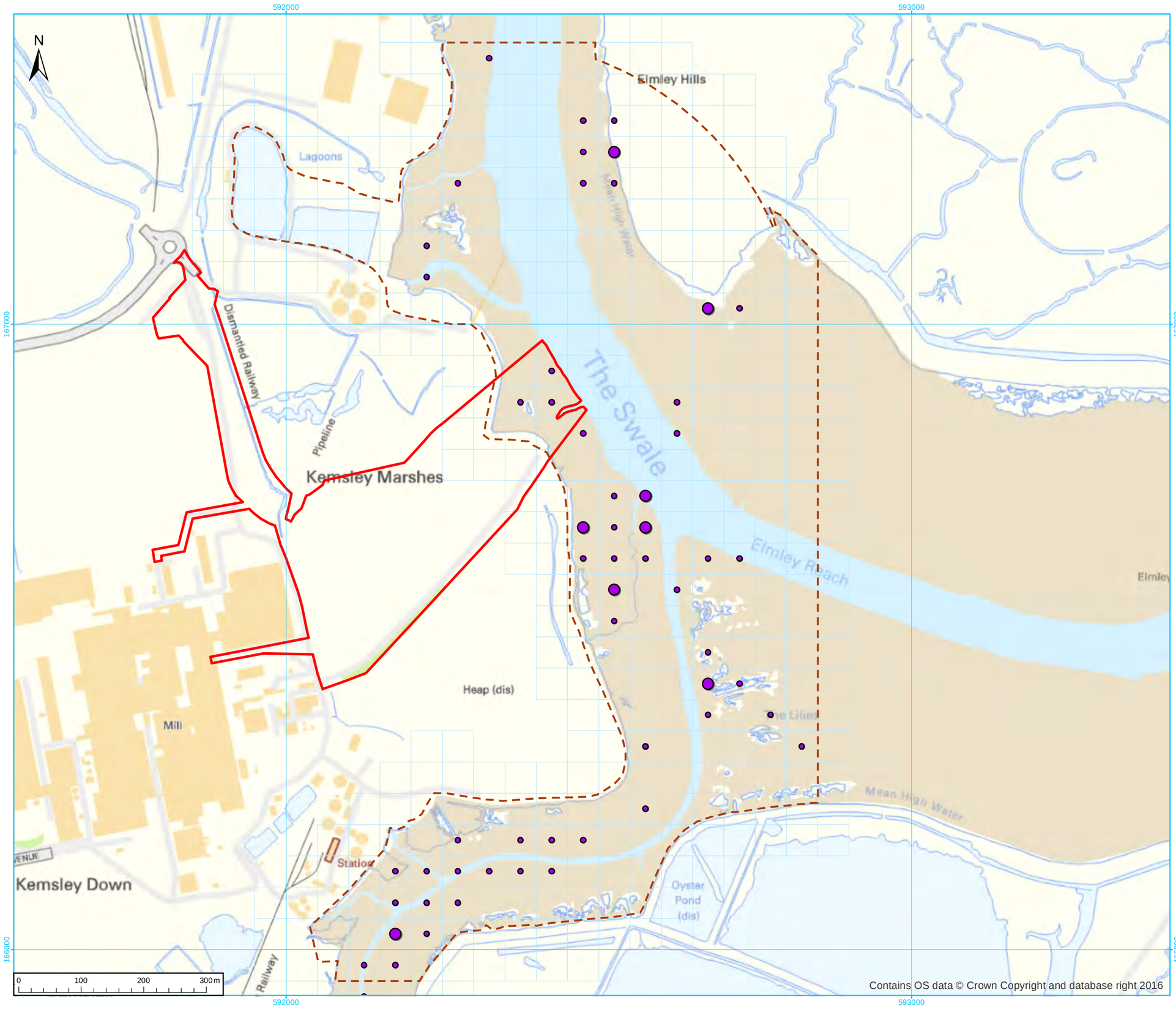

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Legend

Application boundary

Survey boundary

Black-tailed Godwit

Bird Numbers

- 1 - 25
- 26 - 80
- 81 - 150
- 151 - 430

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Black-tailed Godwit at High Tide, in Spring (Mar, Apr, May) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.20		A

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Legend

- Application boundary
- Survey boundary

Black-tailed Godwit
Bird Numbers

- 1 - 25
- 26 - 80
- 81 - 150
- 151 - 430

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

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Title: Distribution of Black-tailed Godwit at Low Tide, in Spring (Mar, Apr, May) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.21		A

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592000 593000 167000 166000

N

Elmley Hills
Lagoons
Mean High Water
Dismantled Railway
Pipeline
Kemsley Marshes
The Swale
Elmley Reach
Heap (dis)
Mill
The Lilies
Mean High Water
Station
Oyster Pond (dis)
Kemsley Down
Railway

0 100 200 300 m

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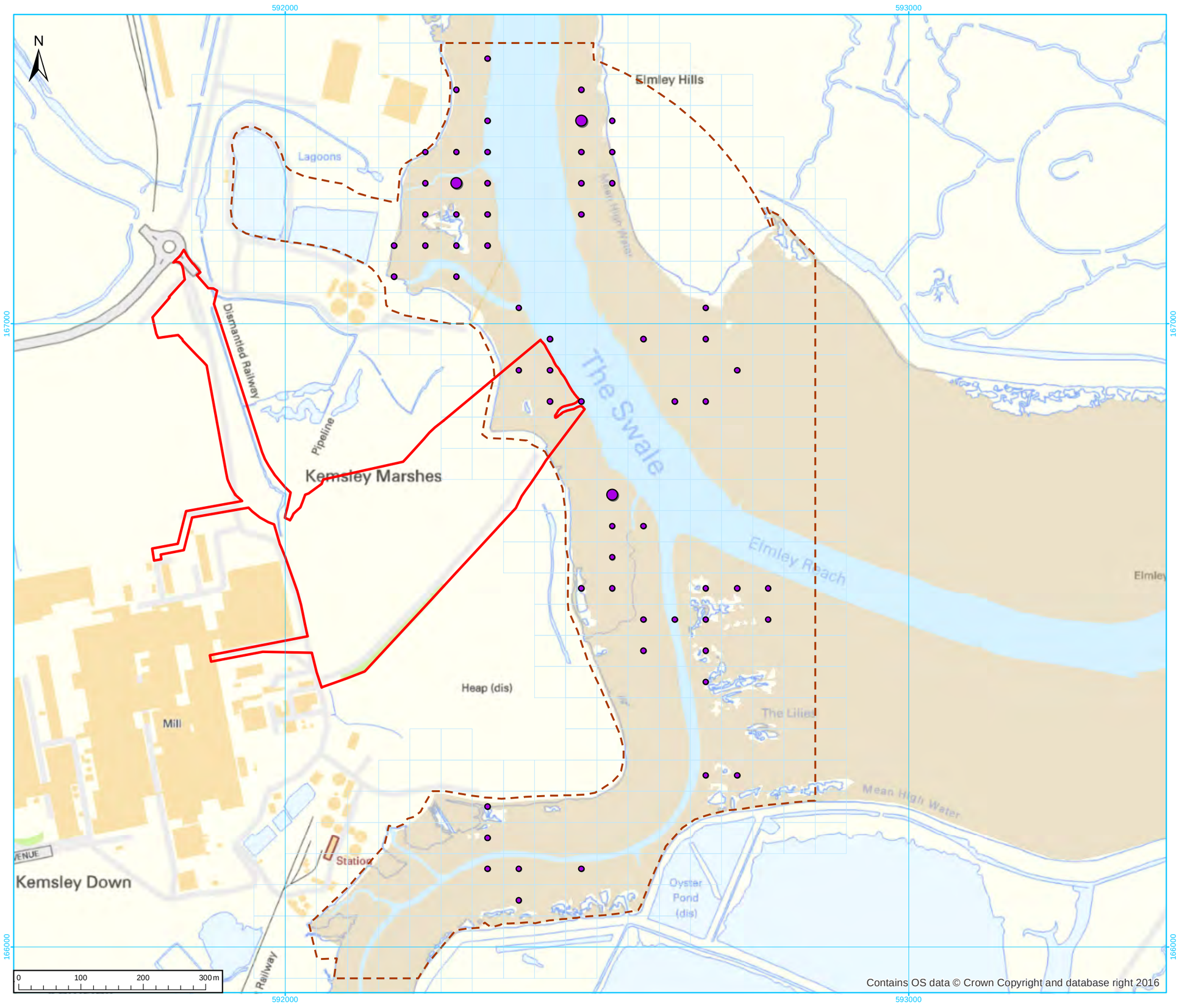

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Legend

- Application boundary
- Survey boundary

Black-tailed Godwit

Bird Numbers

- 1 - 25
- 26 - 80
- 81 - 150
- 151 - 430

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Black-tailed Godwit at High Tide, in Autumn (Jul, Aug, Sep, Oct) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.22		A

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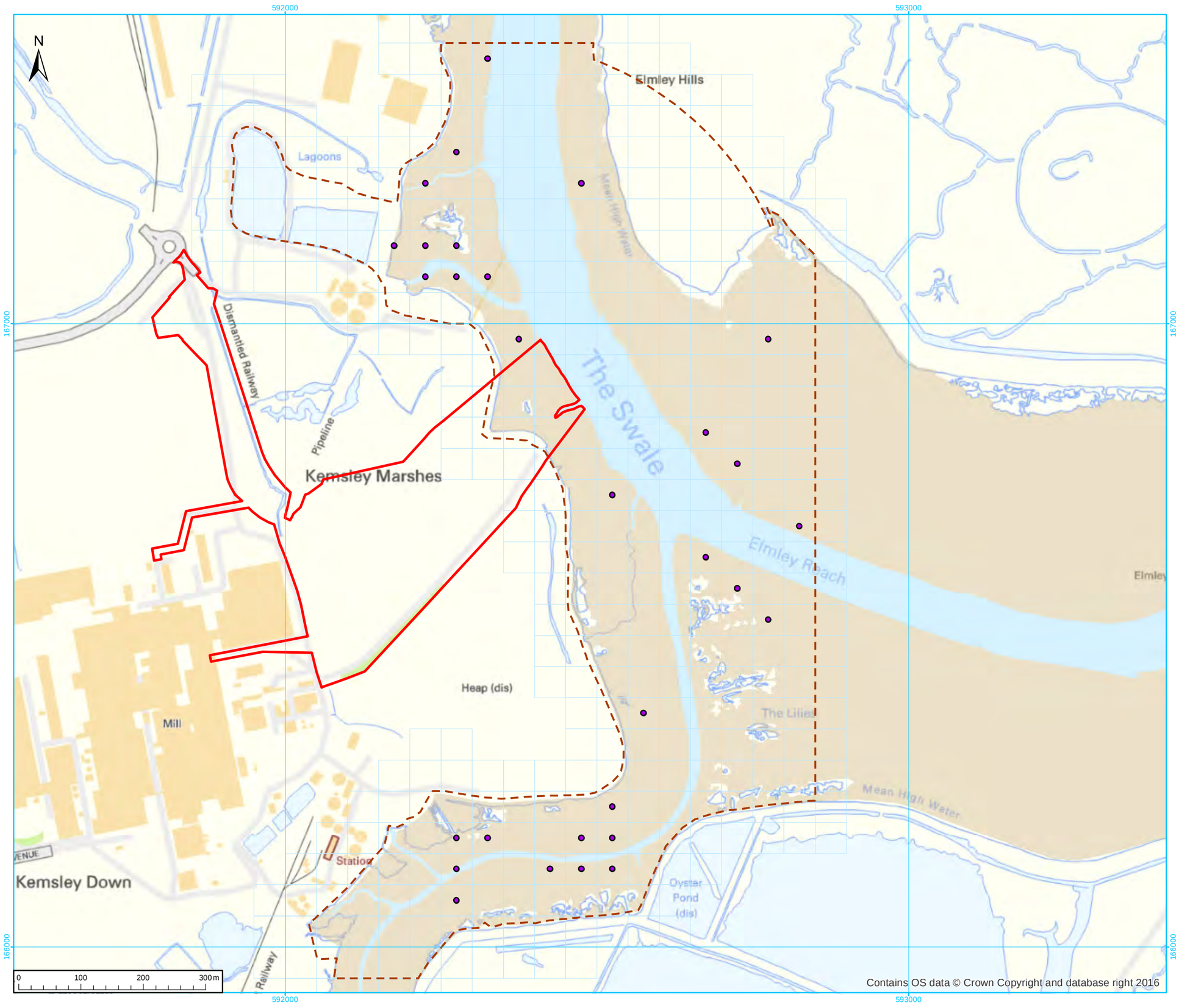

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Legend

- Application boundary
- Survey boundary

Black-tailed Godwit

Bird Numbers

- 1 - 25
- 26 - 80
- 81 - 150
- 151 - 430

Rev	Description	Date	Initial	Checked

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Status	Drawn By	PM/Checked By
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Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.23		A

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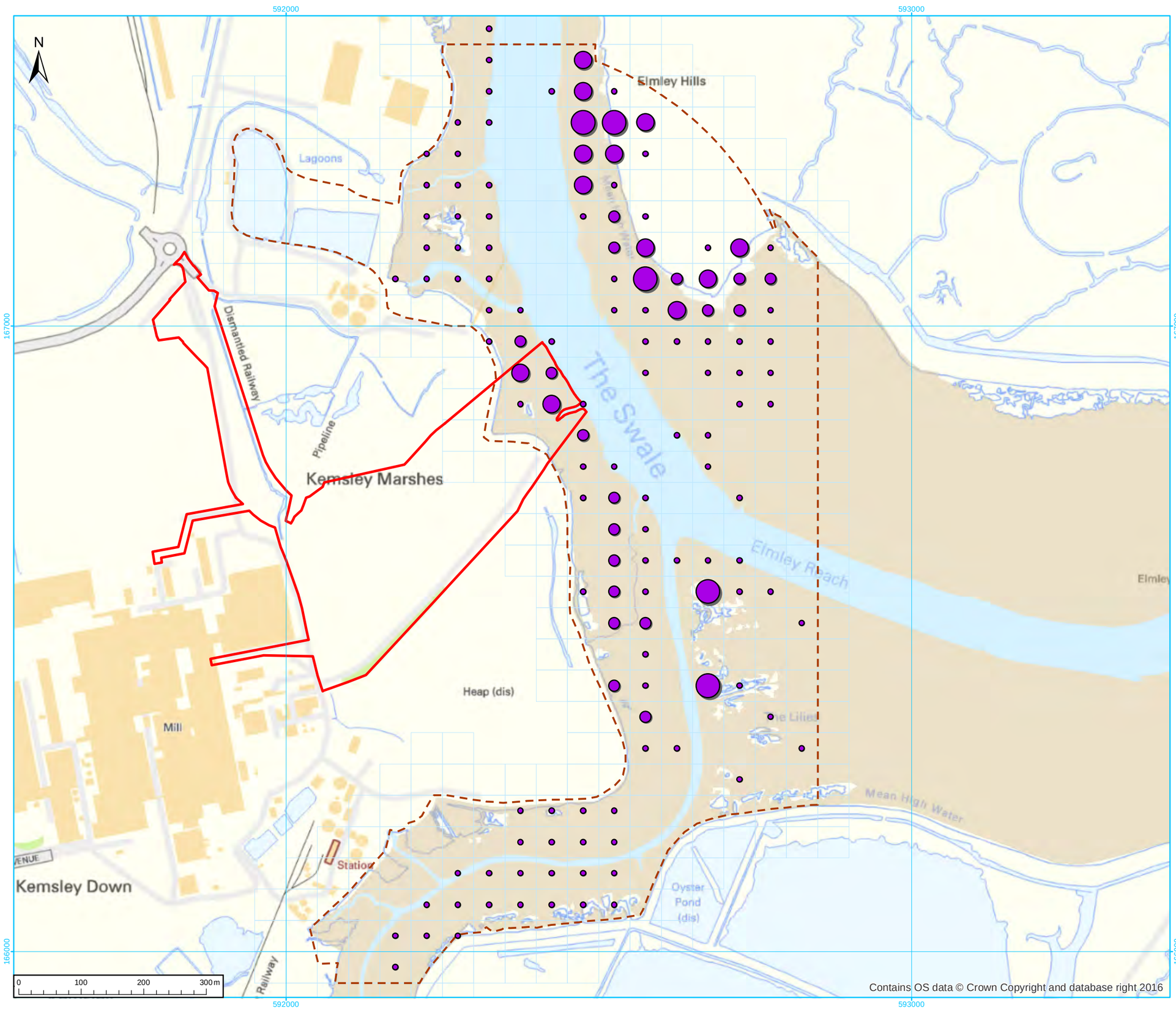

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Legend

- Application boundary
- Survey boundary

Black-tailed Godwit

Bird Numbers

- 1 - 25
- 26 - 80
- 81 - 150
- 151 - 430

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
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T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Black-tailed Godwit at High Tide, in Winter (Jan, Feb, Nov, Dec) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.24		A

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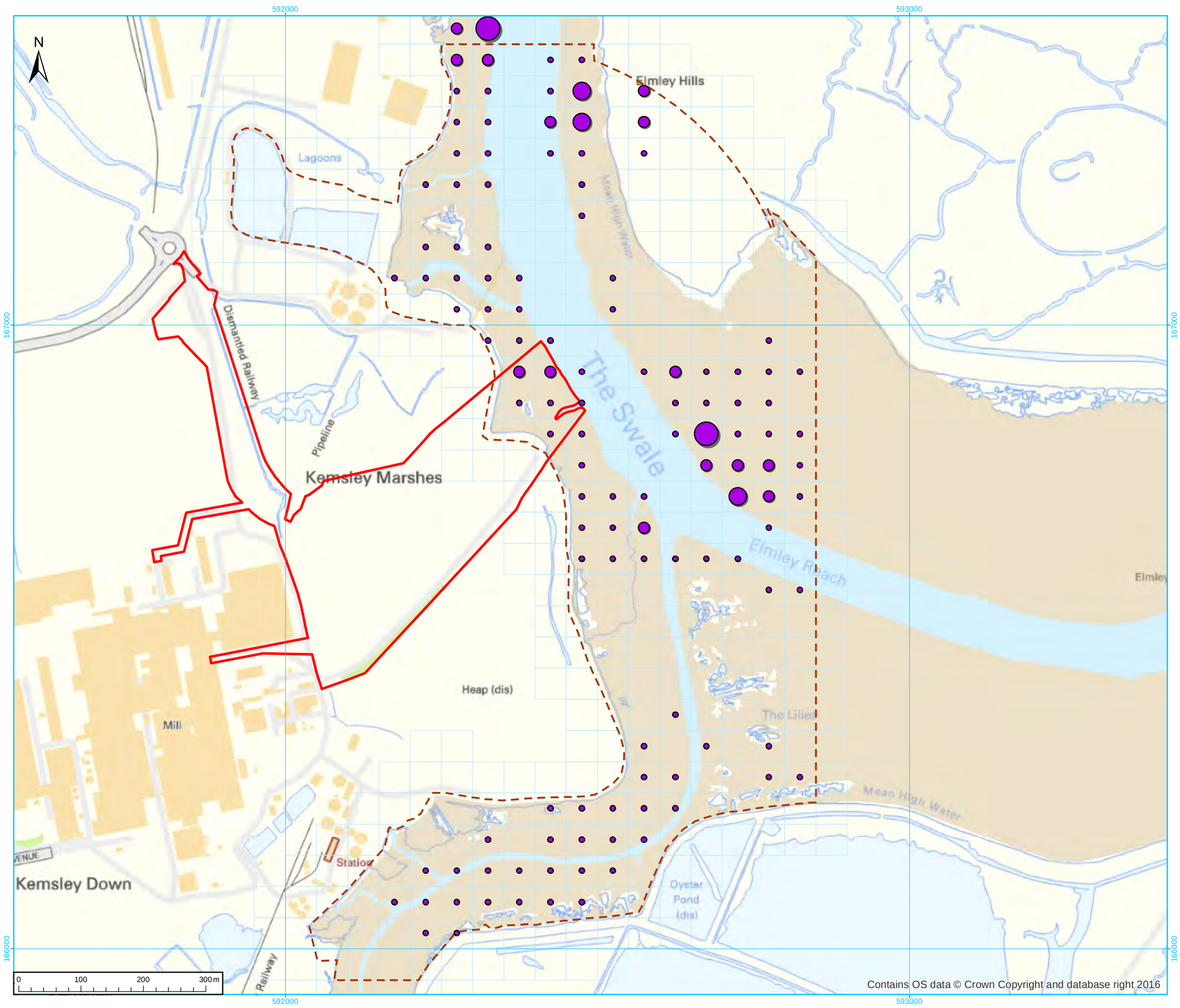

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Legend

- Application boundary
- Survey boundary

Black-tailed Godwit

Bird Numbers

- 1 - 25
- 26 - 80
- 81 - 150
- 151 - 430

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

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Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
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Drawing Number		**Rev**
Figure 3.25		A

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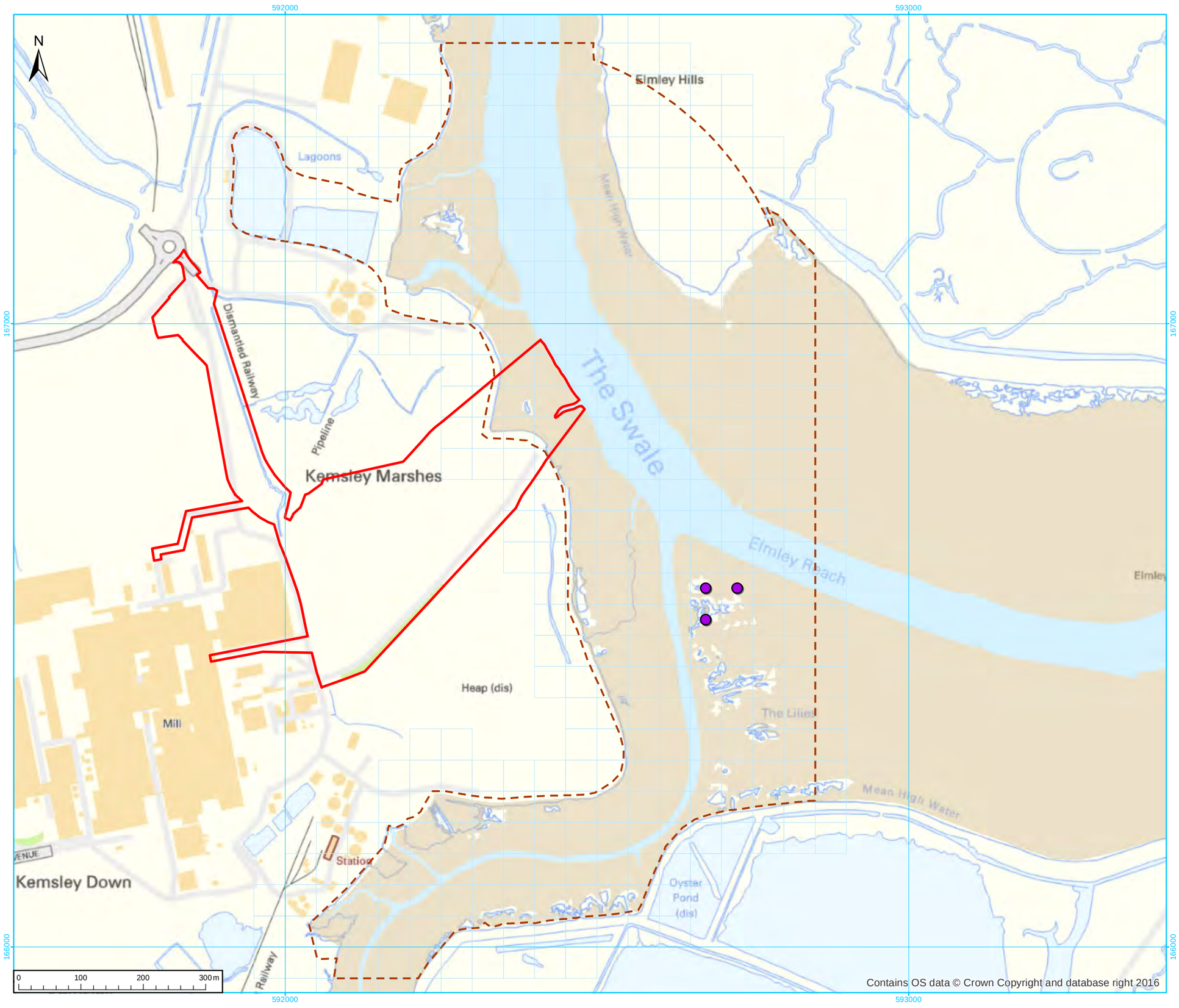

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Legend

- Application boundary
- Survey boundary

Brent Goose (Dark-bellied)

Bird numbers

- 1 - 7

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Brent Goose (Dark-bellied) at High Tide, in Spring (Mar, Apr, May) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
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Drawing Number		**Rev**
Figure 3.26		A

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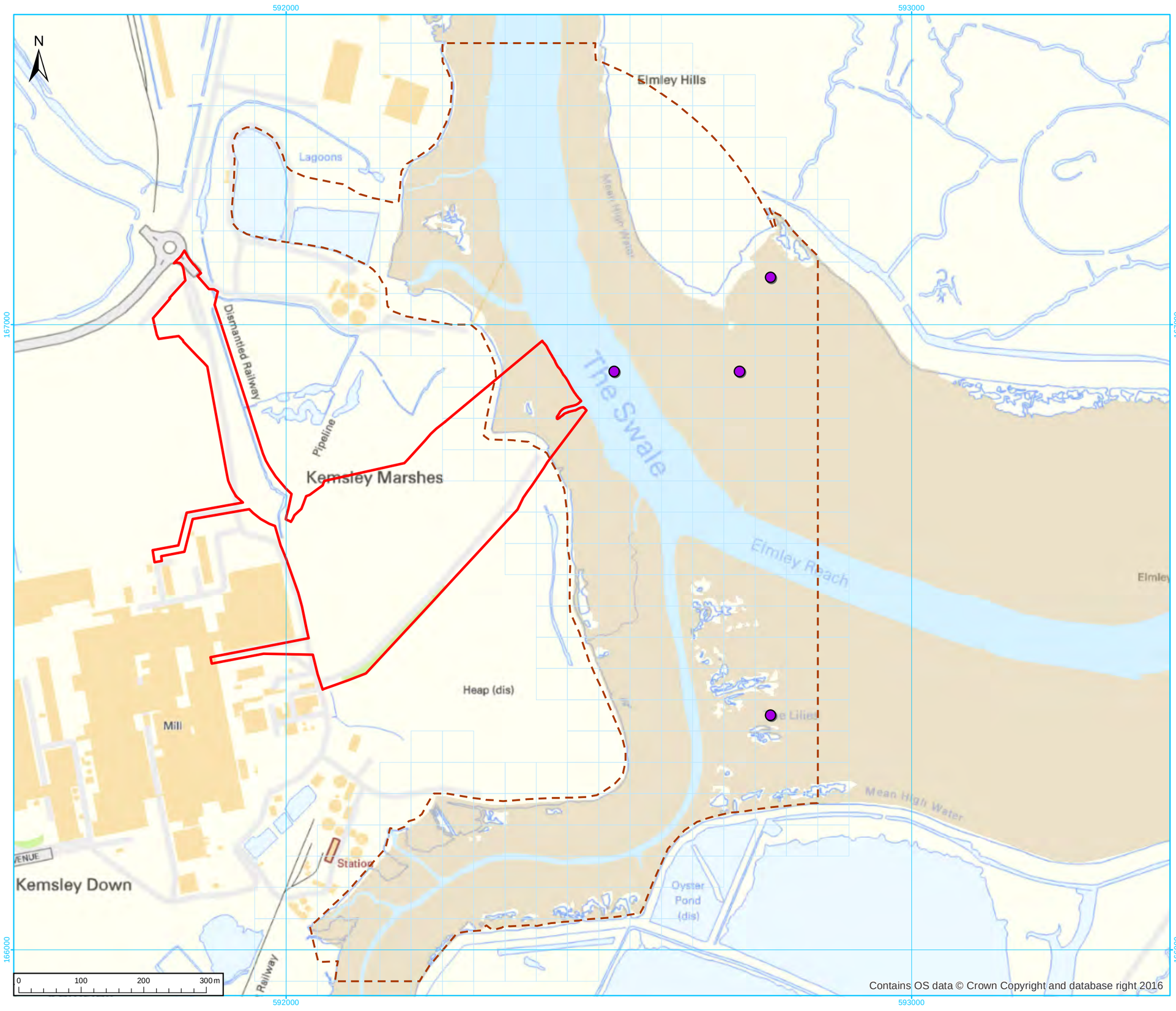

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Legend

- Application boundary
- Survey boundary

Brent Goose (Dark-bellied)

Bird numbers

- 1 - 7

Rev	Description	Date	Initial	Checked

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T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Brent Goose (Dark-bellied) at High Tide, in Autumn (Jul, Aug, Sep, Oct) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.27		A

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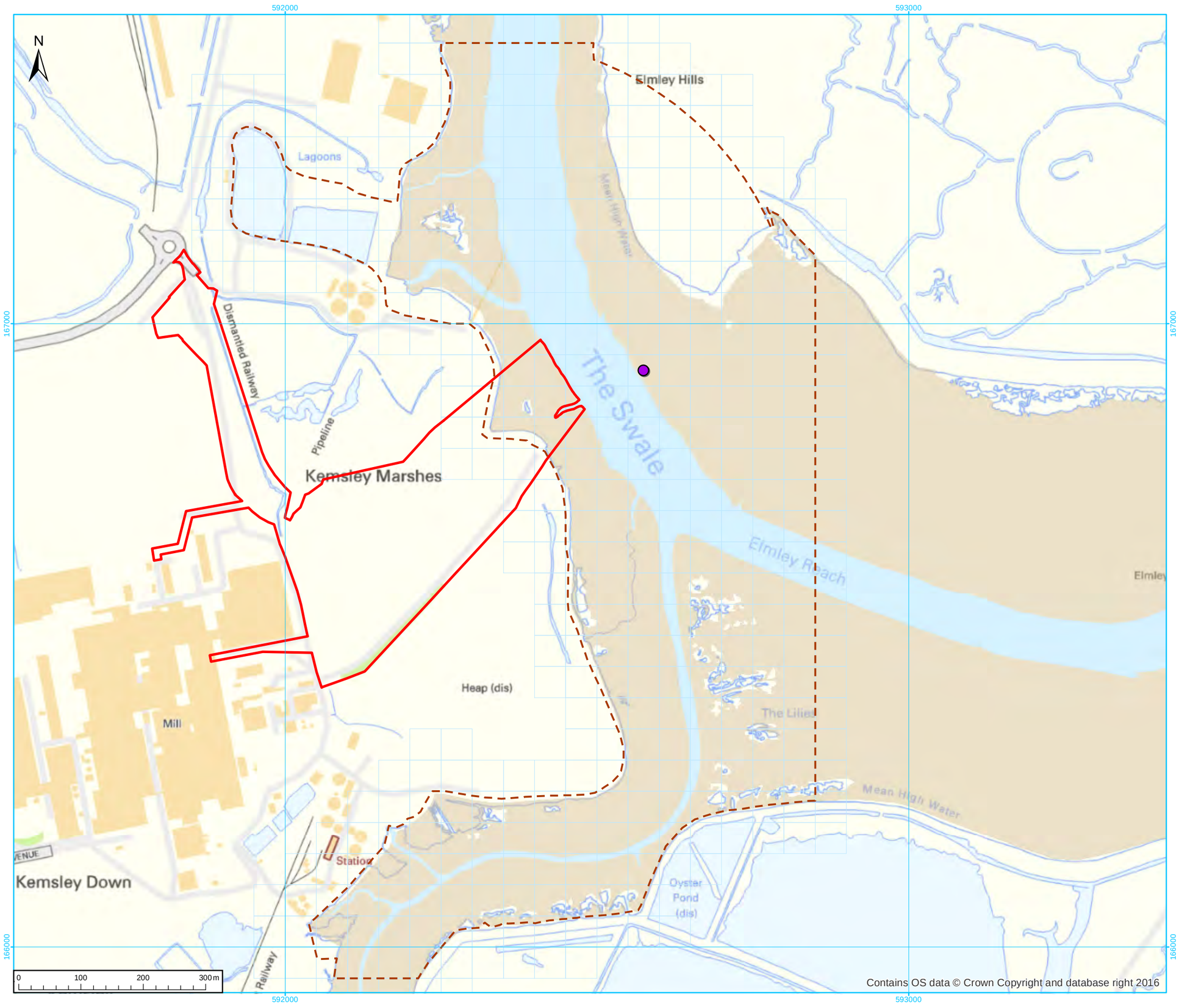

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Legend

- Application boundary
- Survey boundary

Brent Goose (Dark-bellied)

Bird numbers

- 1 - 7

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Brent Goose (Dark-bellied) at Low Tide, in Winter (Jan, Feb, Nov, Dec) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
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Drawing Number		**Rev**
Figure 3.28		A

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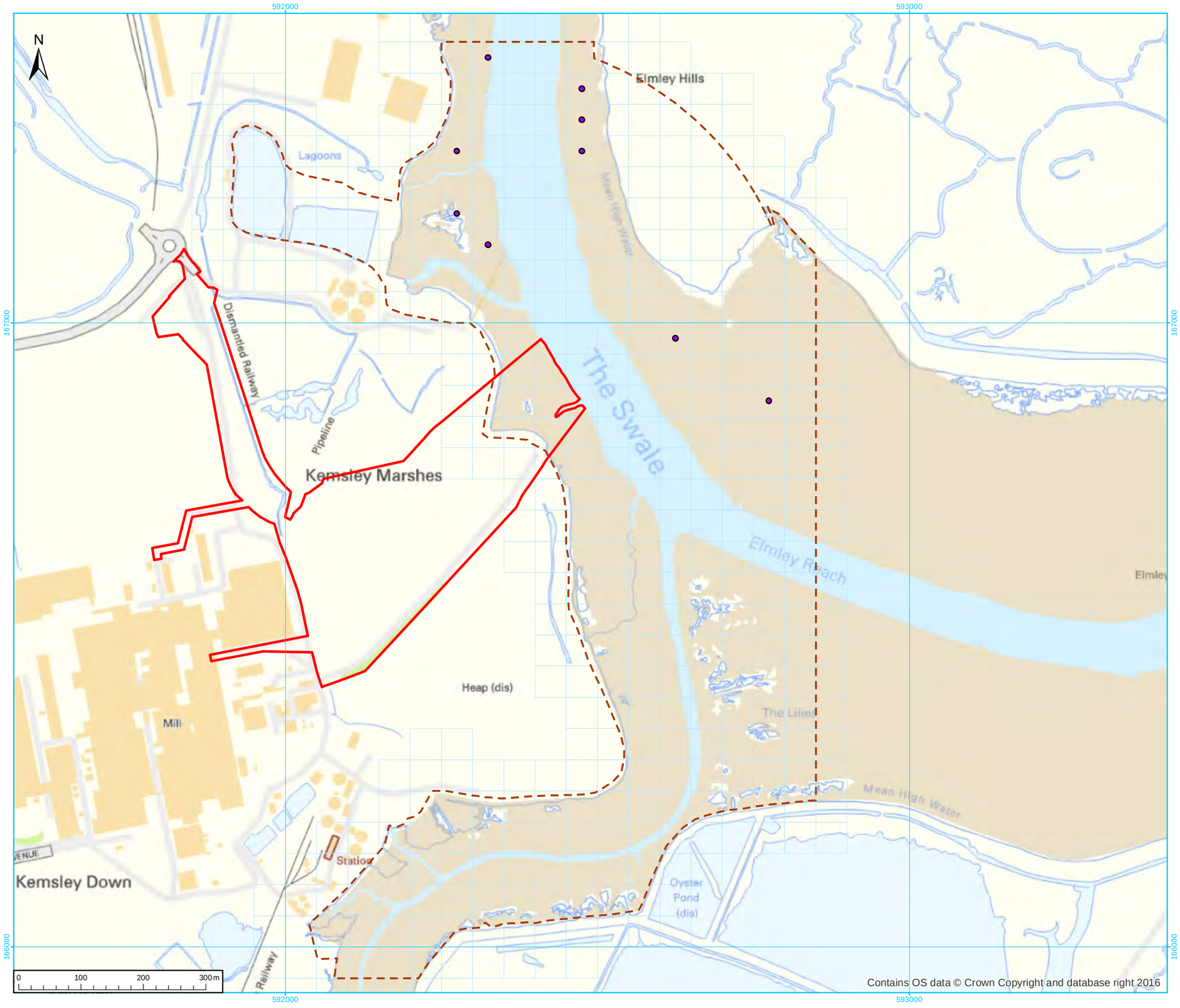

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Legend

- Application boundary
- Survey boundary

Common Gull

Bird numbers

- 1 - 5
- 6 - 12
- 13 - 20

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Common Gull at High Tide, in Spring (Mar, Apr, May) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.29		A

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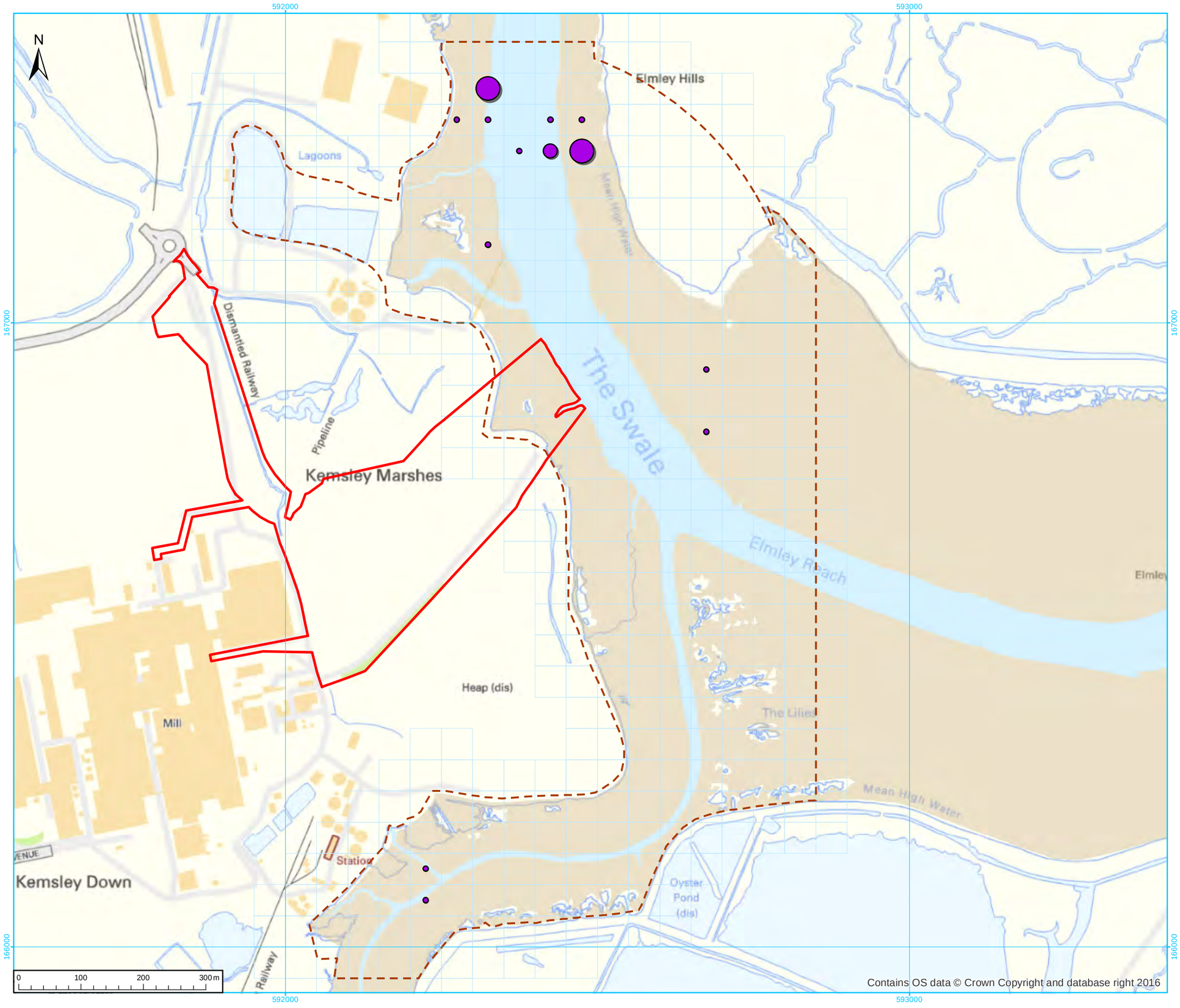

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Legend

- Application boundary
- Survey boundary

Common Gull

Bird numbers

- 1 - 5
- 6 - 12
- 13 - 20

Rev	Description	Date	Initial	Checked

RPS

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T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

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Status	Drawn By	PM/Checked By
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Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.30		A

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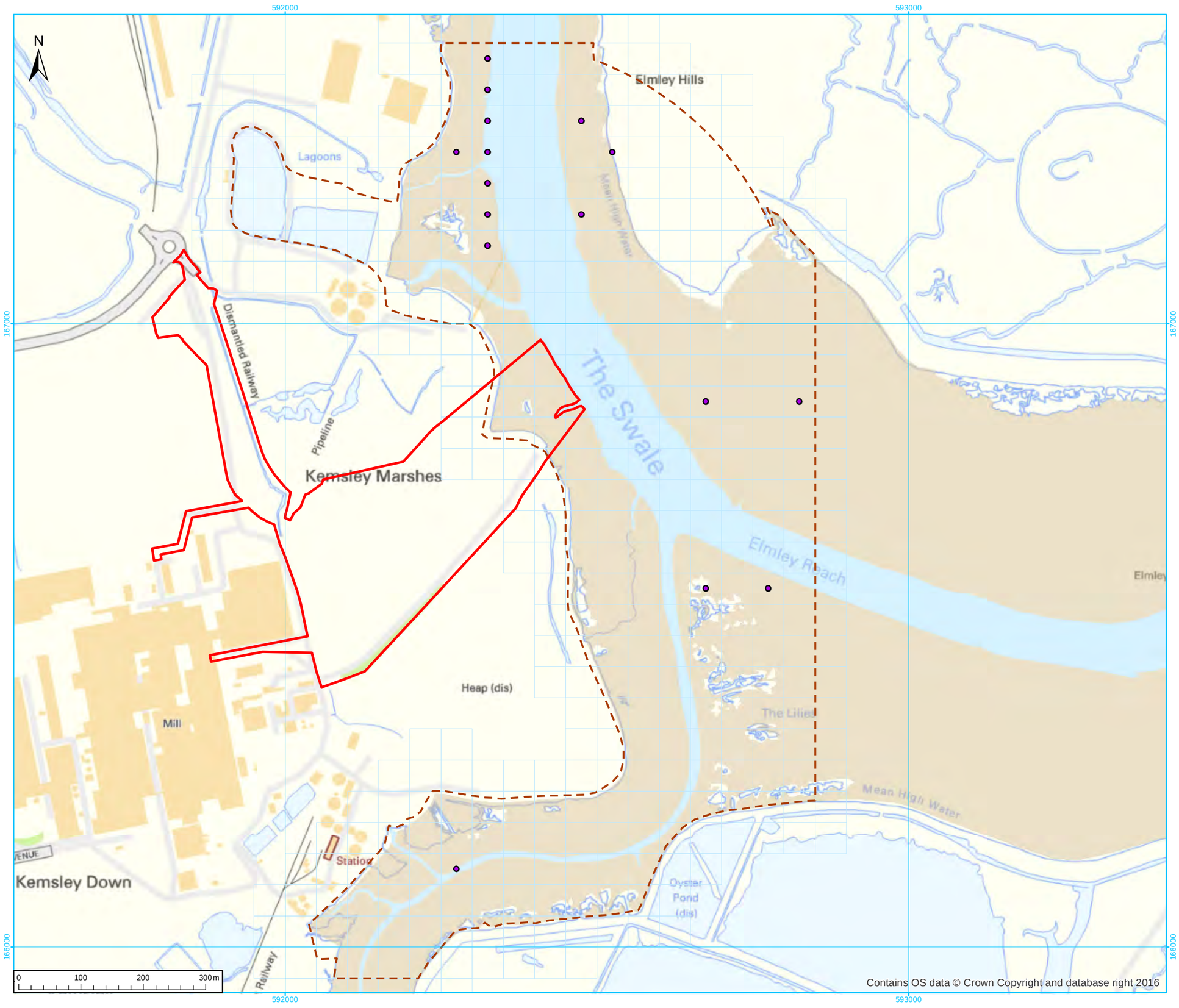

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Legend

- Application boundary
- Survey boundary

Common Gull

Bird numbers

- 1 - 5
- 6 - 12
- 13 - 20

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
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T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Common Gull at High Tide, in Autumn (Jul, Aug, Sep, Oct) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.31		A

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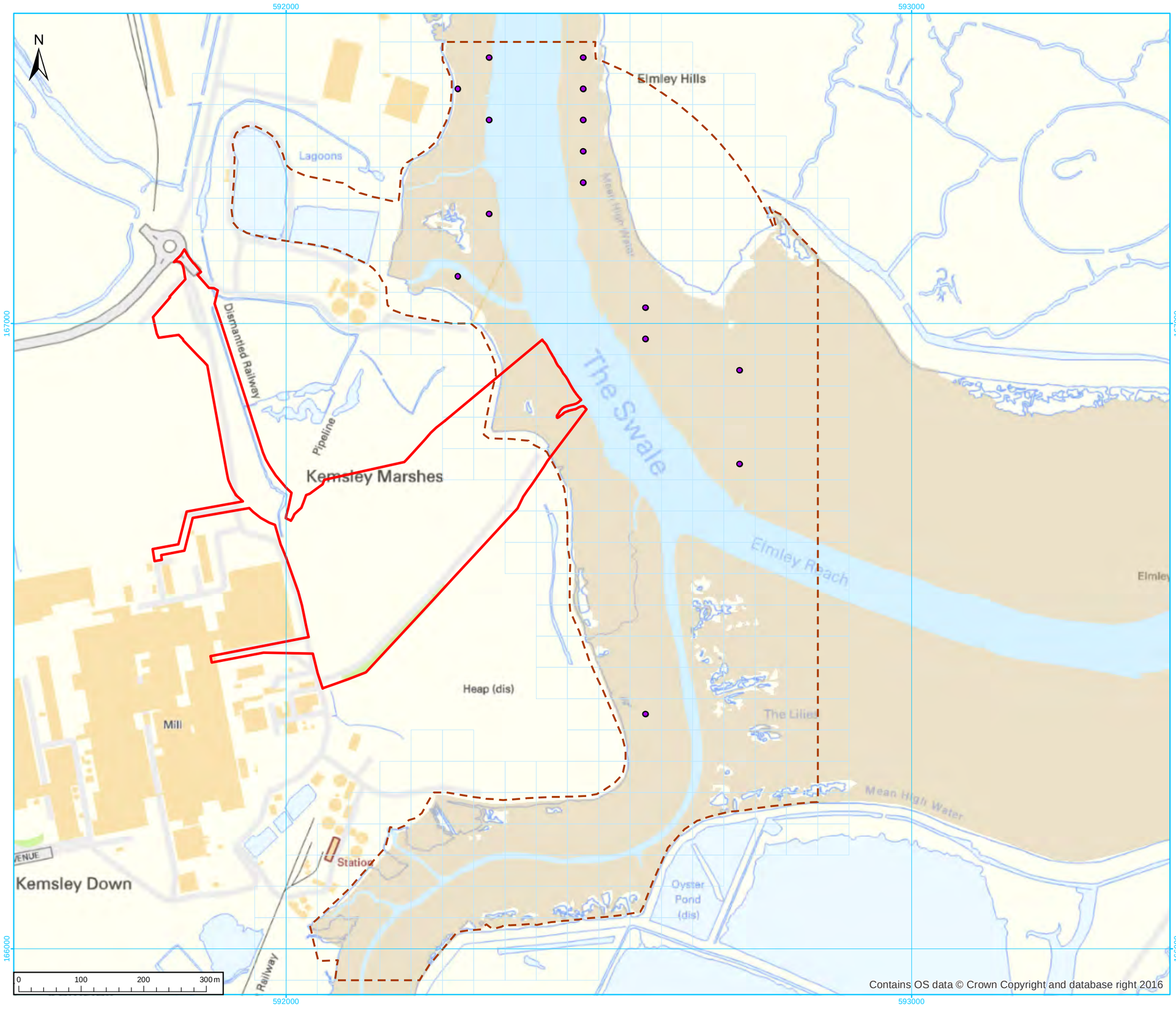

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Legend

- Application boundary
- Survey boundary

Common Gull

Bird numbers

- 1 - 5
- 6 - 12
- 13 - 20

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
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T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

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Project: Kemsley

Title: Distribution of Common Gull at Low Tide, in Autumn (Jul, Aug, Sep, Oct) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
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Drawing Number		**Rev**
Figure 3.32		A

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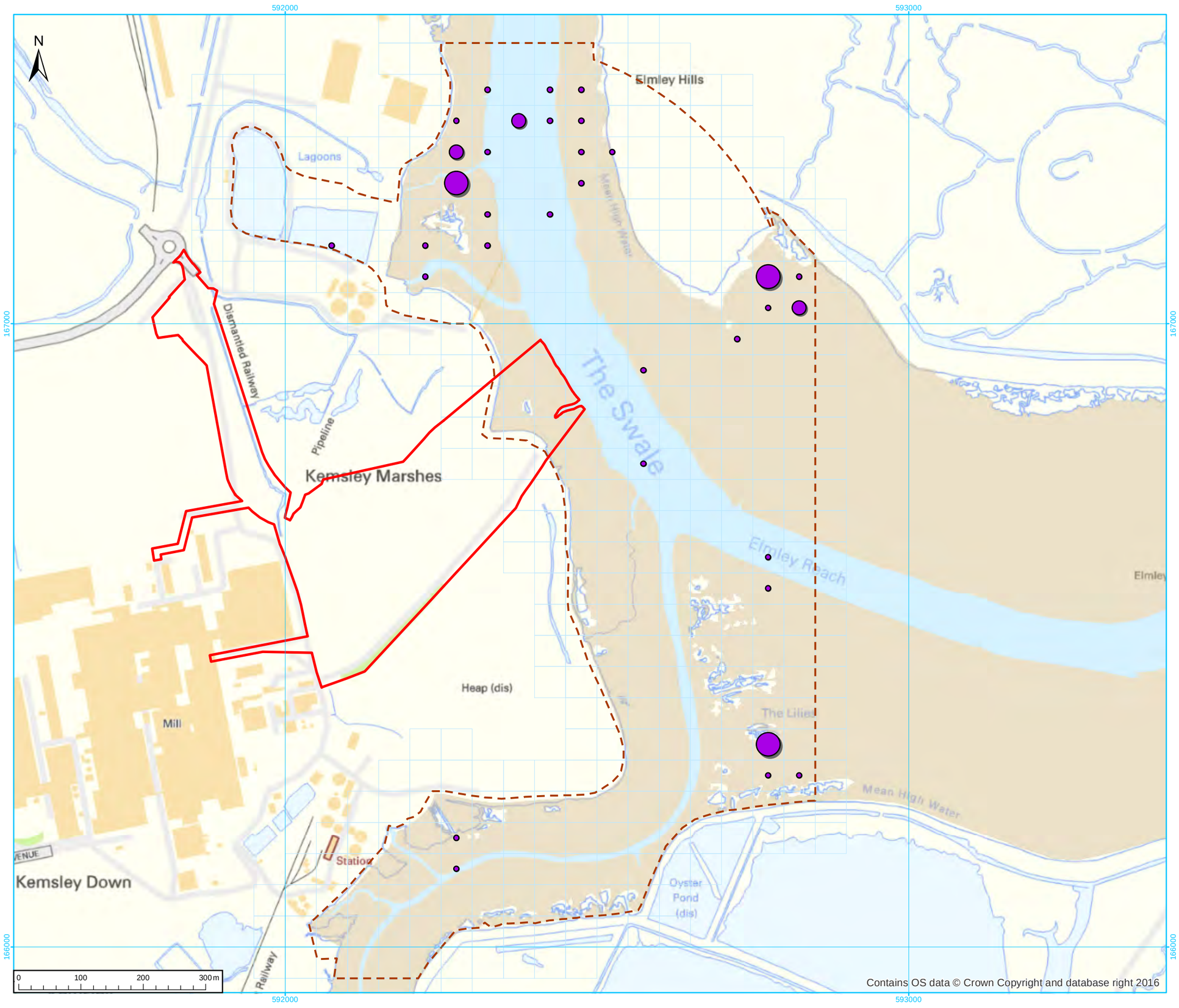

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Common Gull

Bird numbers

- 1 - 5
- 6 - 12
- 13 - 20

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Status	Drawn By	PM/Checked By
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Drawing Number		**Rev**
Figure 3.33		A

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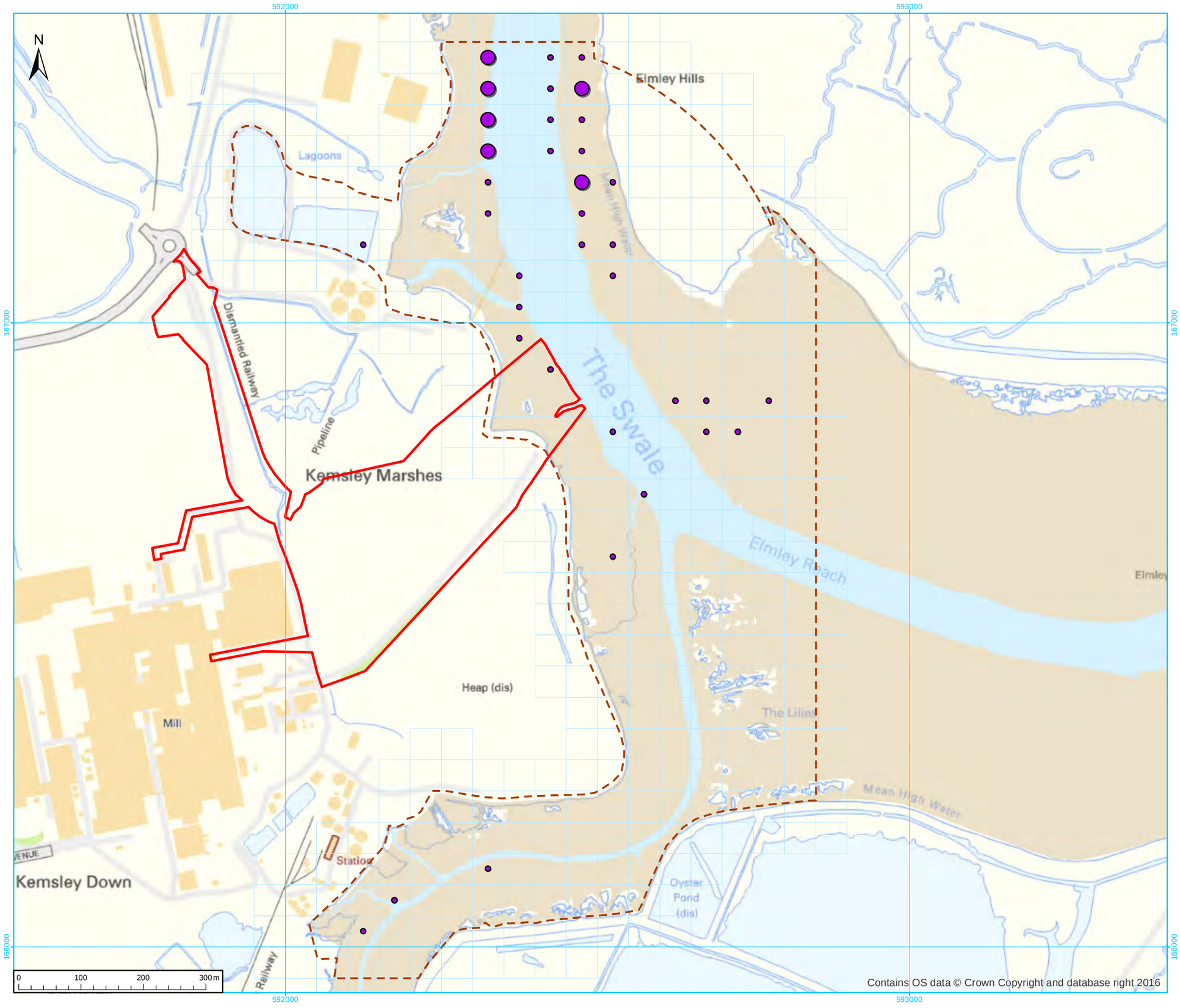

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Common Gull

Bird numbers

- 1 - 5
- 6 - 12
- 13 - 20

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Status	Drawn By	PM/Checked By
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Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.34		A

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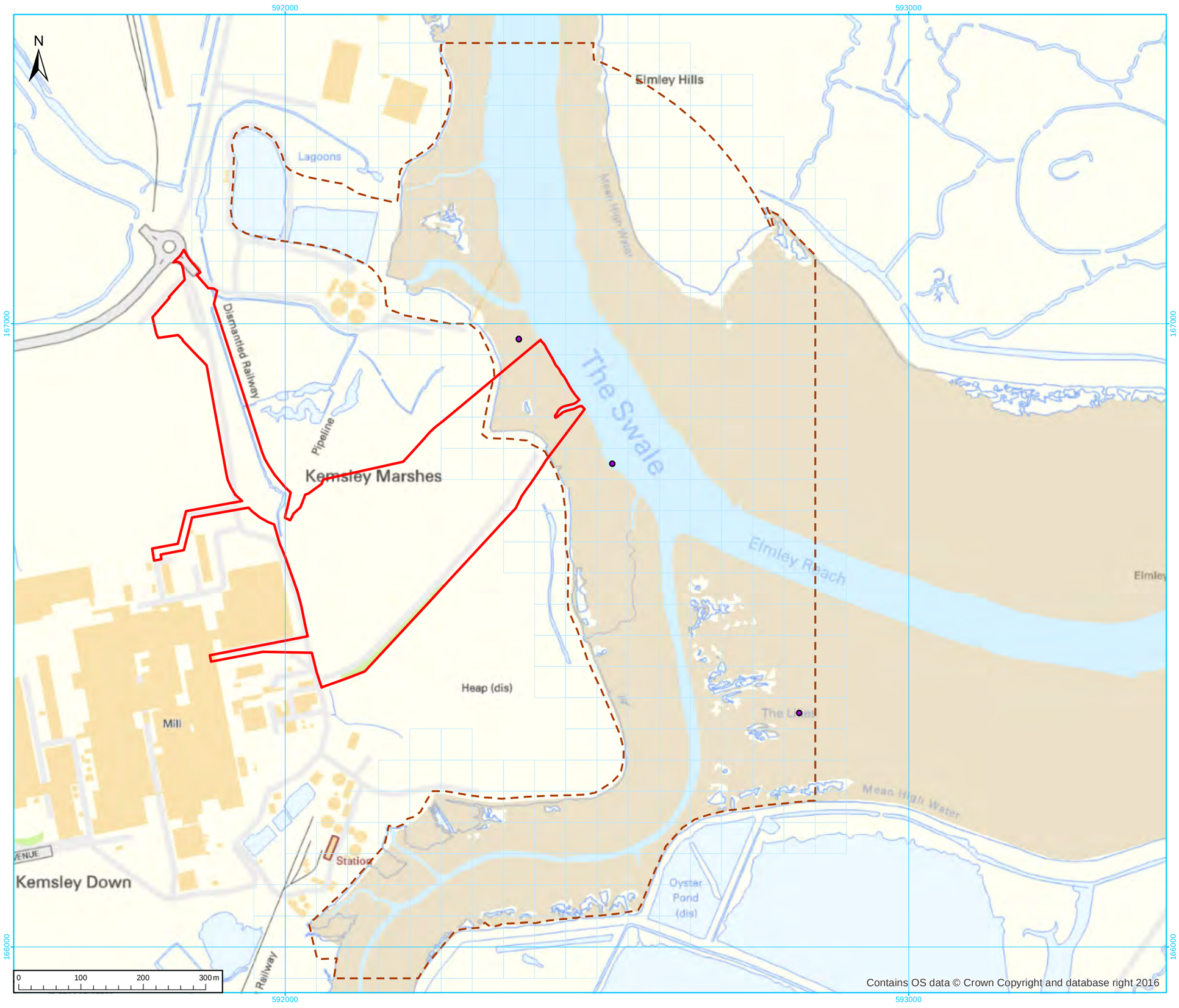

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Legend

- Application boundary
- Survey boundary

Cormorant

Bird numbers

- 1 - 7
- 8 - 15
- 16 - 20

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Cormorant at High Tide, in Spring (Mar, Apr, May) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.35		A

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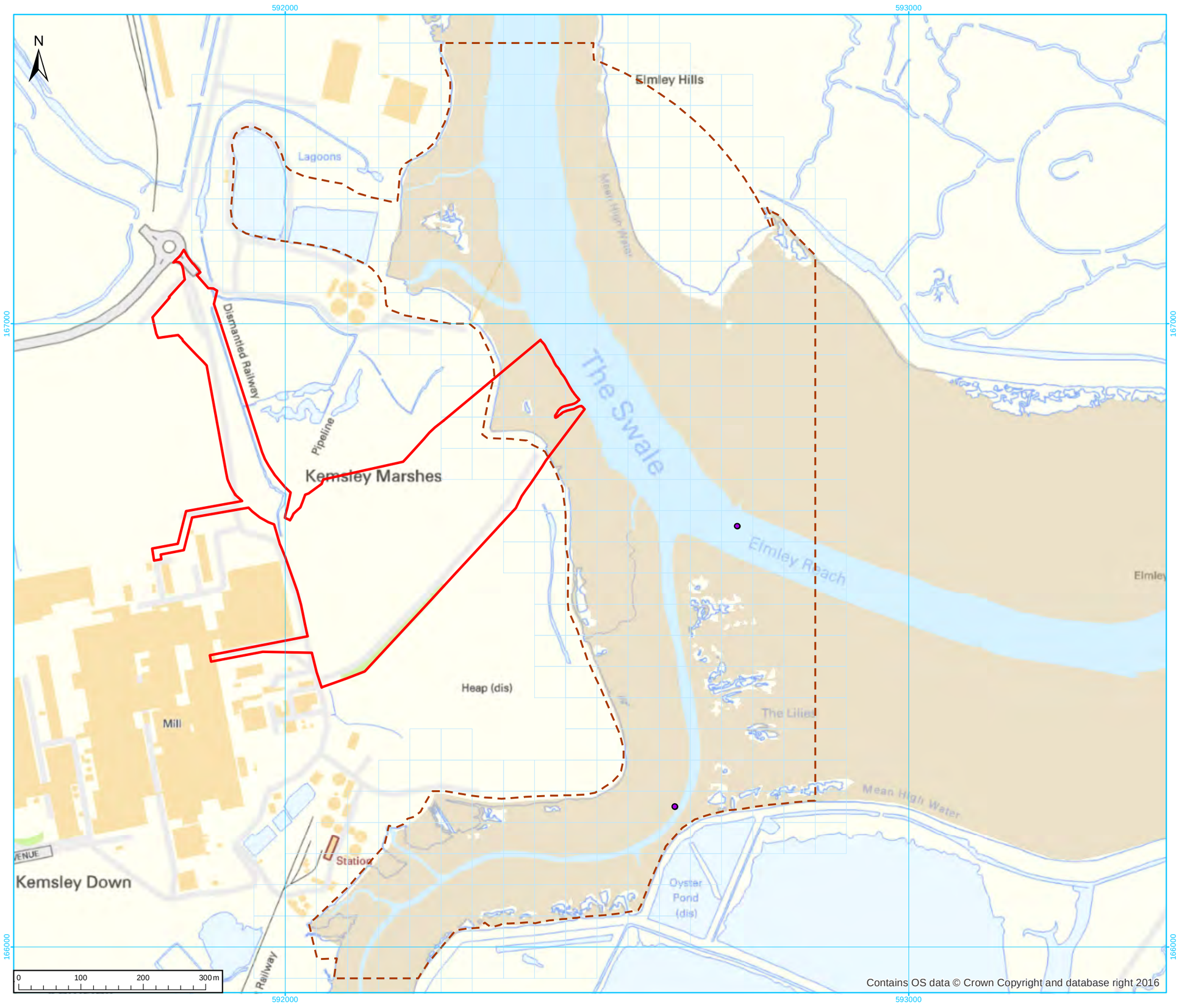

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Legend

Application boundary

Survey boundary

Cormorant

Bird numbers

1 - 7

8 - 15

16 - 20

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
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Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.36		A

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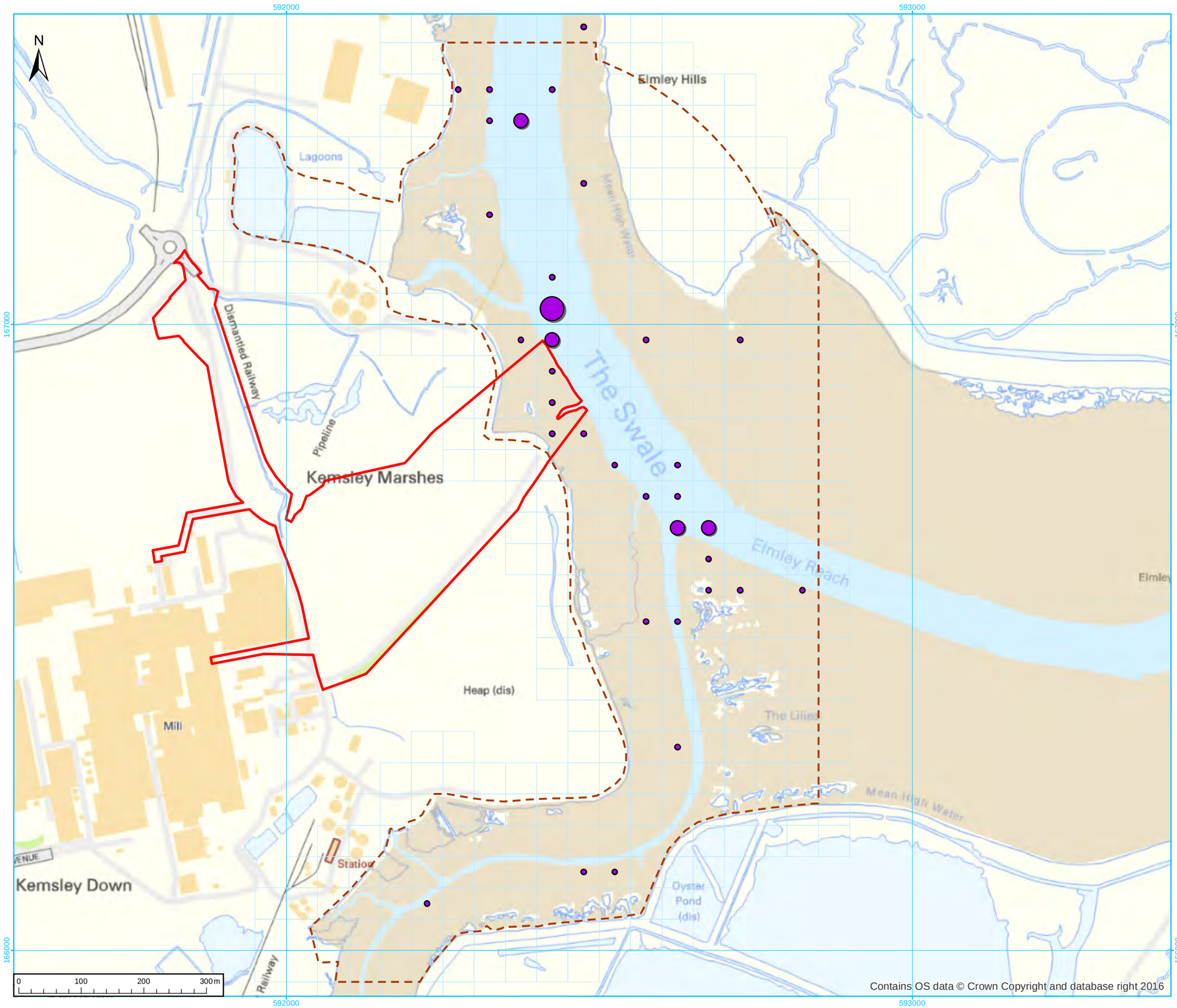

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Legend

- Application boundary
- Survey boundary

Cormorant

Bird numbers

- 1 - 7
- 8 - 15
- 16 - 20

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
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T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

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Project: Kemsley

Title: Distribution of Cormorant at High Tide, in Autumn (Jul, Aug, Sep, Oct) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.37		A

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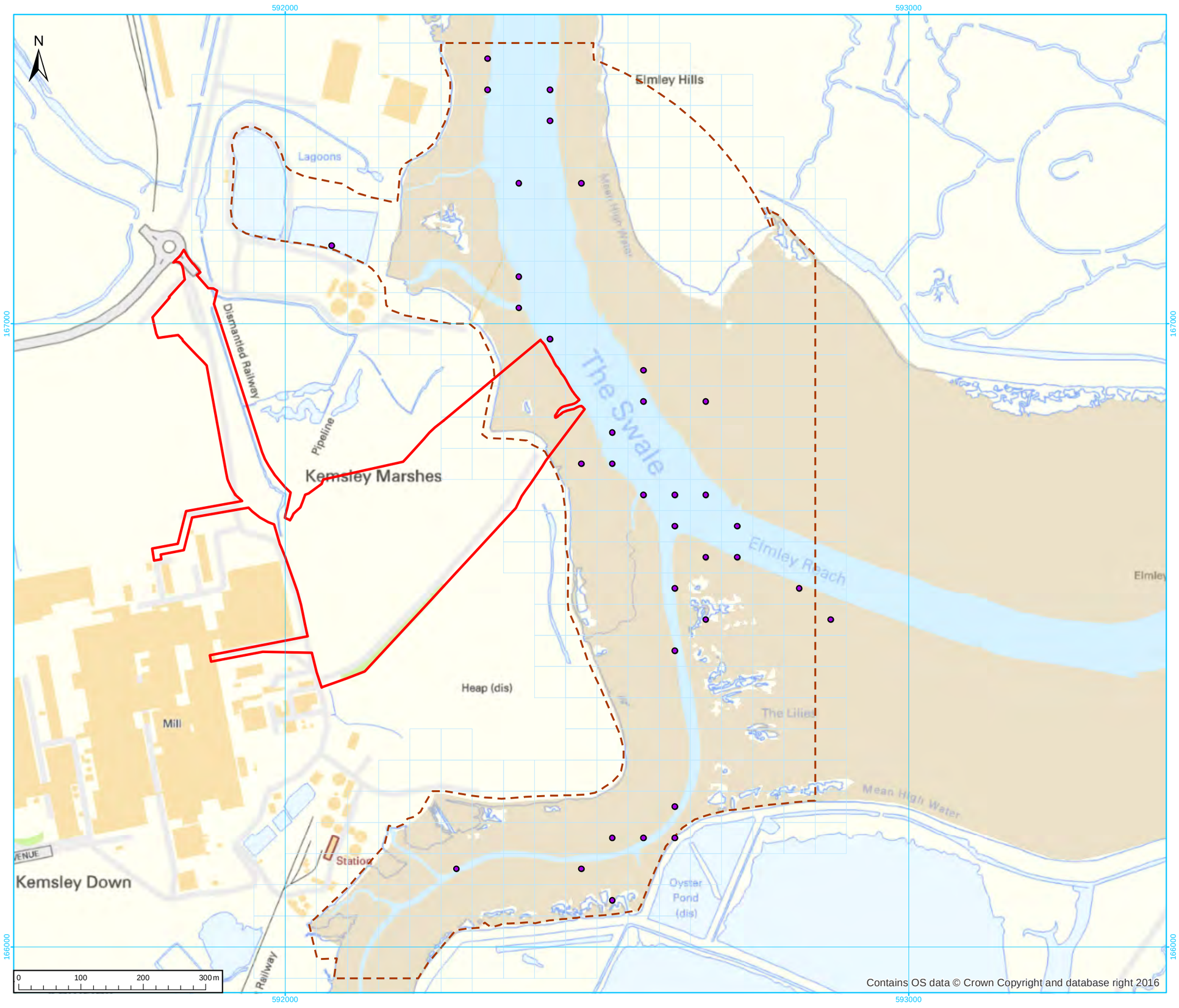

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Legend

- Application boundary
- Survey boundary

Cormorant

Bird numbers

- 1 - 7
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- 16 - 20

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Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.38		A

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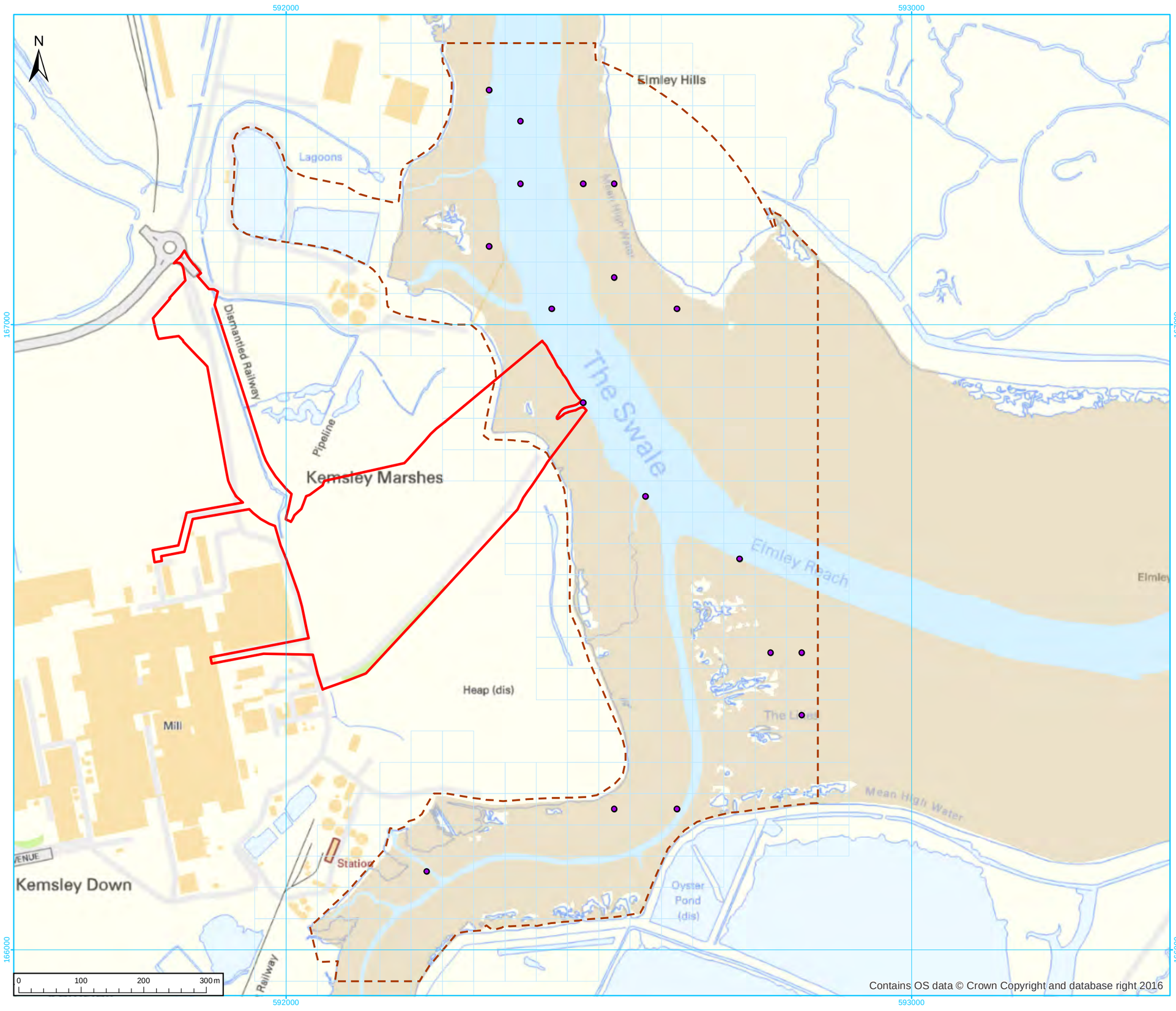

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Legend

Application boundary

Survey boundary

Cormorant

Bird numbers

1 - 7

8 - 15

16 - 20

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
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Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Cormorant at High Tide, in Winter (Jan, Feb, Nov, Dec) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.39		A

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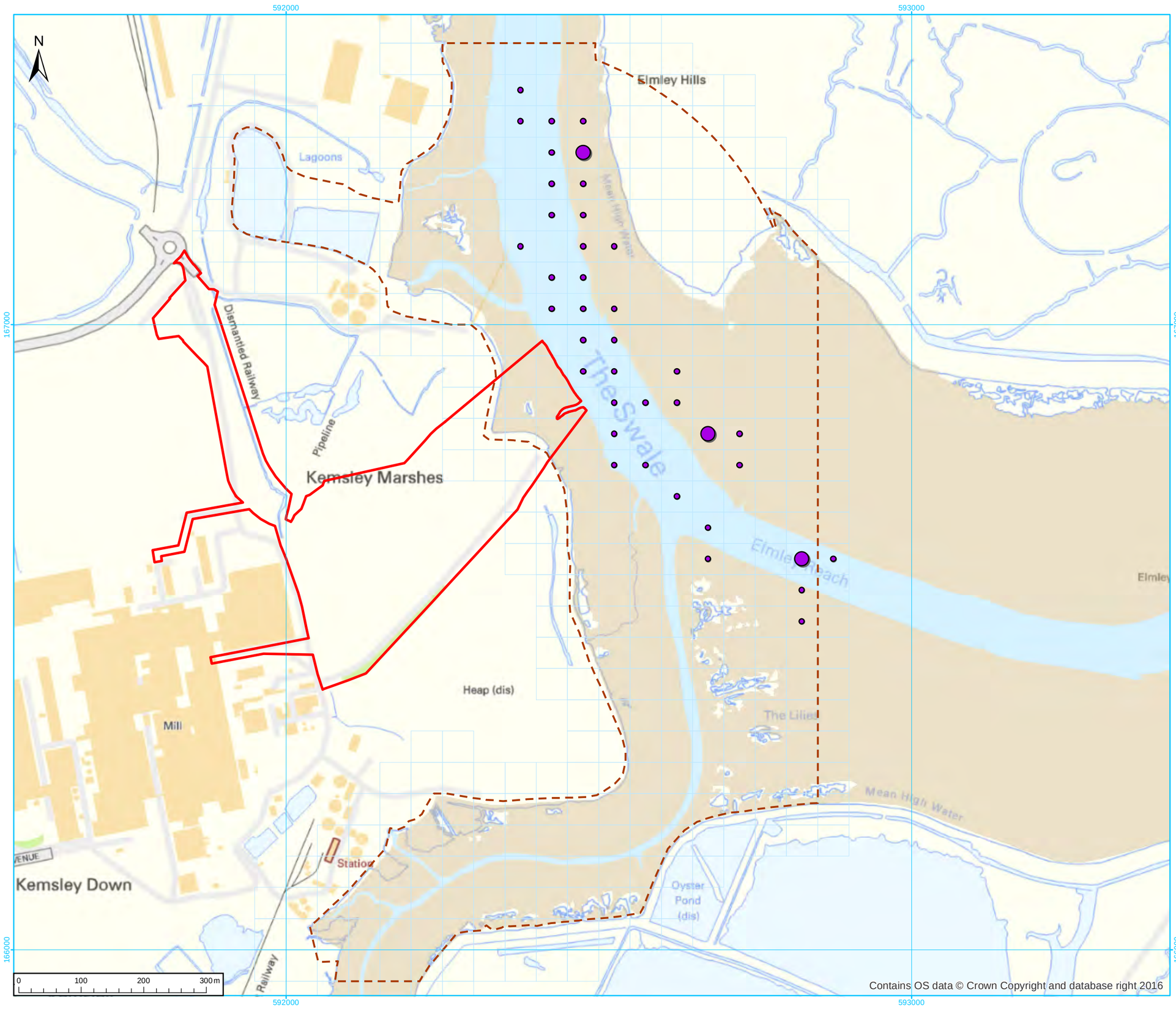

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Legend

- Application boundary
- Survey boundary

Cormorant

Bird numbers

- 1 - 7
- 8 - 15
- 16 - 20

Rev	Description	Date	Initial	Checked

RPS

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Status	Drawn By	PM/Checked By
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Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.40		A

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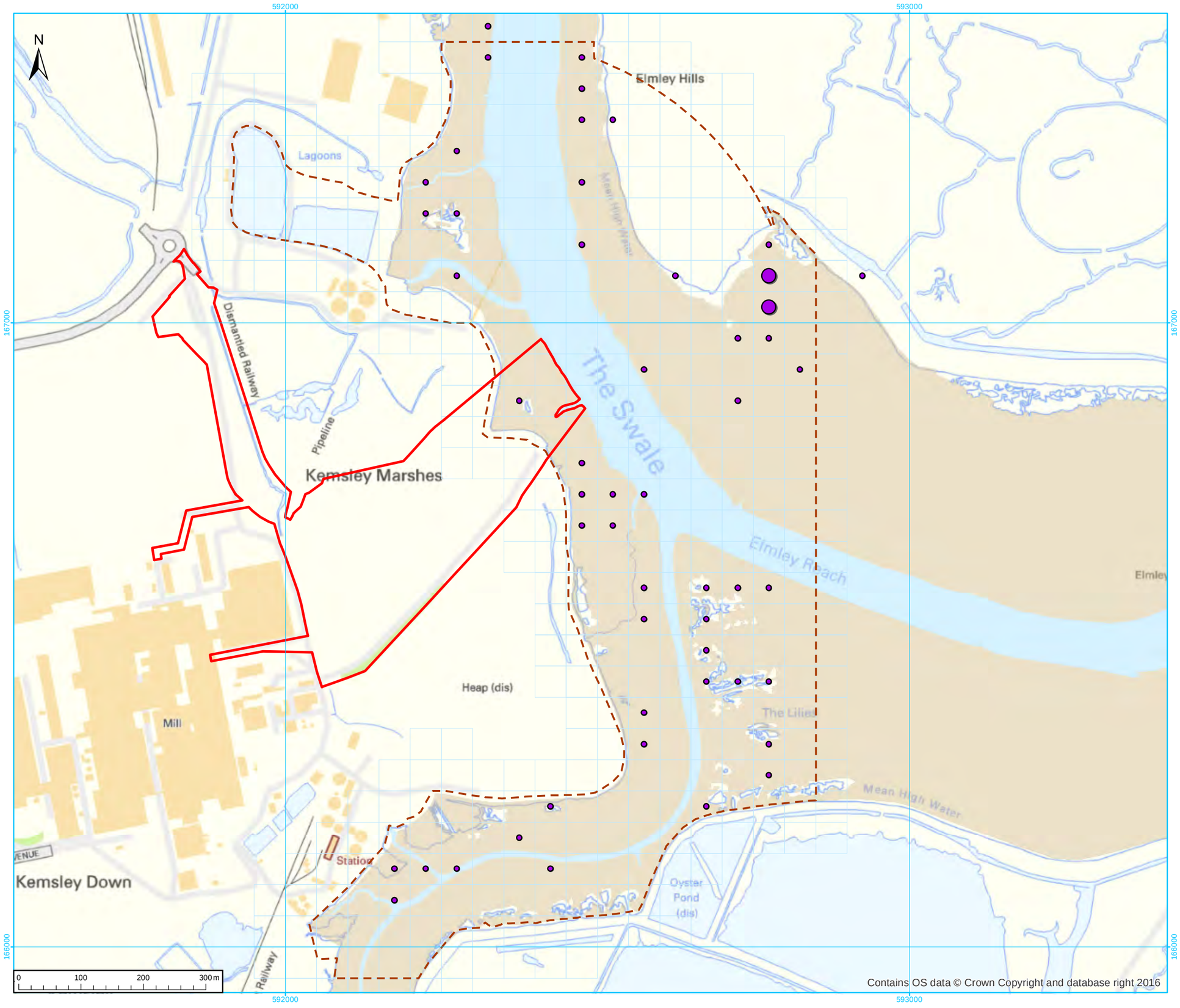

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Legend

Application boundary

Survey boundary

Curlew

Bird Numbers

1 - 6

7 - 25

26 - 55

Rev	Description	Date	Initial	Checked

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Willow Mere House, Compass Point Business Park
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T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Curlew at High Tide, in Spring (Mar, Apr, May) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.41		A

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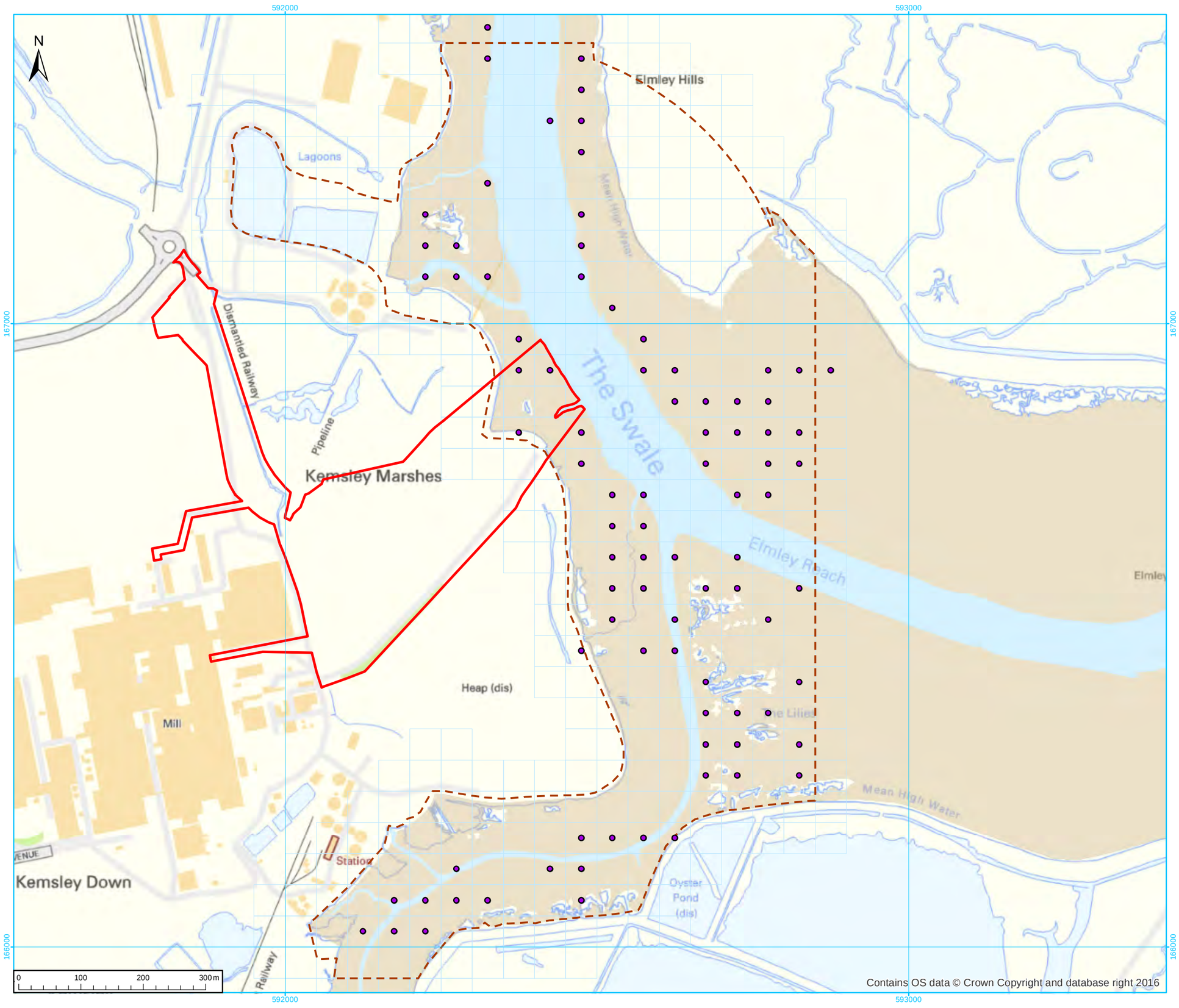

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Legend

- Application boundary
- Survey boundary

Curlew

Bird Numbers

- 1 - 6
- 7 - 25
- 26 - 55

Rev	Description	Date	Initial	Checked

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Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.42		A

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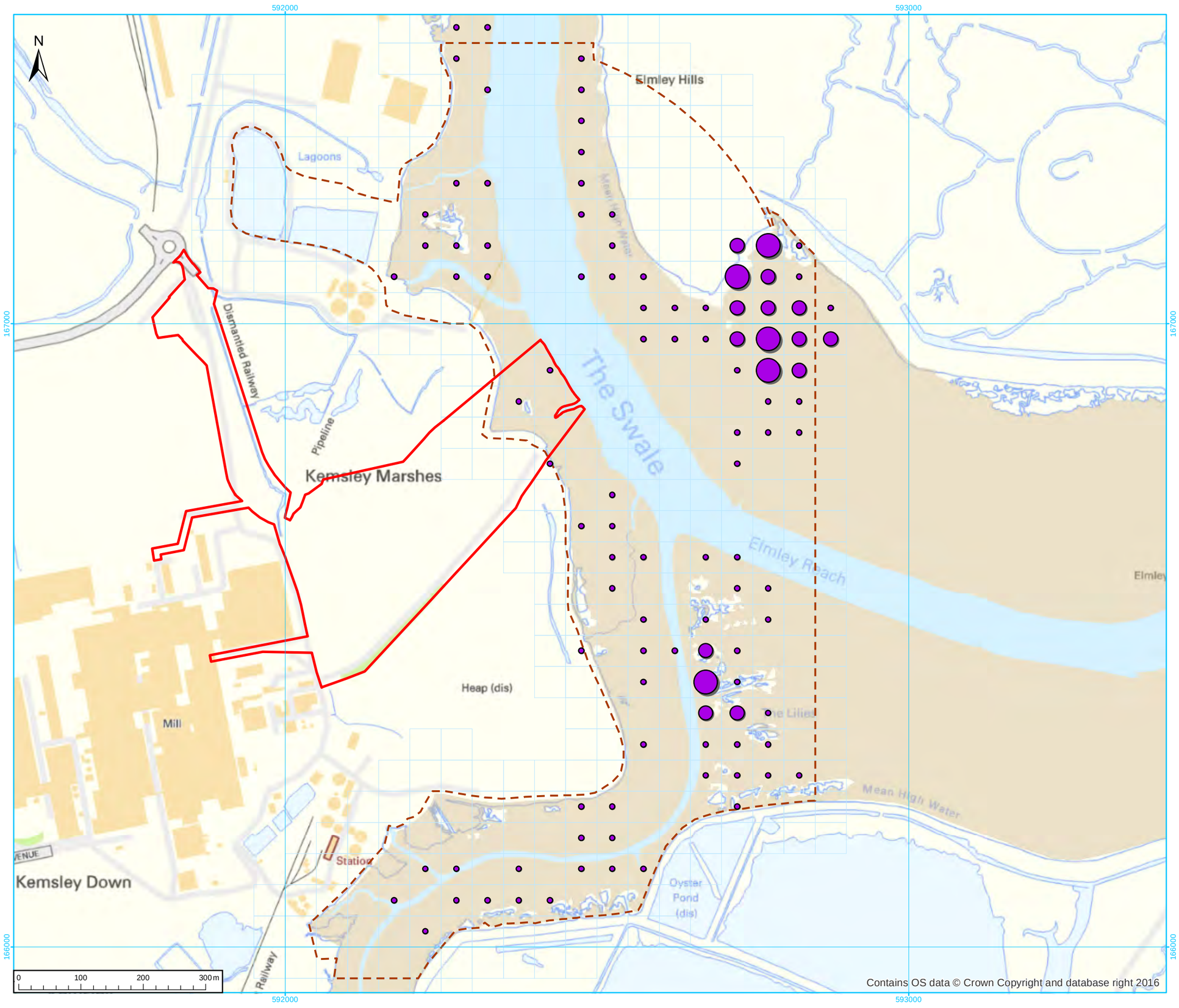

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Legend

- Application boundary
- Survey boundary

Curlew

Bird Numbers

- 1 - 6
- 7 - 25
- 26 - 55

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Curlew at High Tide, in Autumn (Jul, Aug, Sep, Oct) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.43		A

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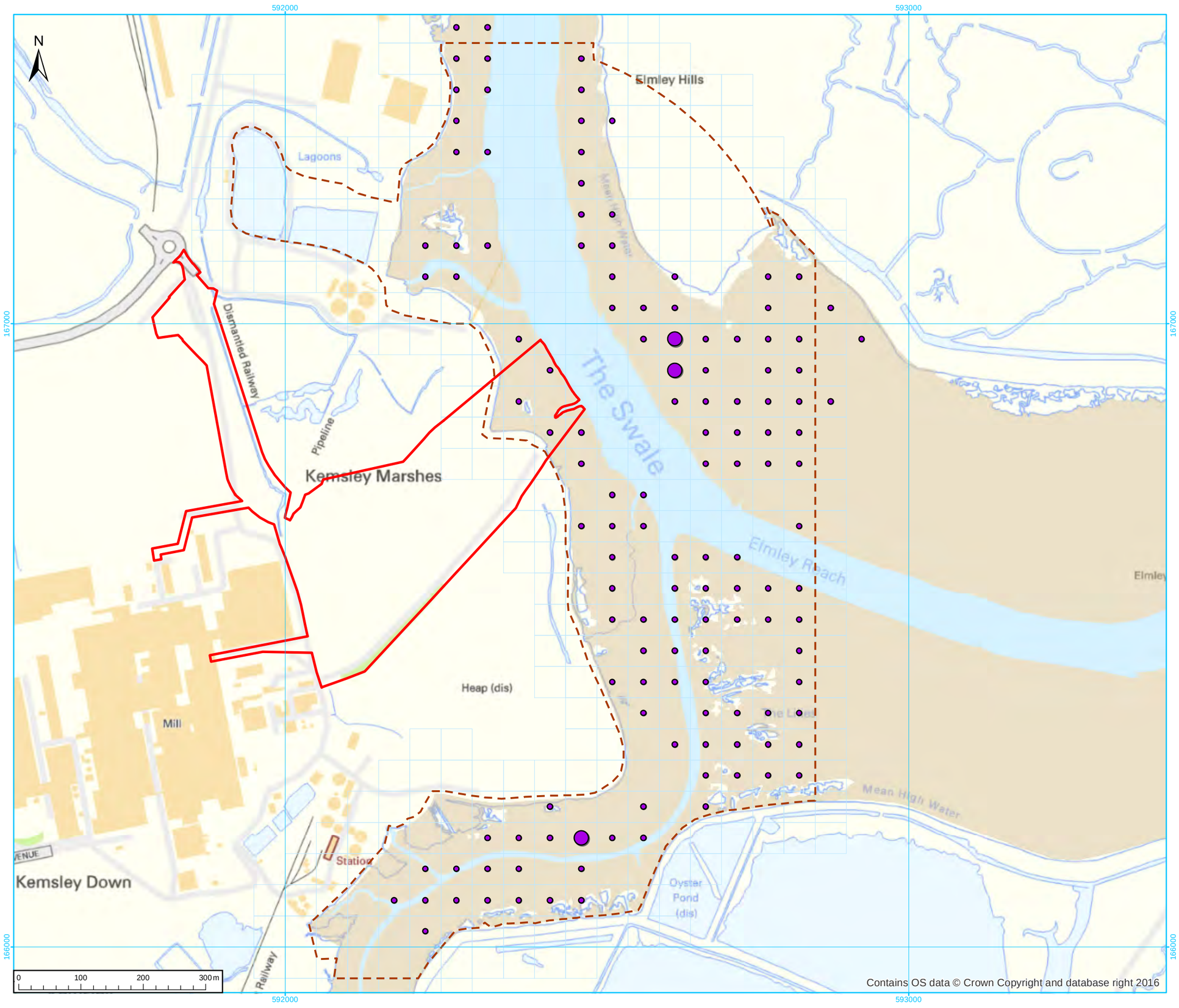

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Legend

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- Survey boundary

Curlew

Bird Numbers

- 1 - 6
- 7 - 25
- 26 - 55

Rev	Description	Date	Initial	Checked

RPS

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Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.44		A

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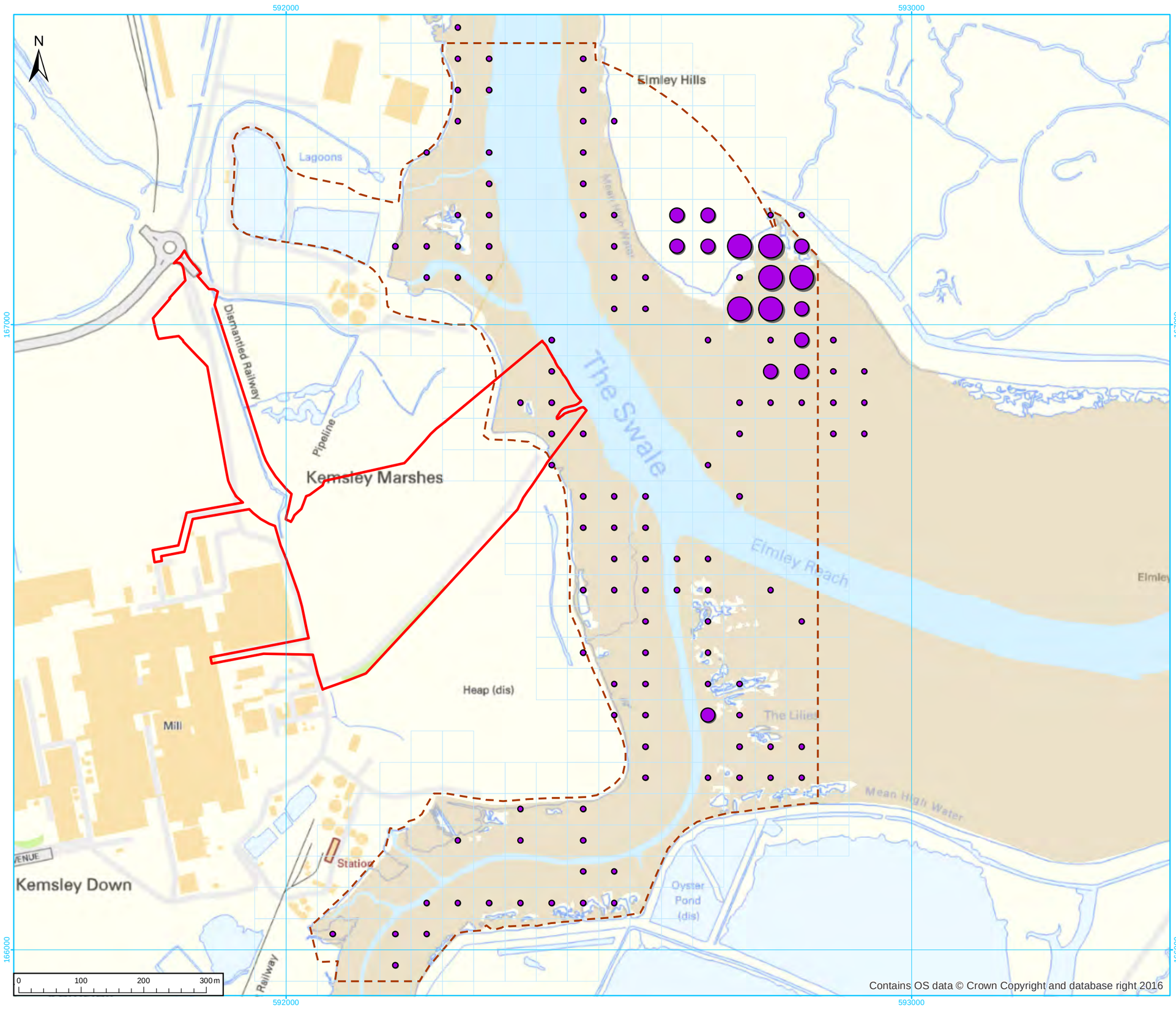

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Curlew

Bird Numbers

- 1 - 6
- 7 - 25
- 26 - 55

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OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.45		A

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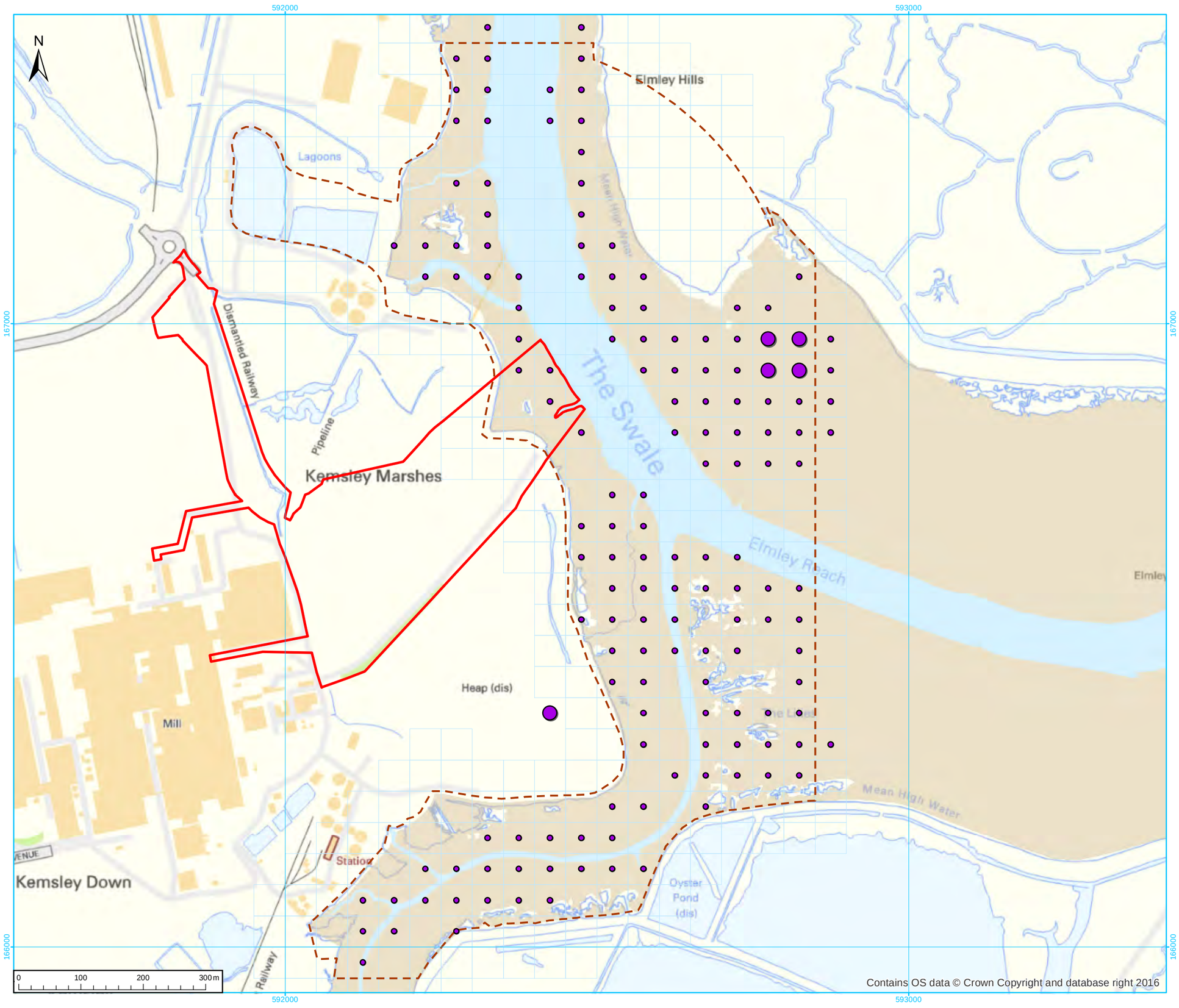

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Curlew

Bird Numbers

- 1 - 6
- 7 - 25
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Status	Drawn By	PM/Checked By
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OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.46		A

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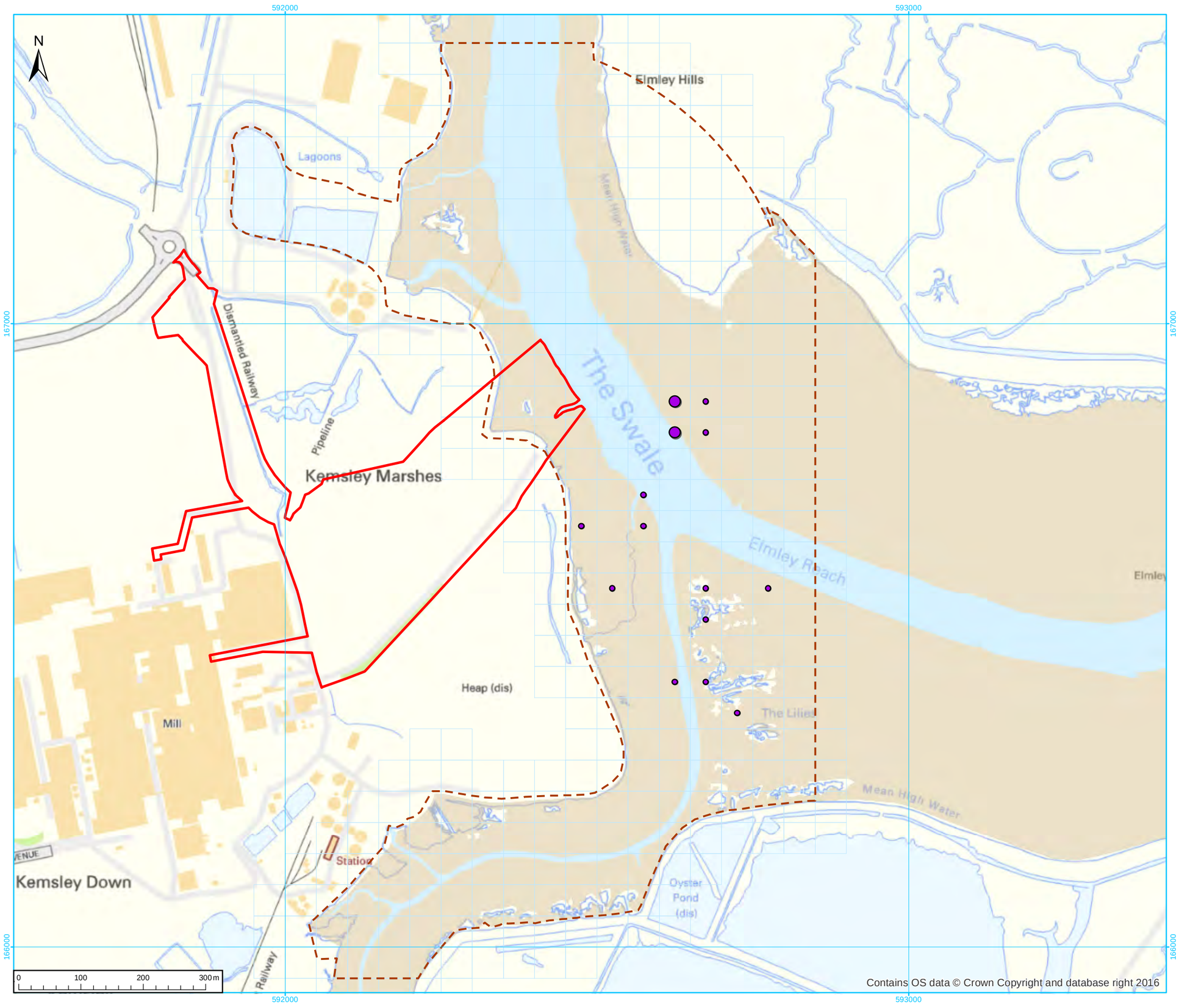

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Legend

Application boundary

Survey boundary

Dunlin

Bird Numbers

- 1 - 50
- 51 - 130
- 131 - 250
- 251 - 520

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
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T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

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Status	Drawn By	PM/Checked By
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Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.47		A

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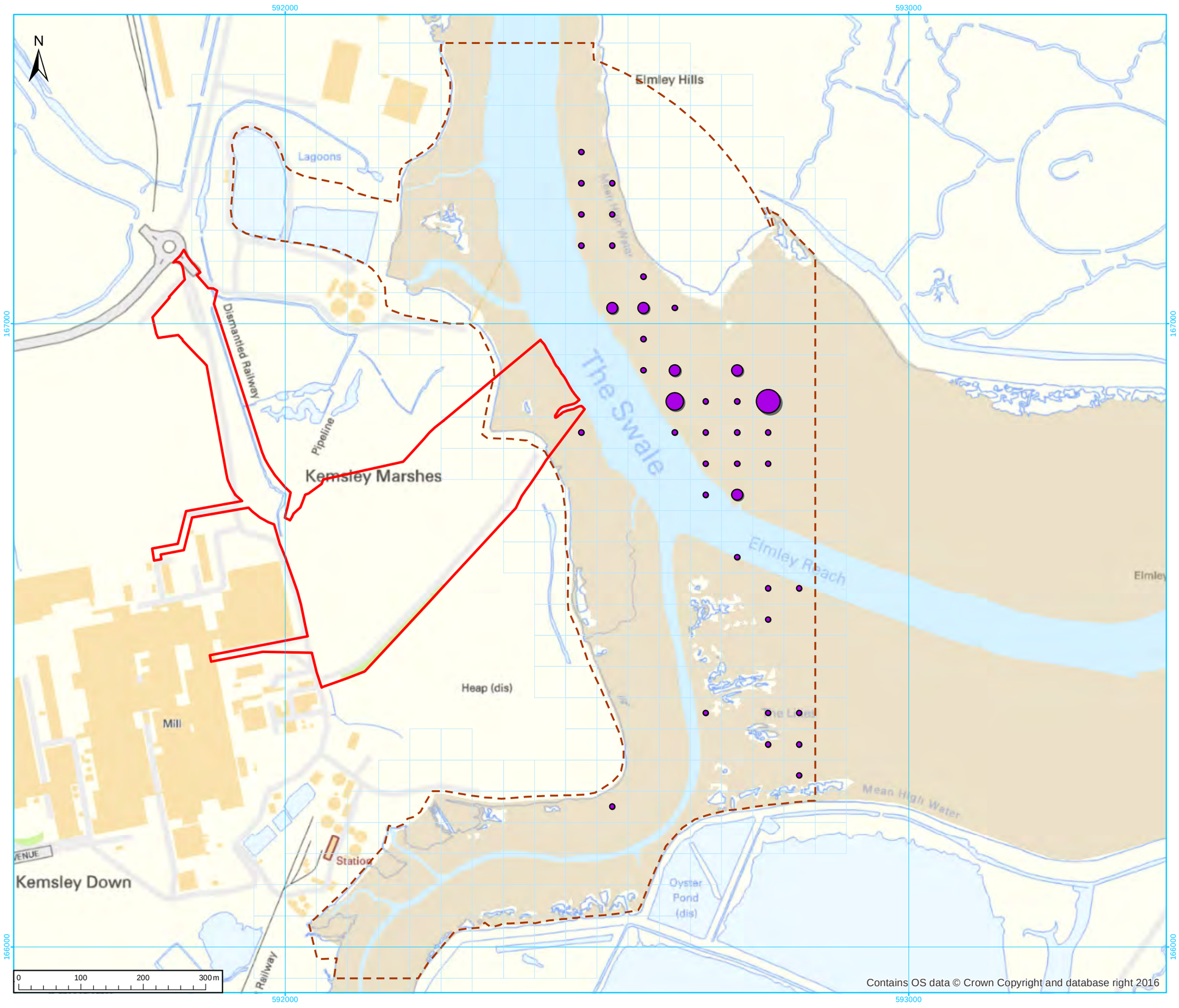

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Application boundary

Survey boundary

Dunlin

Bird Numbers

- 1 - 50
- 51 - 130
- 131 - 250
- 251 - 520

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Status	Drawn By	PM/Checked By
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Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.48		A

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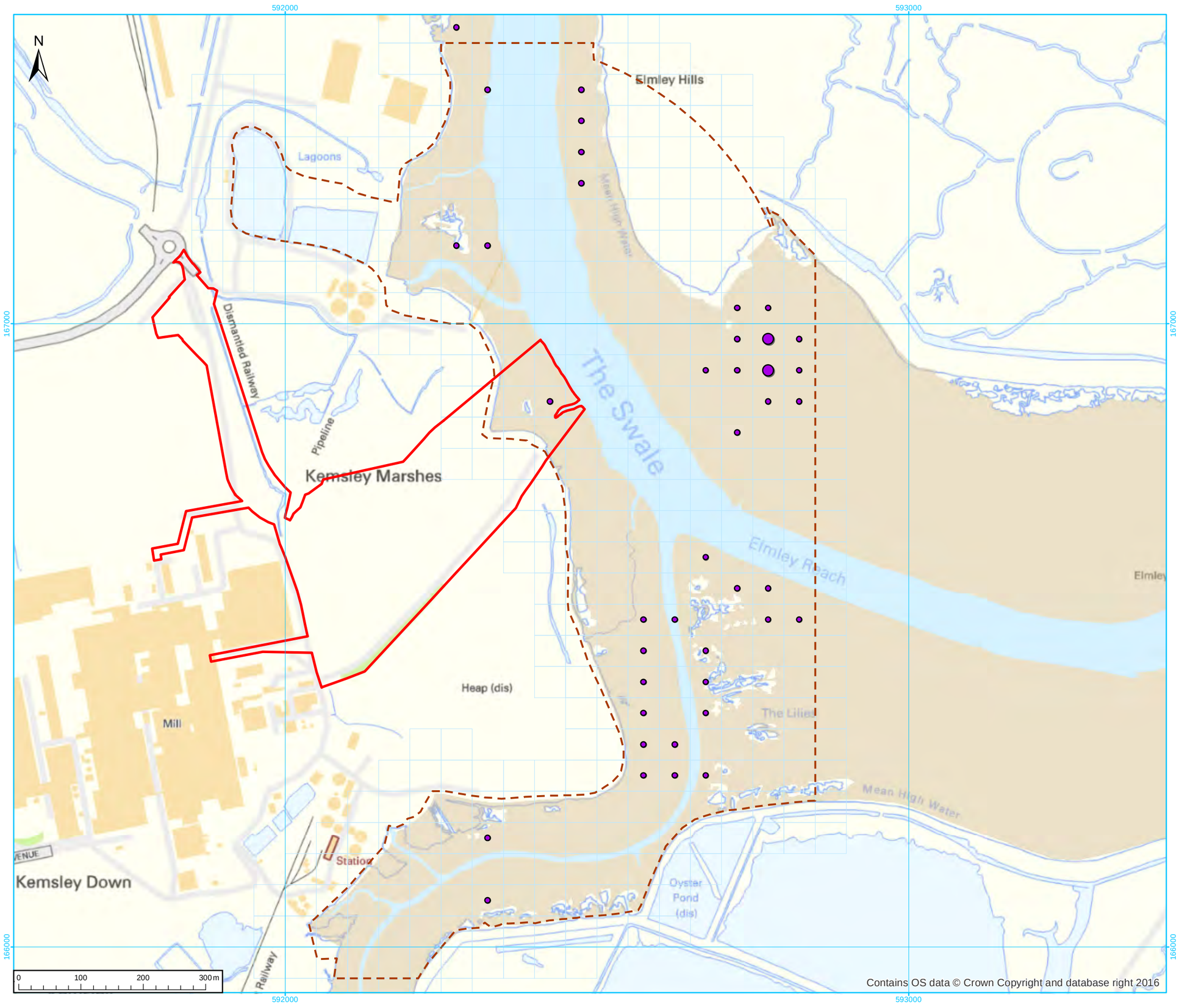

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Status	Drawn By	PM/Checked By
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Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.49		A

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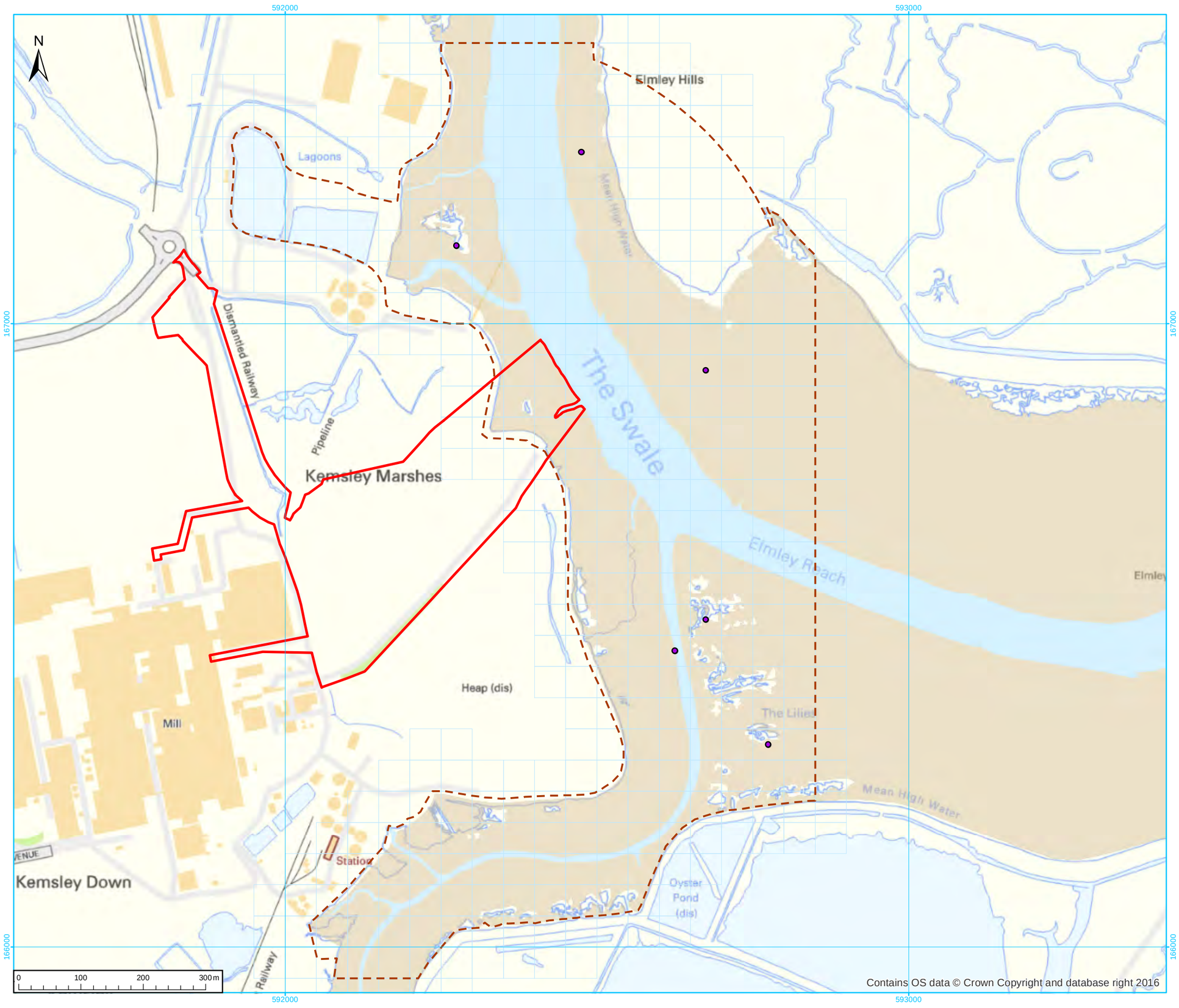

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Survey boundary

Dunlin

Bird Numbers

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- 131 - 250
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Status	Drawn By	PM/Checked By
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OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.50		A

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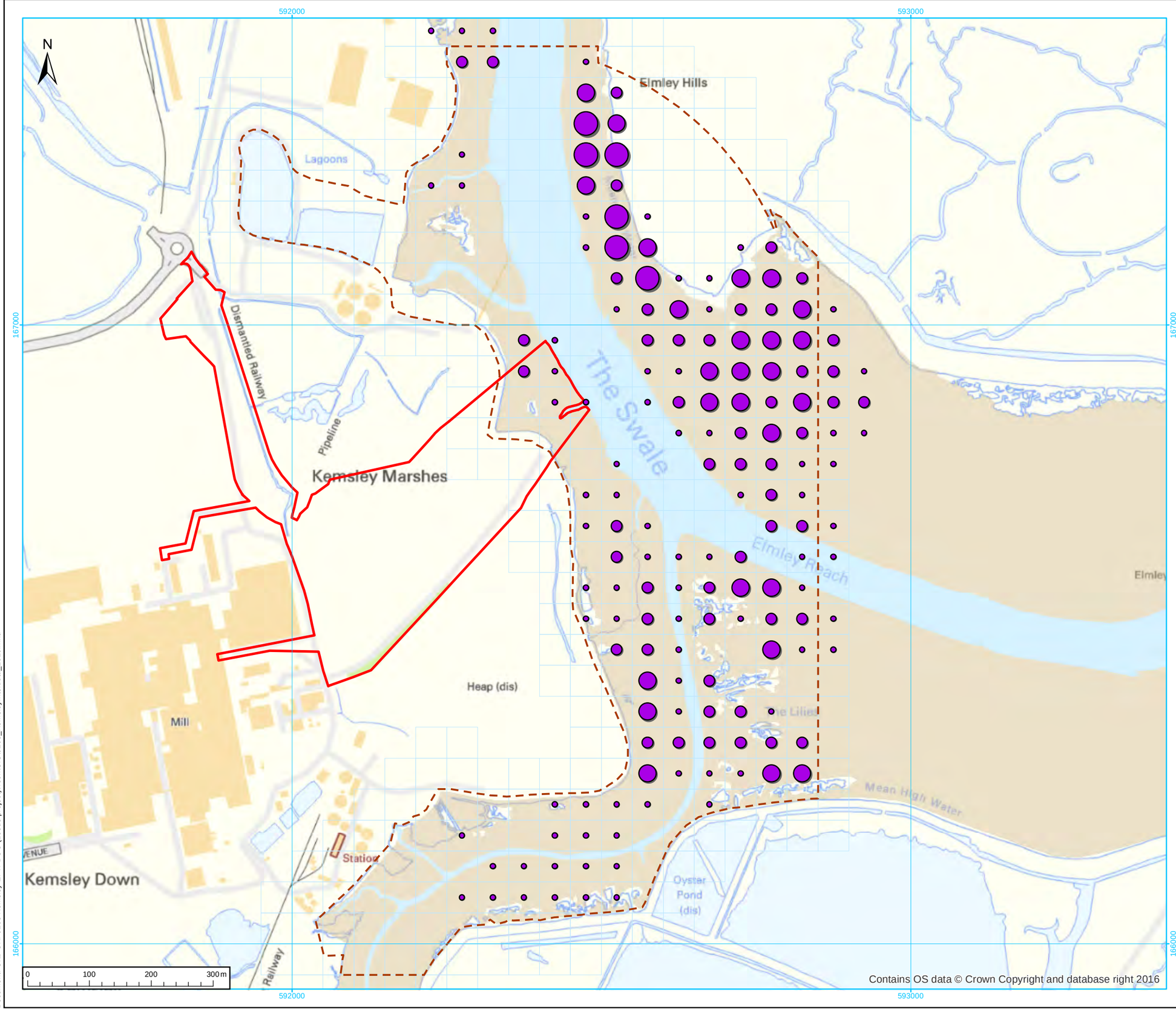

Notes

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Legend

- Application boundary
- Survey boundary

Dunlin

Bird Numbers

- 1 - 50
- 51 - 130
- 131 - 250
- 251 - 520

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Dunlin at High Tide, in Winter (Jan, Feb, Nov, Dec) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.51		A

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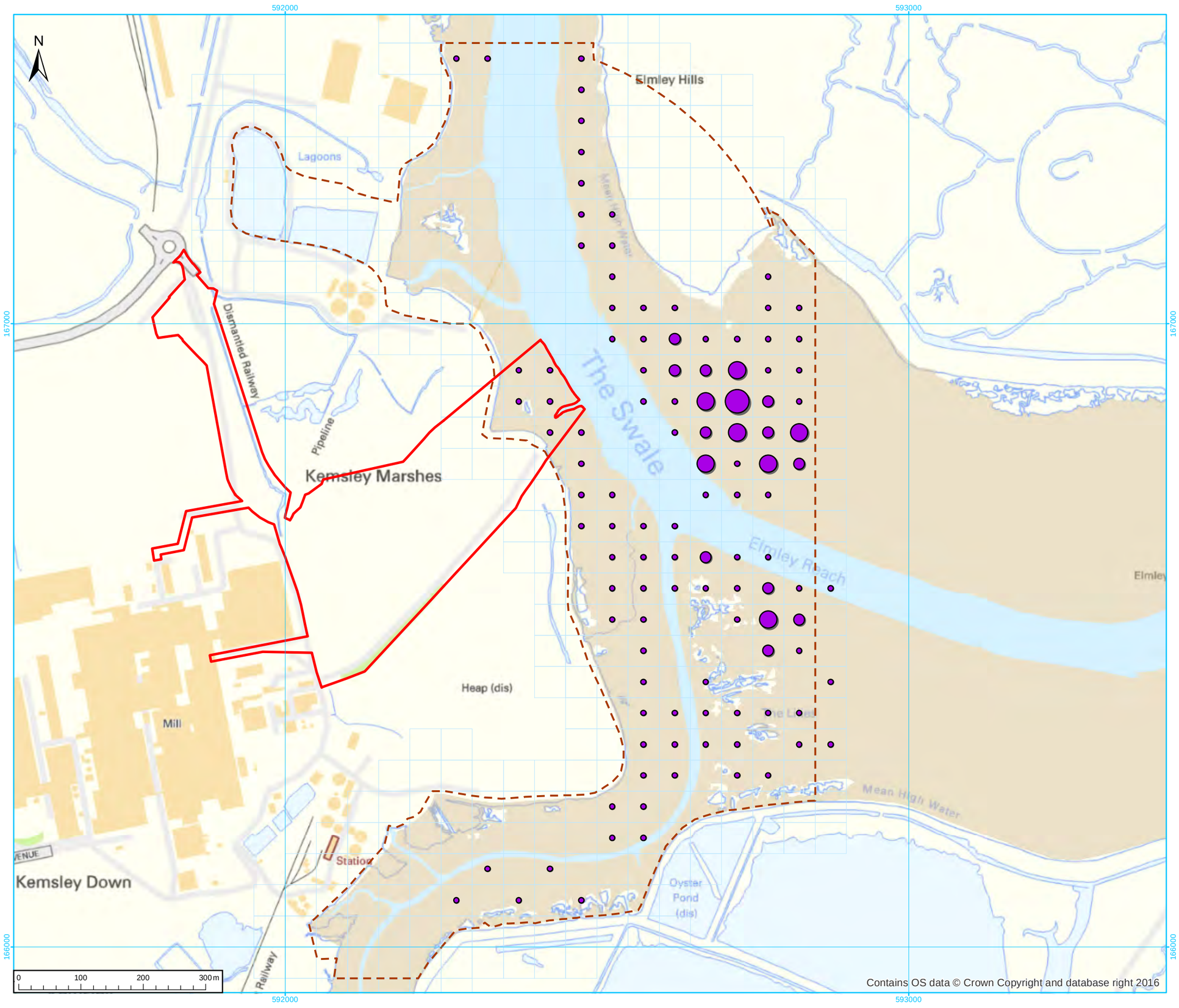

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Legend

- Application boundary
- Survey boundary

Dunlin

Bird Numbers

- 1 - 50
- 51 - 130
- 131 - 250
- 251 - 520

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Dunlin at Low Tide, in Winter (Jan, Feb, Nov, Dec) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.52		A

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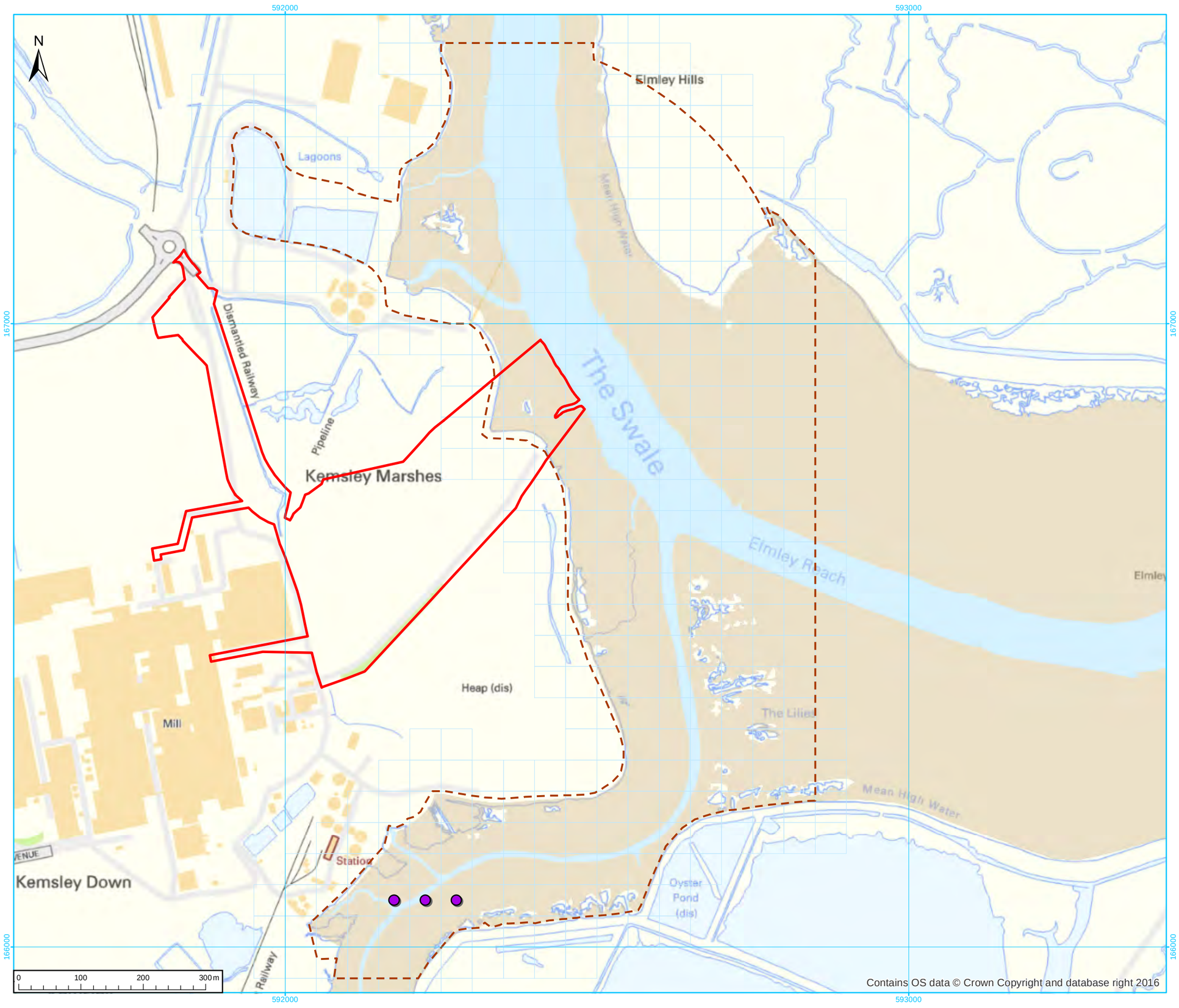

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Legend

- Application boundary
- Survey boundary

Greenshank

Bird Numbers

- 1 - 4

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Greenshank at High Tide, in Spring (Mar, Apr, May) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.53		A

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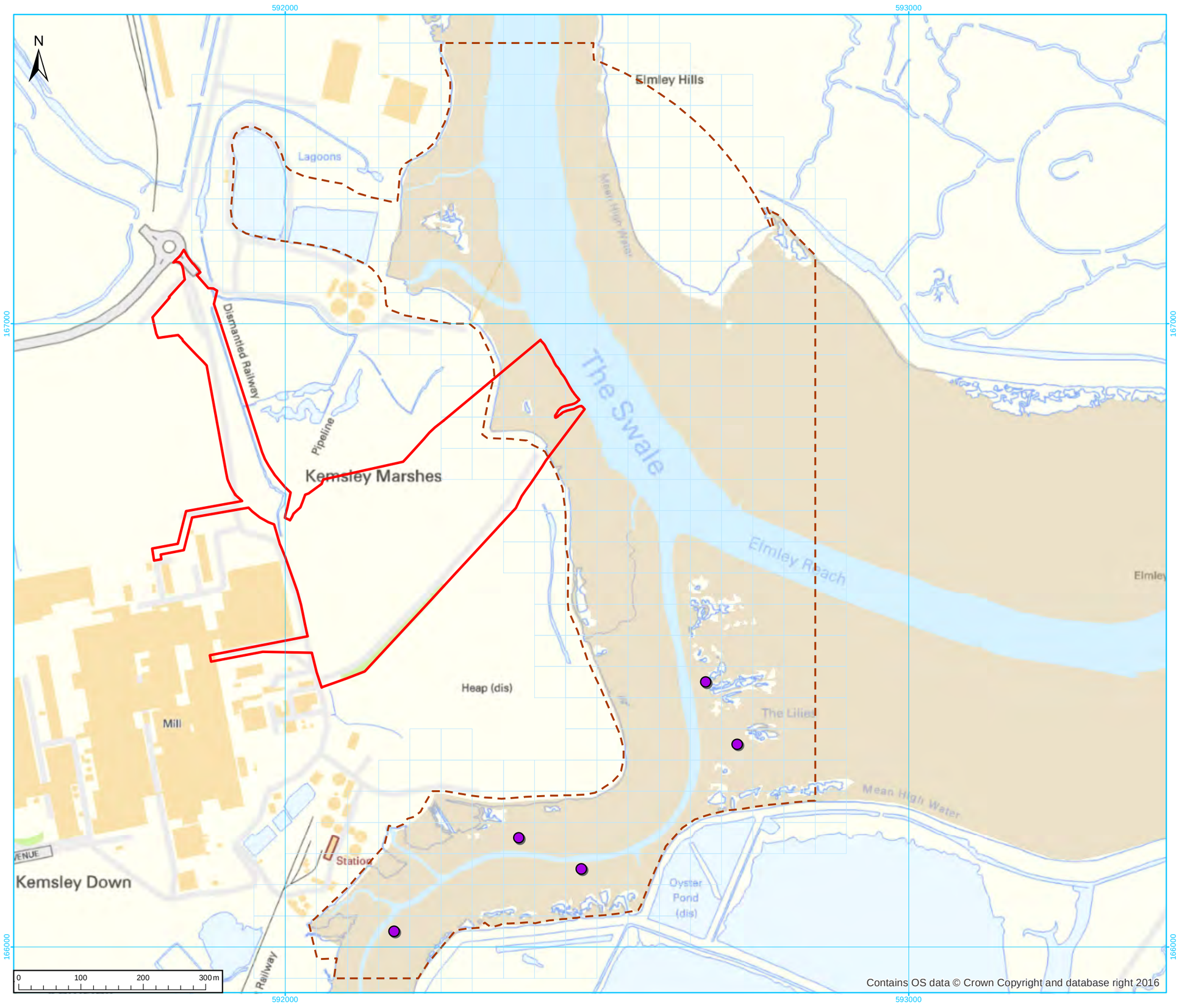

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Legend

- Application boundary
- Survey boundary

Greenshank

Bird Numbers

- 1 - 4

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RPS

Willow Mere House, Compass Point Business Park
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T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

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Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.54		A

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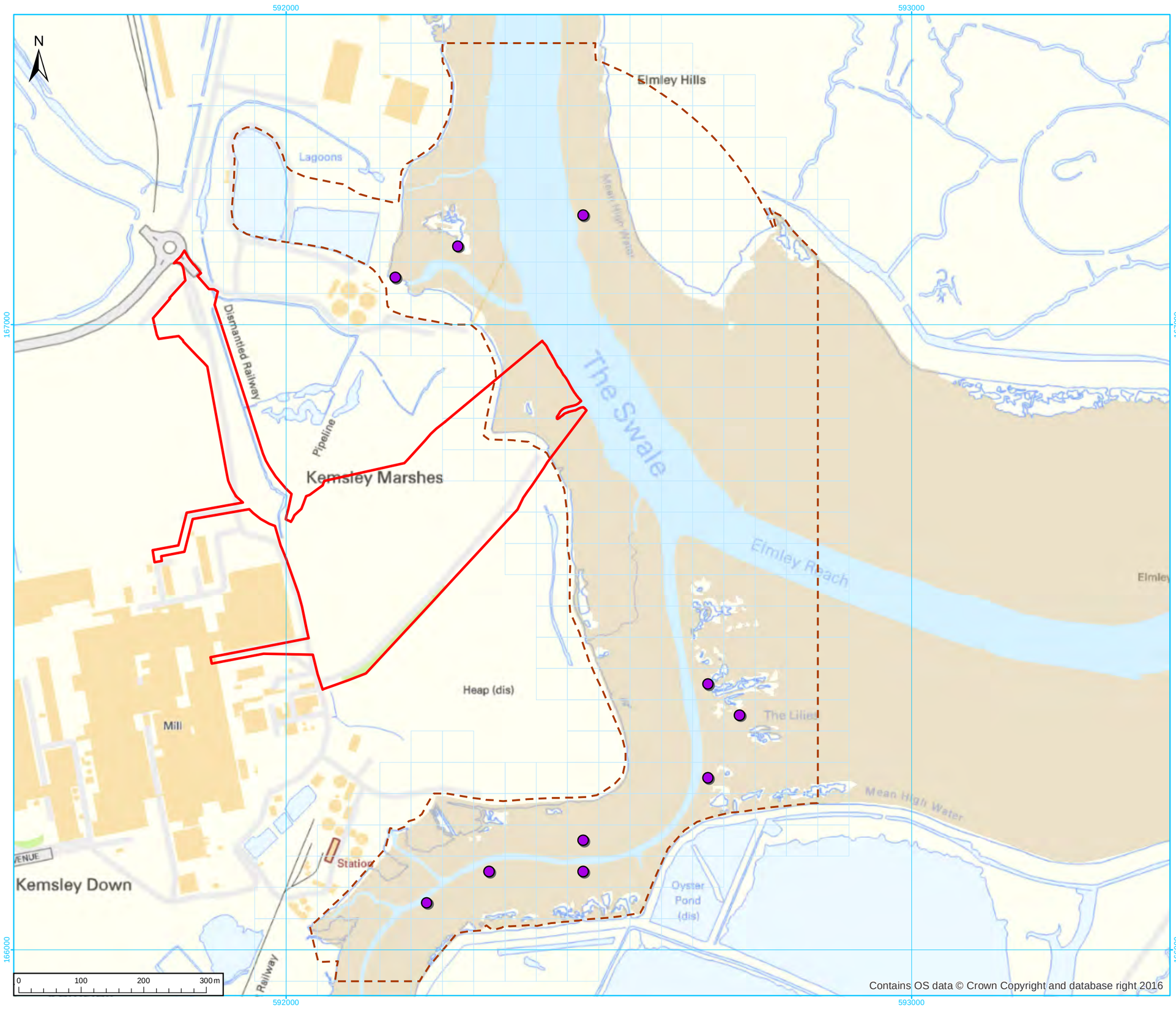

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Legend

Application boundary

Survey boundary

Greenshank

Bird Numbers

1 - 4

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RPS

Willow Mere House, Compass Point Business Park
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T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Greenshank at High Tide, in Autumn (Jul, Aug, Sep, Oct) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.55		A

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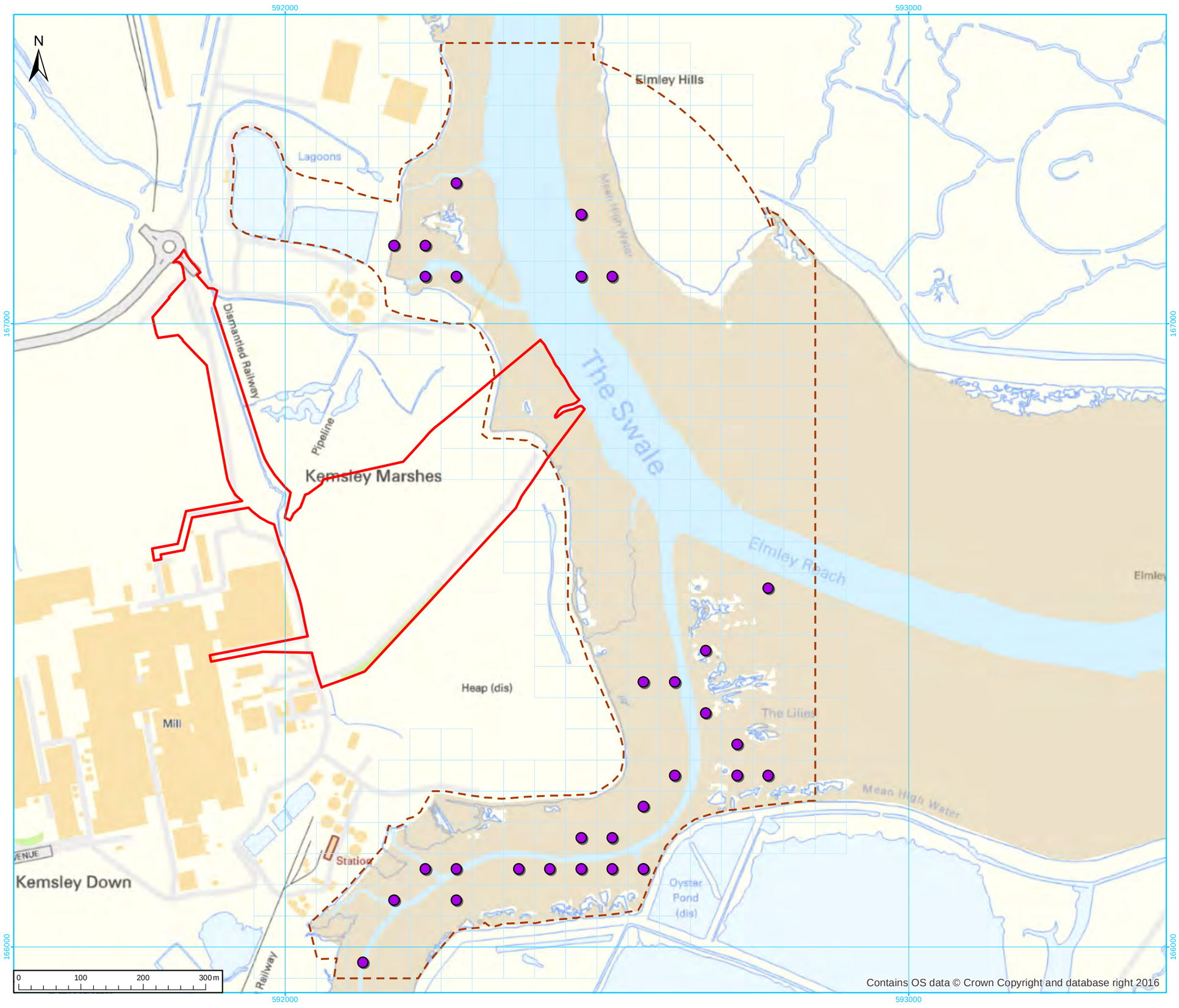

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Legend

- Application boundary
- Survey boundary

Greenshank

Bird Numbers

- 1 - 4

Rev	Description	Date	Initial	Checked

RPS

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Project: Kemsley

Title: Distribution of Greenshank at Low Tide, in Autumn (Jul, Aug, Sep, Oct) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.56		A

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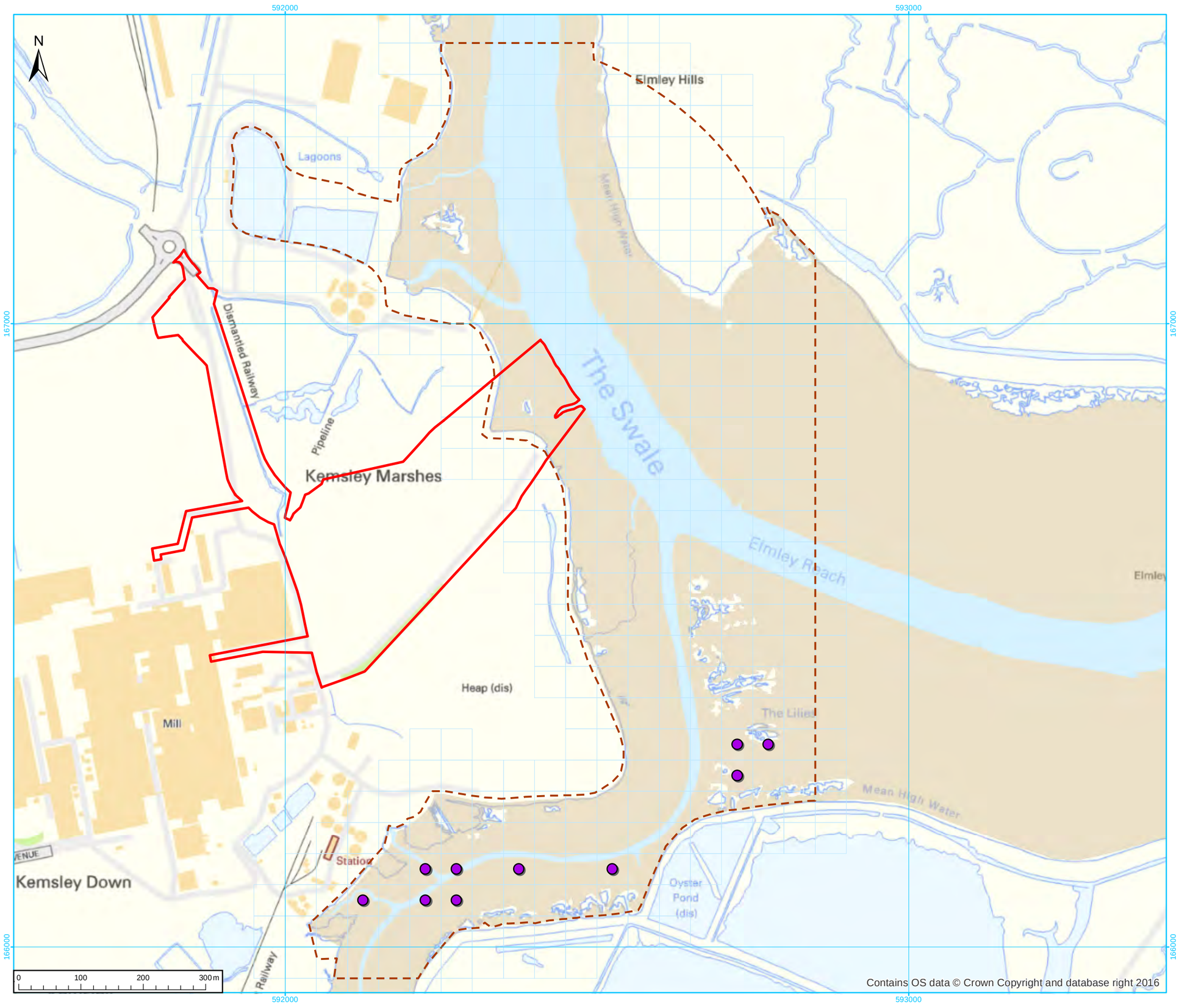

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Legend

- Application boundary
- Survey boundary

Greenshank

Bird Numbers

- 1 - 4

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Greenshank at Low Tide, in Winter (Jan, Feb, Nov, Dec) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.57		A

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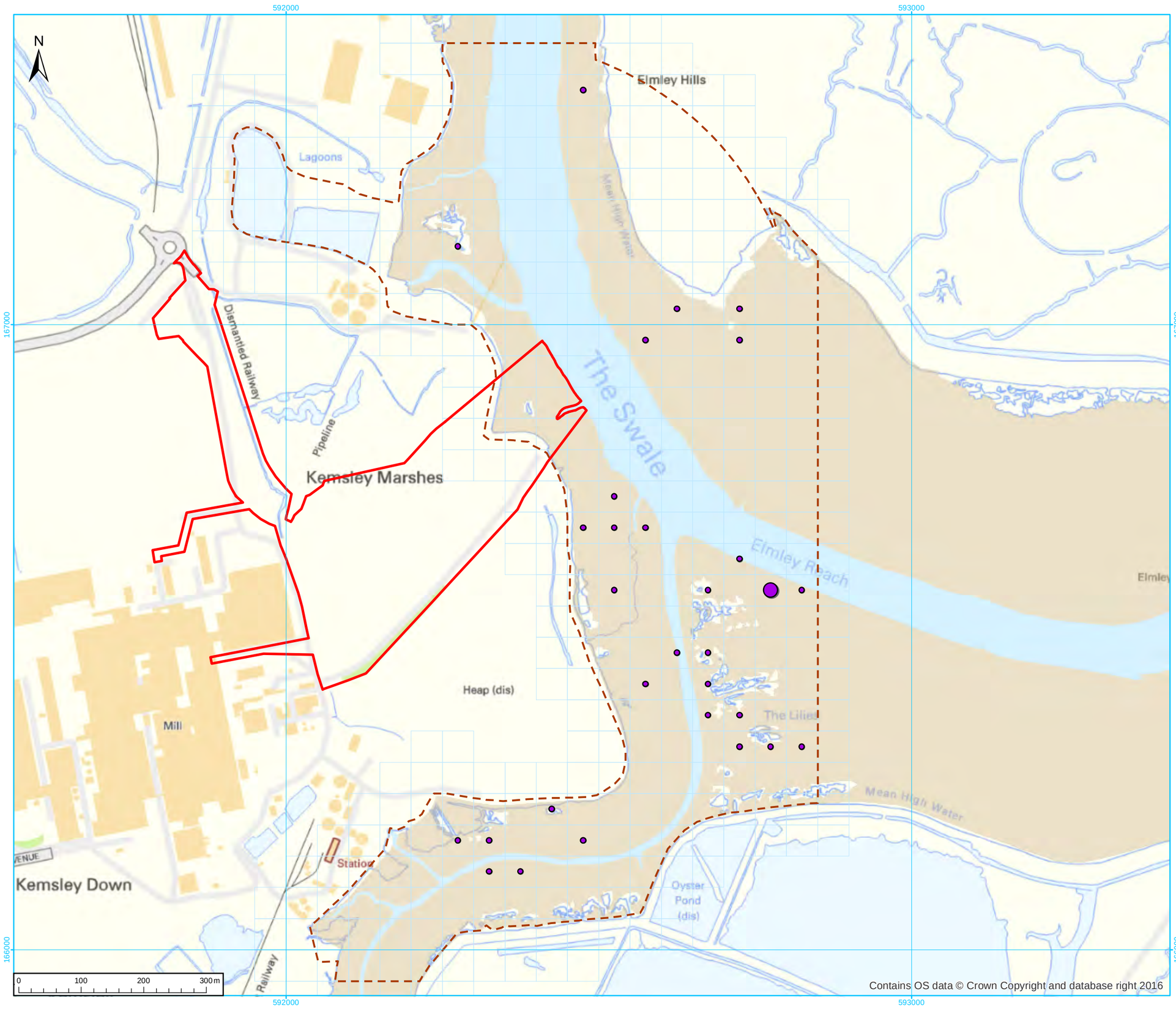

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Legend

- Application boundary
- Survey boundary

Grey Plover

Bird Numbers

- 1 - 6
- 7 - 25
- 26 - 55

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Grey Plover at High Tide, in Spring (Mar, Apr, May) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.58		A

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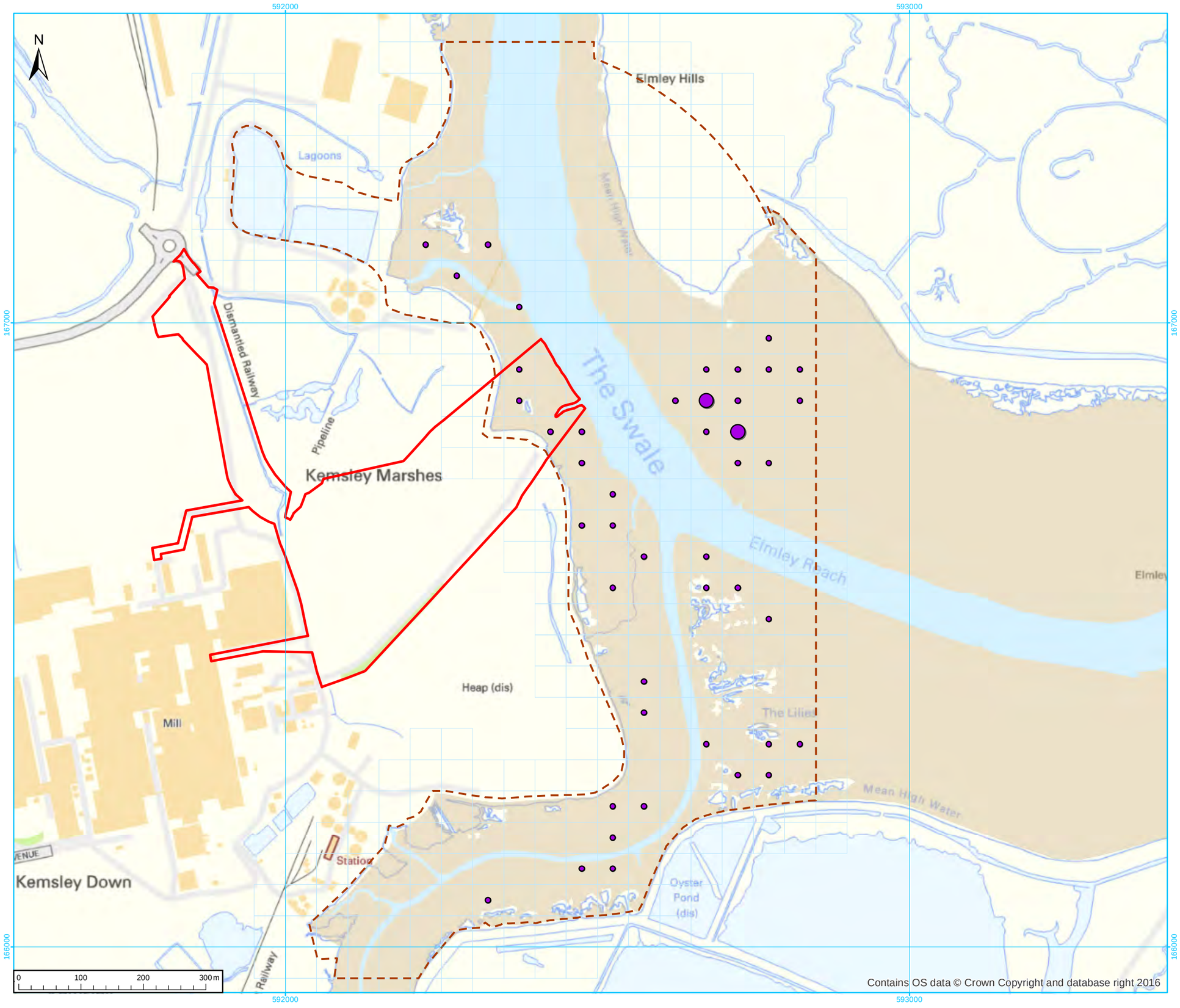

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Legend

- Application boundary
- Survey boundary

Grey Plover

Bird Numbers

- 1 - 6
- 7 - 25
- 26 - 55

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Grey Plover at Low Tide, in Spring (Mar, Apr, May) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.59		A

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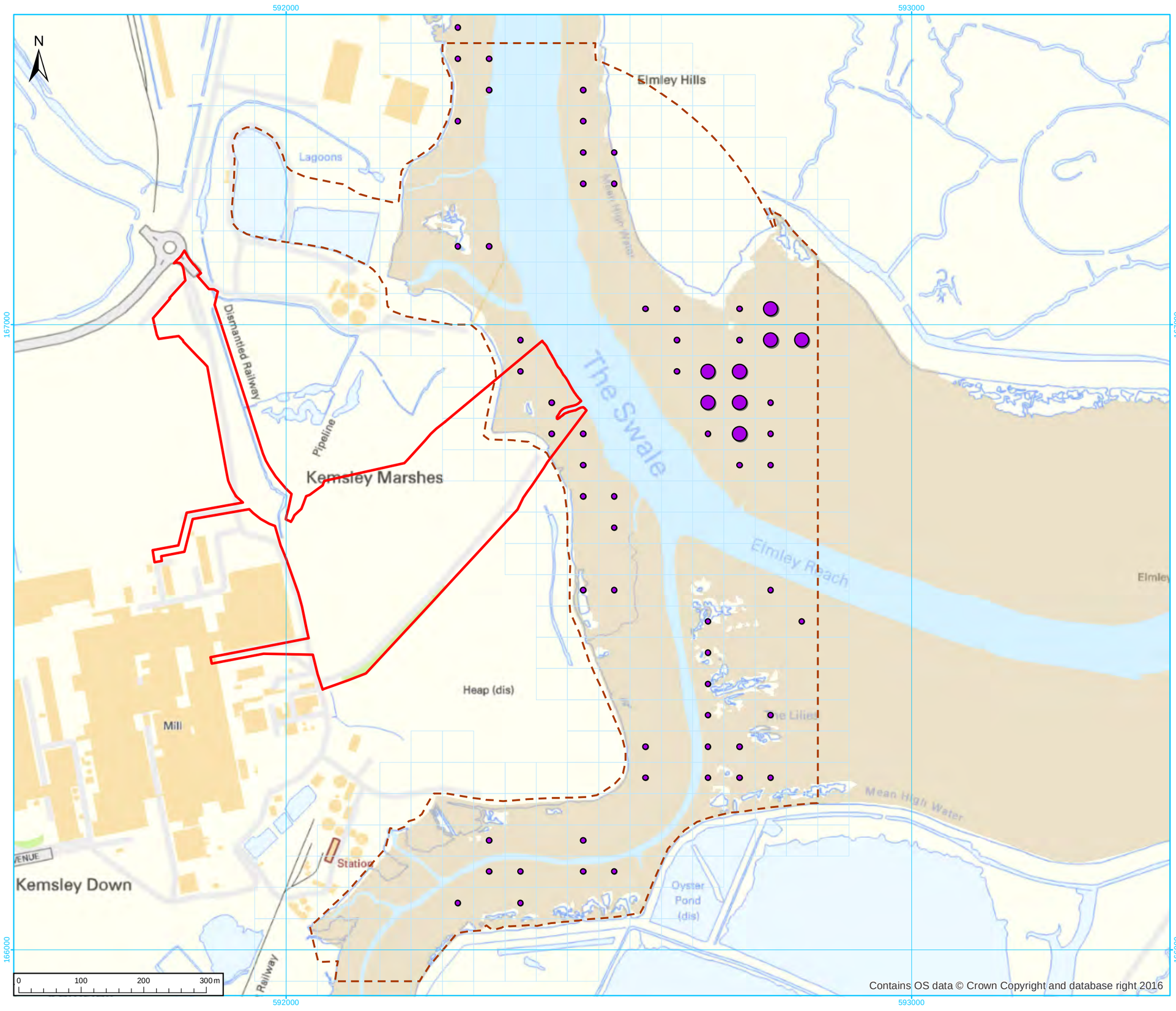

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Legend

Application boundary

Survey boundary

Grey Plover

Bird Numbers

- 1 - 6
- 7 - 25
- 26 - 55

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Grey Plover at High Tide, in Autumn (Jul, Aug, Sep, Oct) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.60		A

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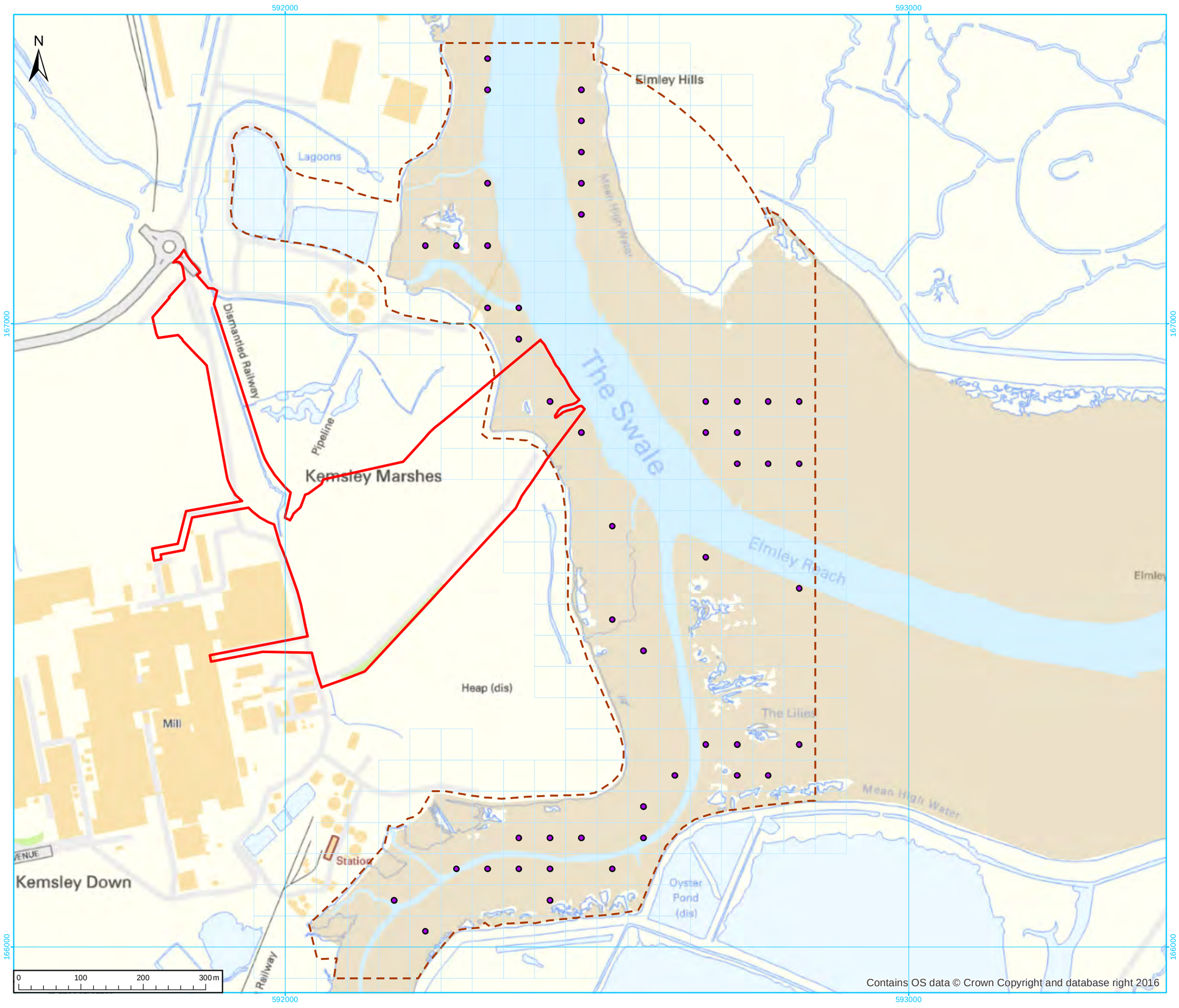

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Legend

- Application boundary
- Survey boundary

Grey Plover

Bird Numbers

- 1 - 6
- 7 - 25
- 26 - 55

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
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Client: Wheelabrator Technologies Inc.

Project: Kemsley

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Status	Drawn By	PM/Checked By
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Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.61		A

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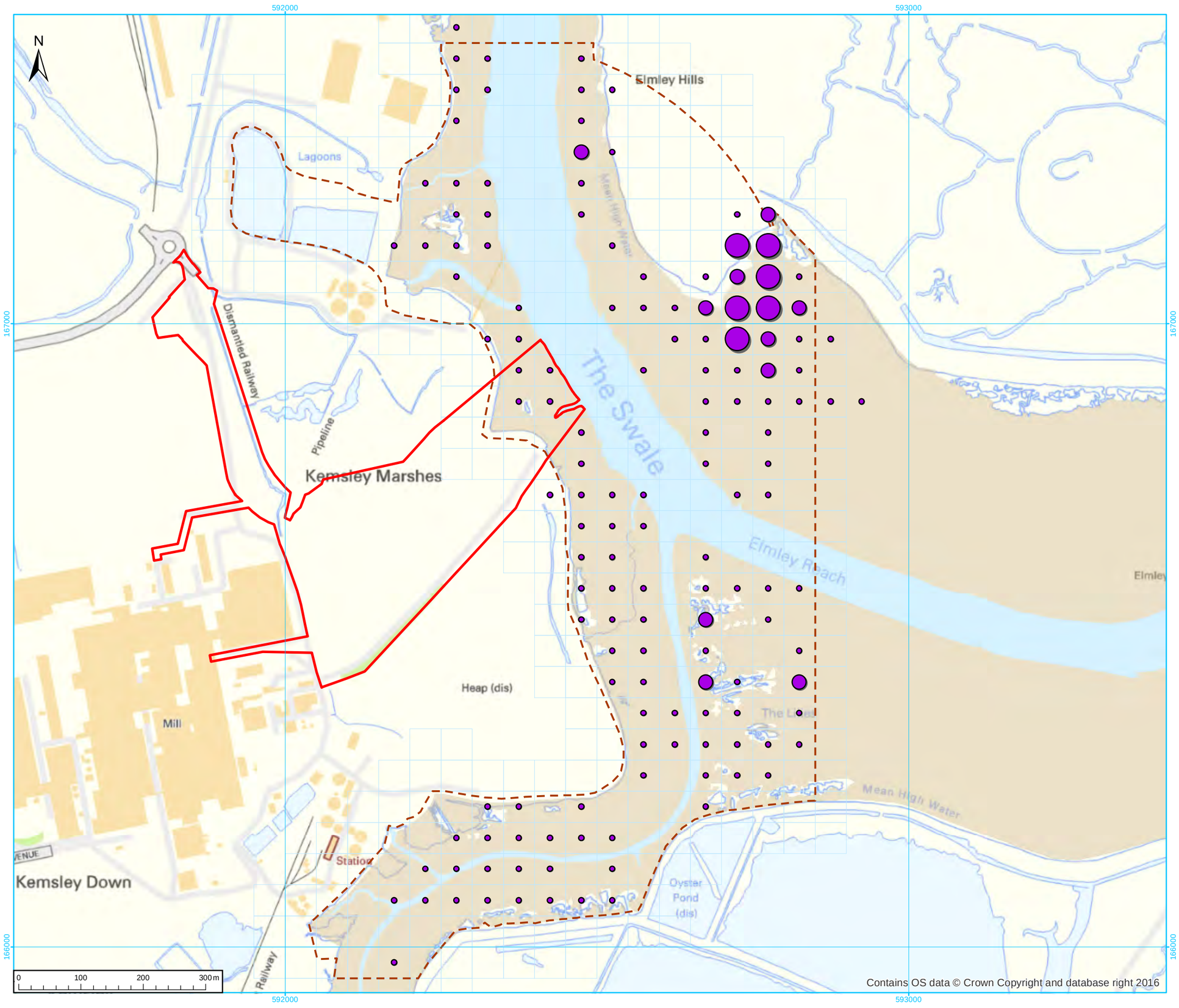

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Legend

- Application boundary
- Survey boundary

Grey Plover

Bird Numbers

- 1 - 6
- 7 - 25
- 26 - 55

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Grey Plover at High Tide, in Winter (Jan, Feb, Nov, Dec) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.62		A

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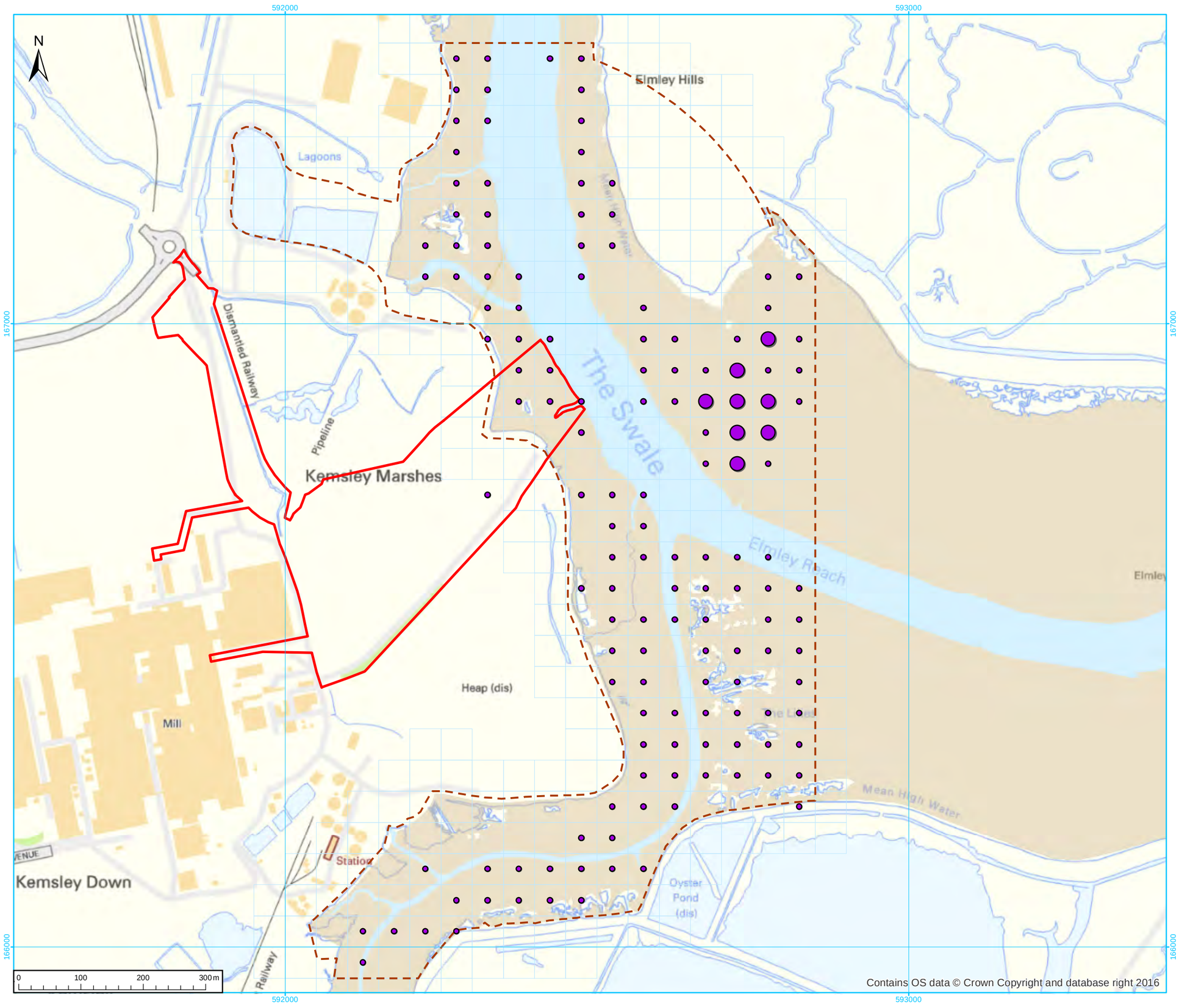

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Grey Plover

Bird Numbers

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Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.63		A

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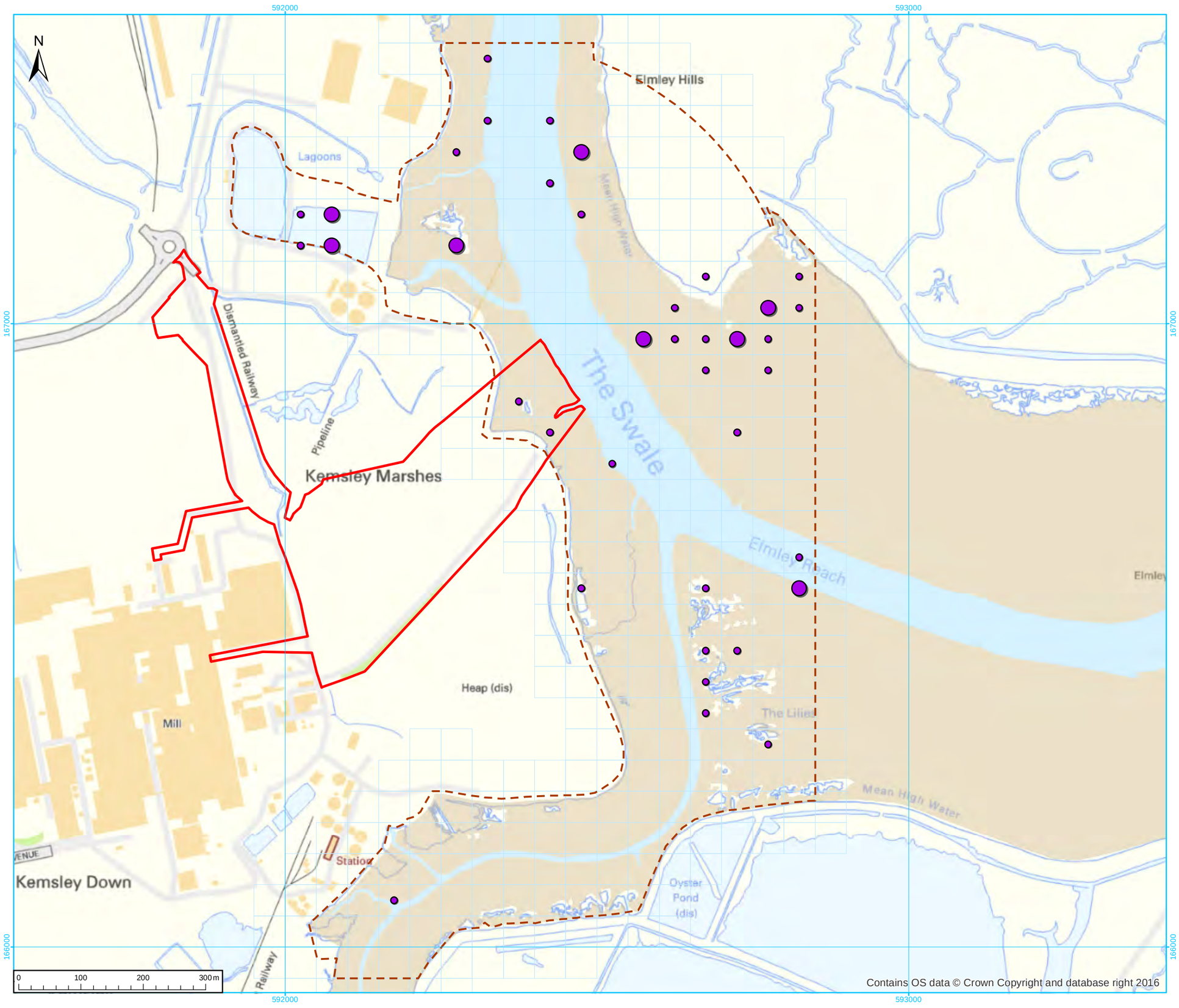

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Legend

- Application boundary
- Survey boundary

Herring Gull

Bird Numbers

- 1 - 5
- 6 - 15
- 16 - 30

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Herring Gull at High Tide, in Spring (Mar, Apr, May) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.64		A

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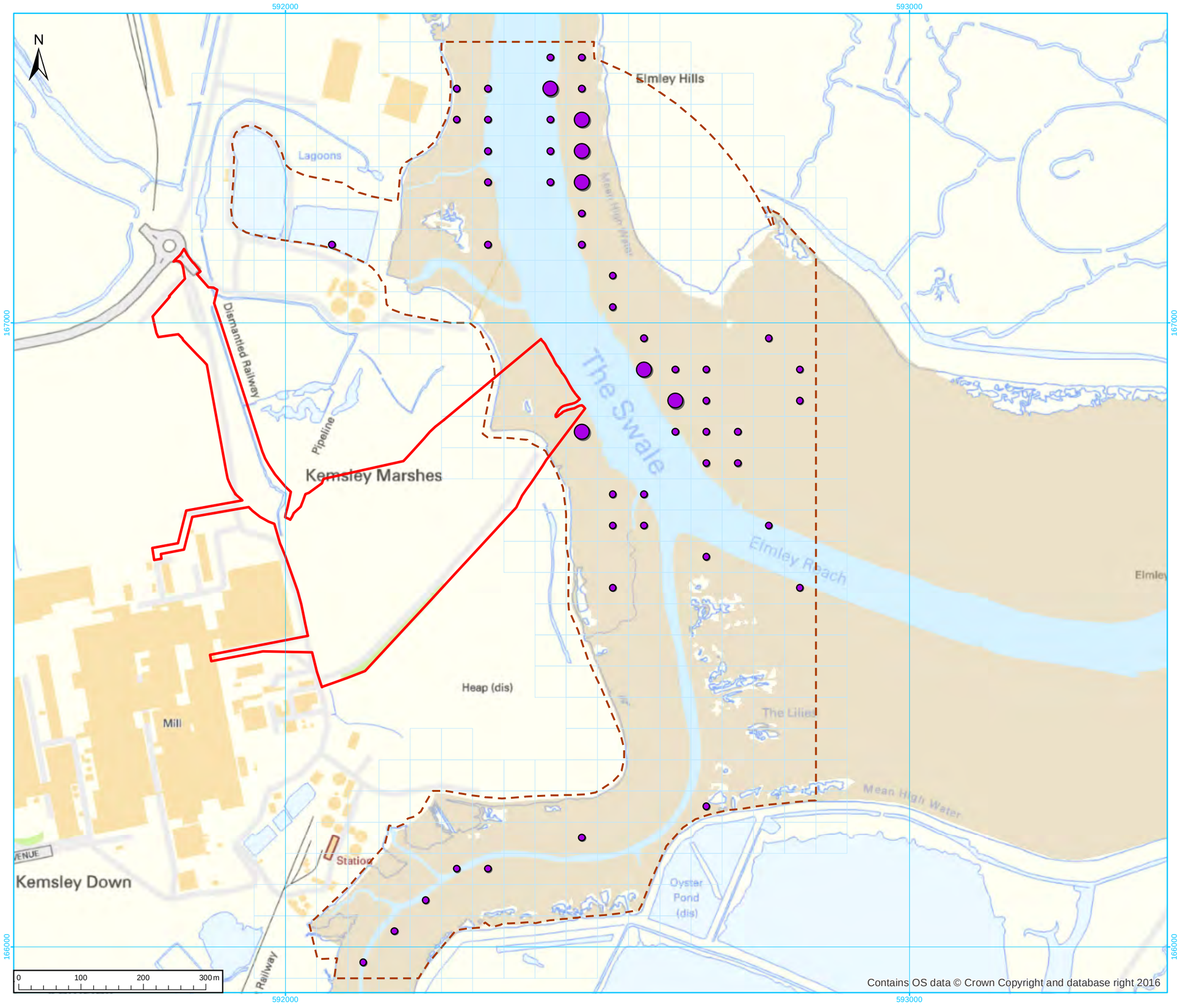

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Herring Gull

Bird Numbers

- 1 - 5
- 6 - 15
- 16 - 30

Rev	Description	Date	Initial	Checked

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Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
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Figure 3.65		A

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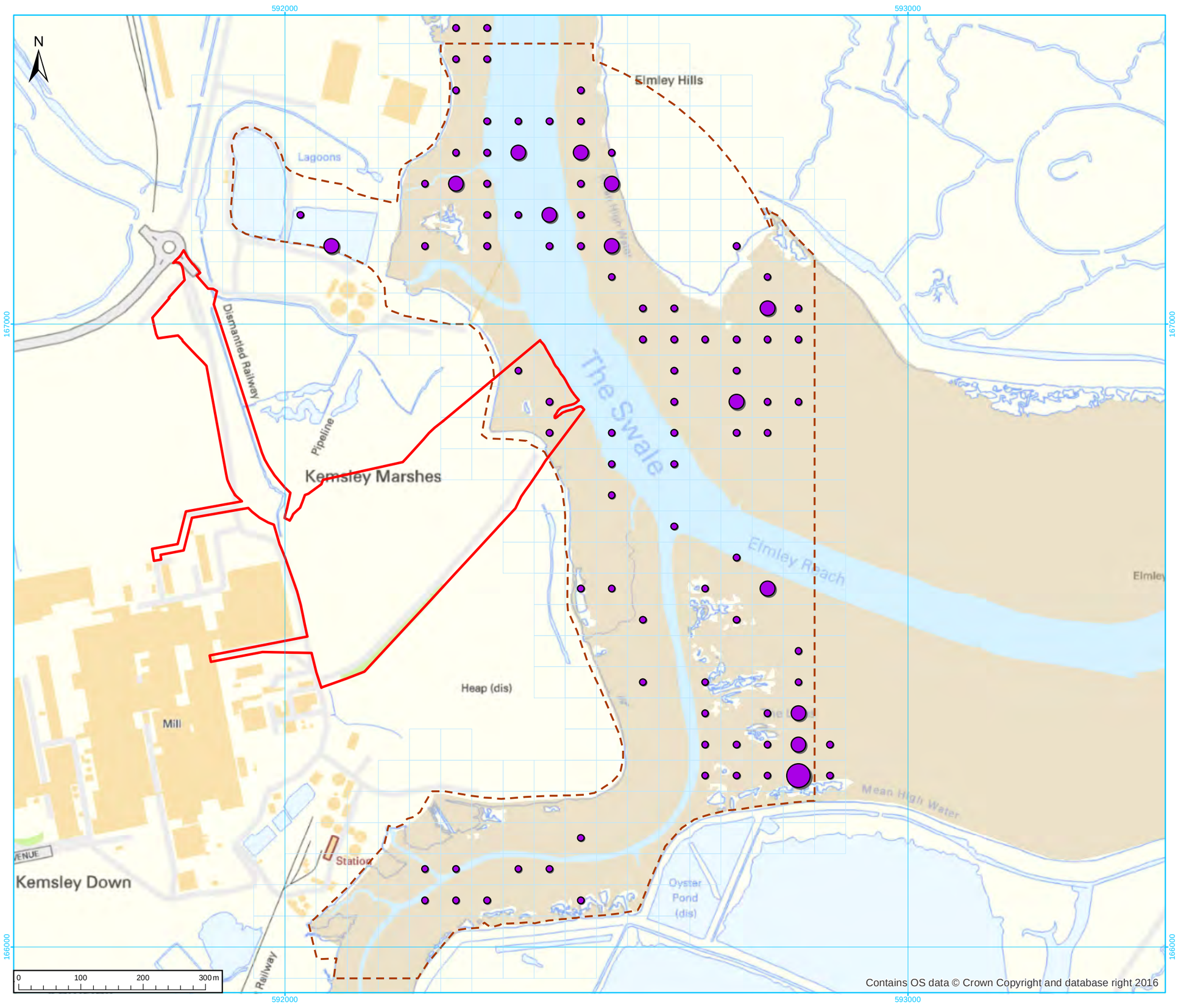

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Herring Gull

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Drawing Number		**Rev**
Figure 3.66		A

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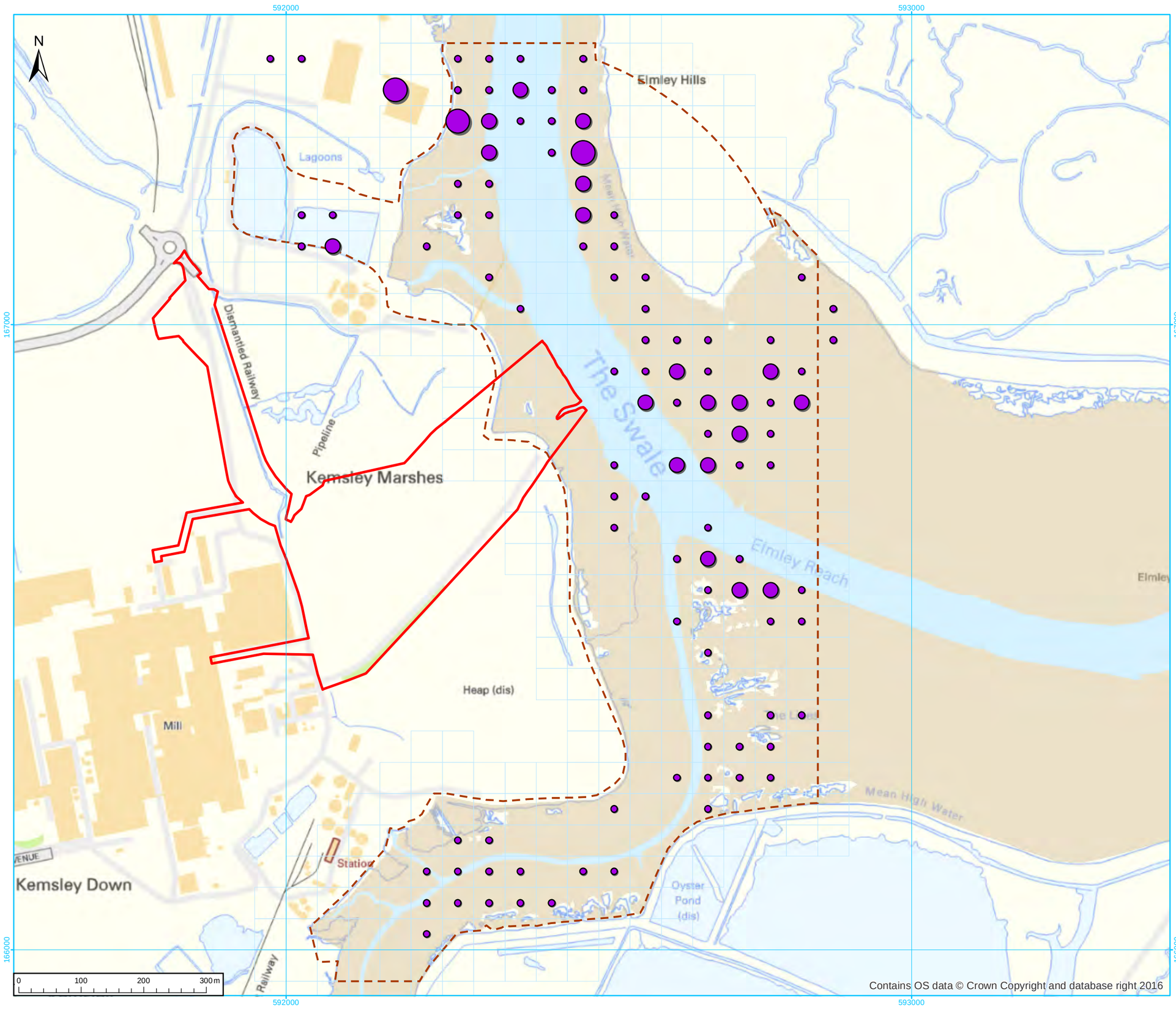

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Legend

- Application boundary
- Survey boundary

Herring Gull

Bird Numbers

- 1 - 5
- 6 - 15
- 16 - 30

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Herring Gull at Low Tide, in Autumn (Jul, Aug, Sep, Oct) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.67		A

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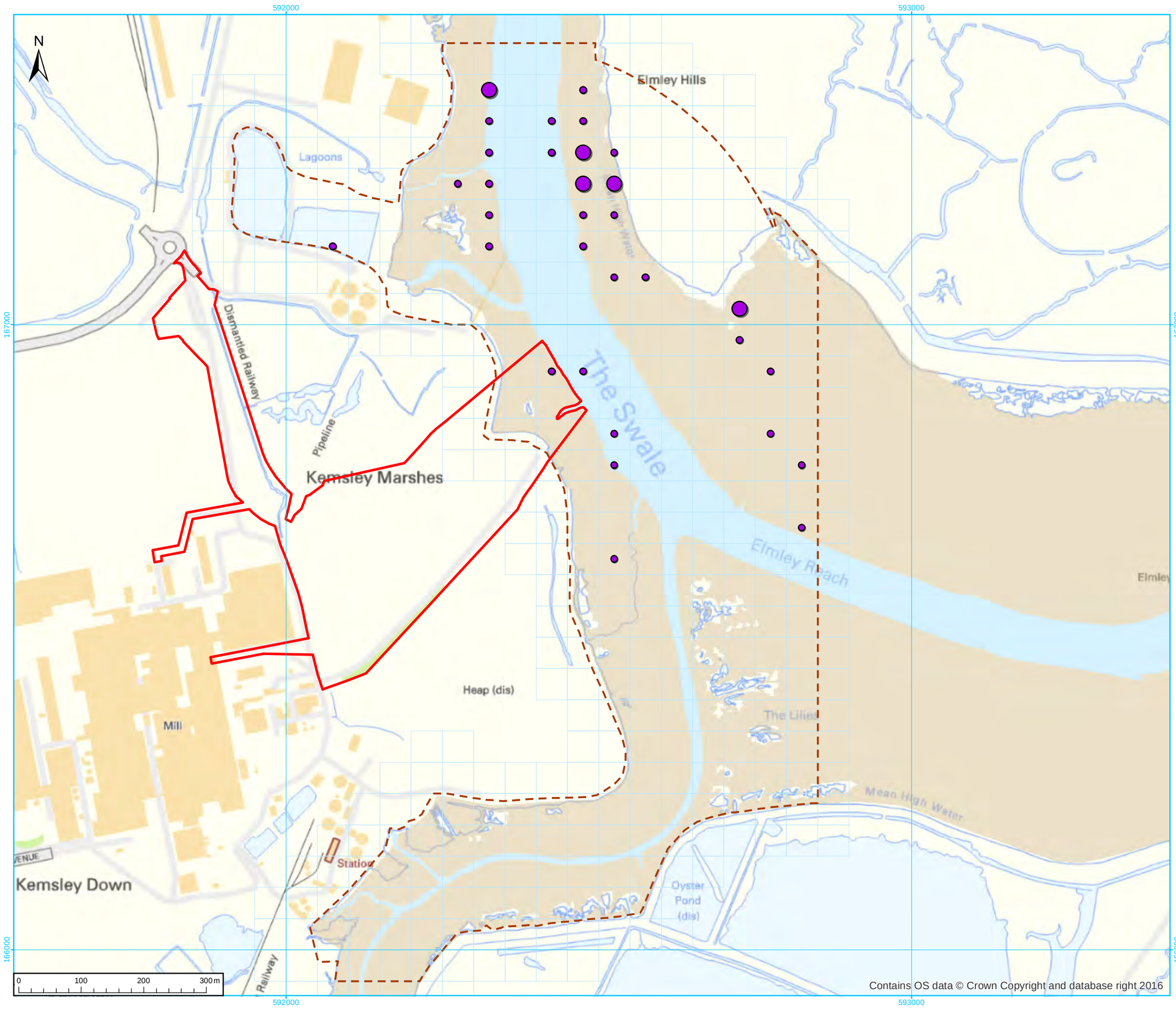

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Legend

- Application boundary
- Survey boundary

Herring Gull

Bird Numbers

- 1 - 5
- 6 - 15
- 16 - 30

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Herring Gull at High Tide, in Winter (Jan, Feb, Nov, Dec) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.68		A

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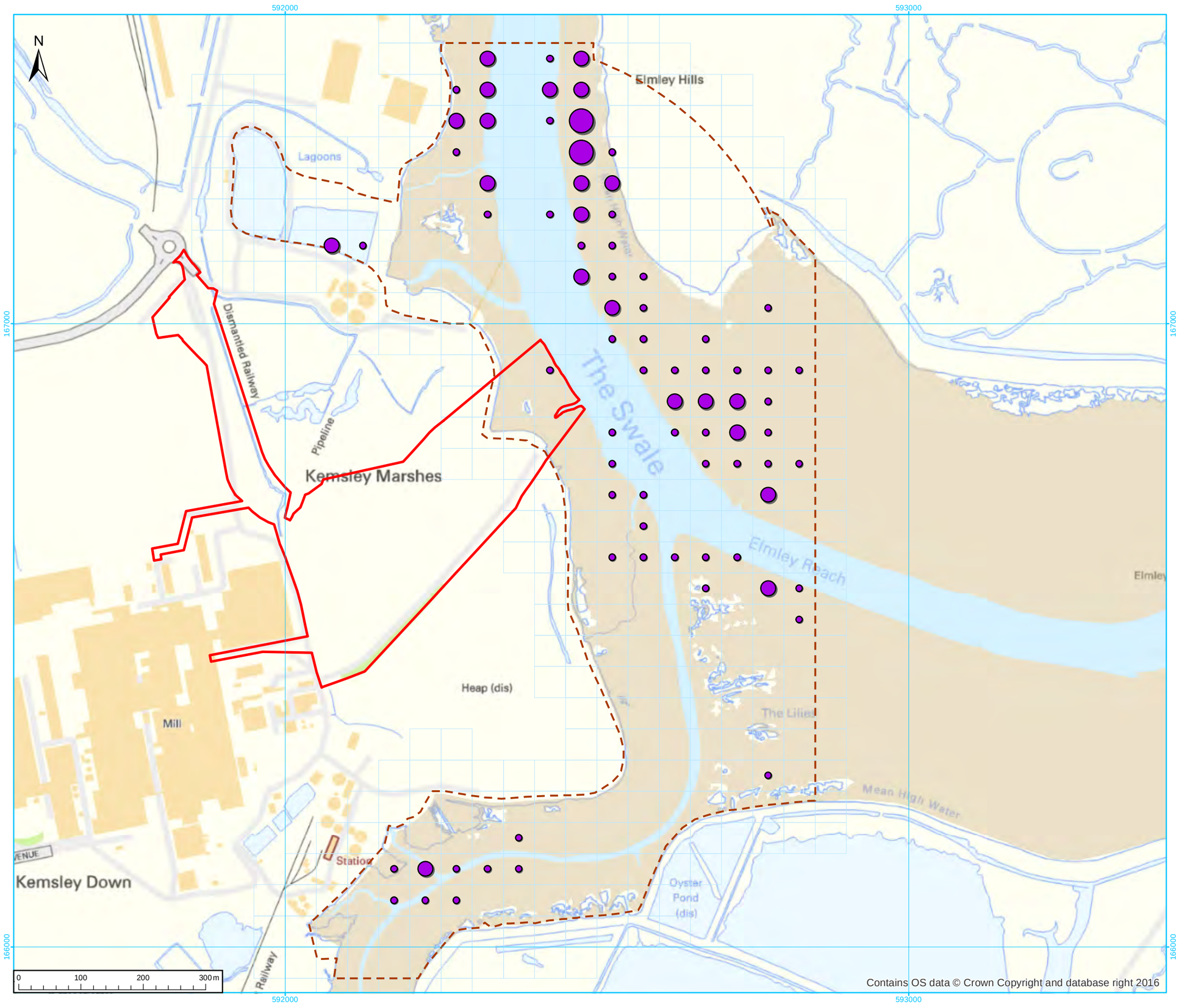

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Legend

- Application boundary
- Survey boundary

Herring Gull

Bird Numbers

- 1 - 5
- 6 - 15
- 16 - 30

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Herring Gull at Low Tide, in Winter (Jan, Feb, Nov, Dec) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.69		A

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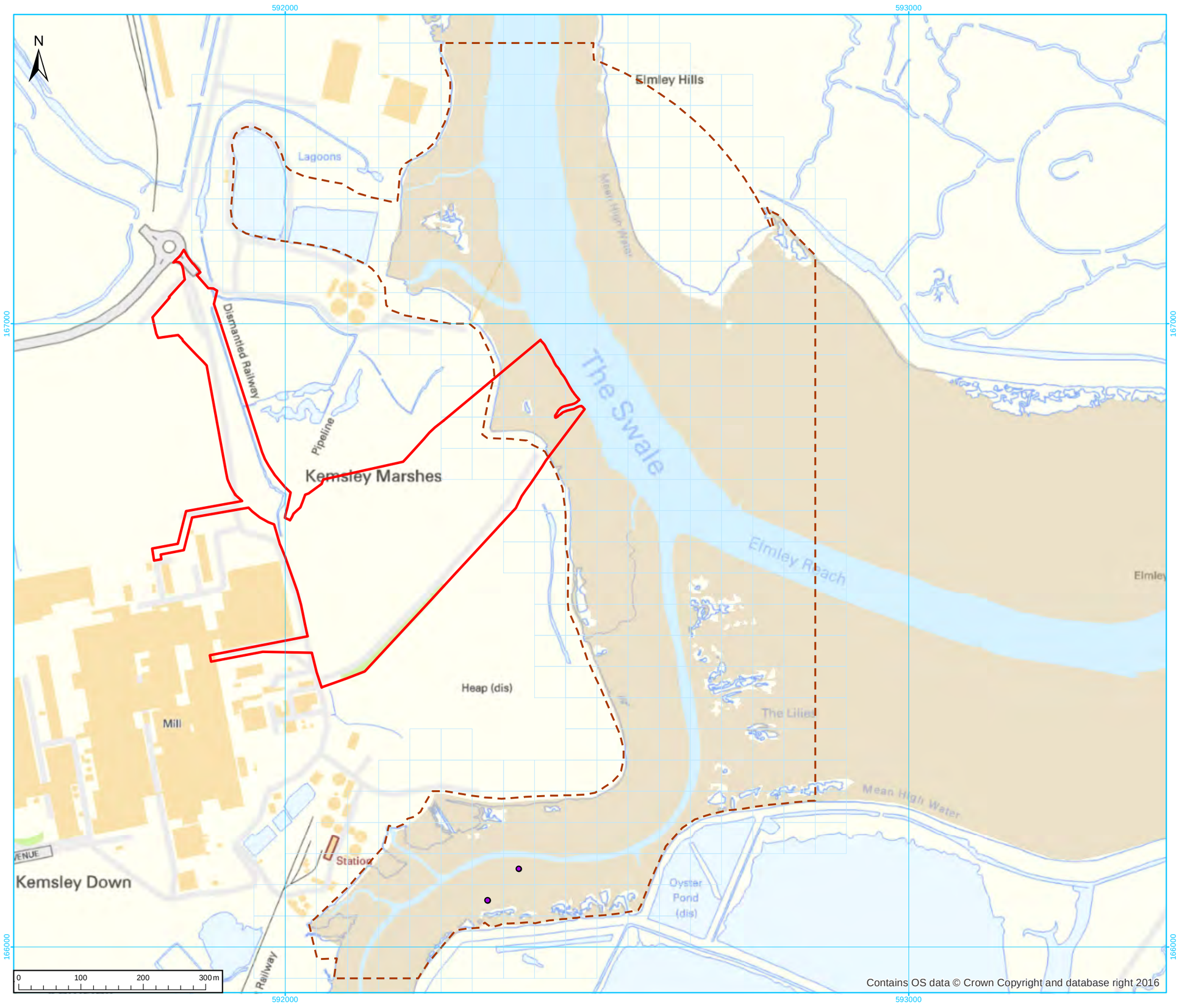

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Legend

- Application boundary
- Survey boundary

Knot

Bird Numbers

- 1 - 10
- 11 - 50
- 51 - 130

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Knot at High Tide, in Spring (Mar, Apr, May) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.70		A

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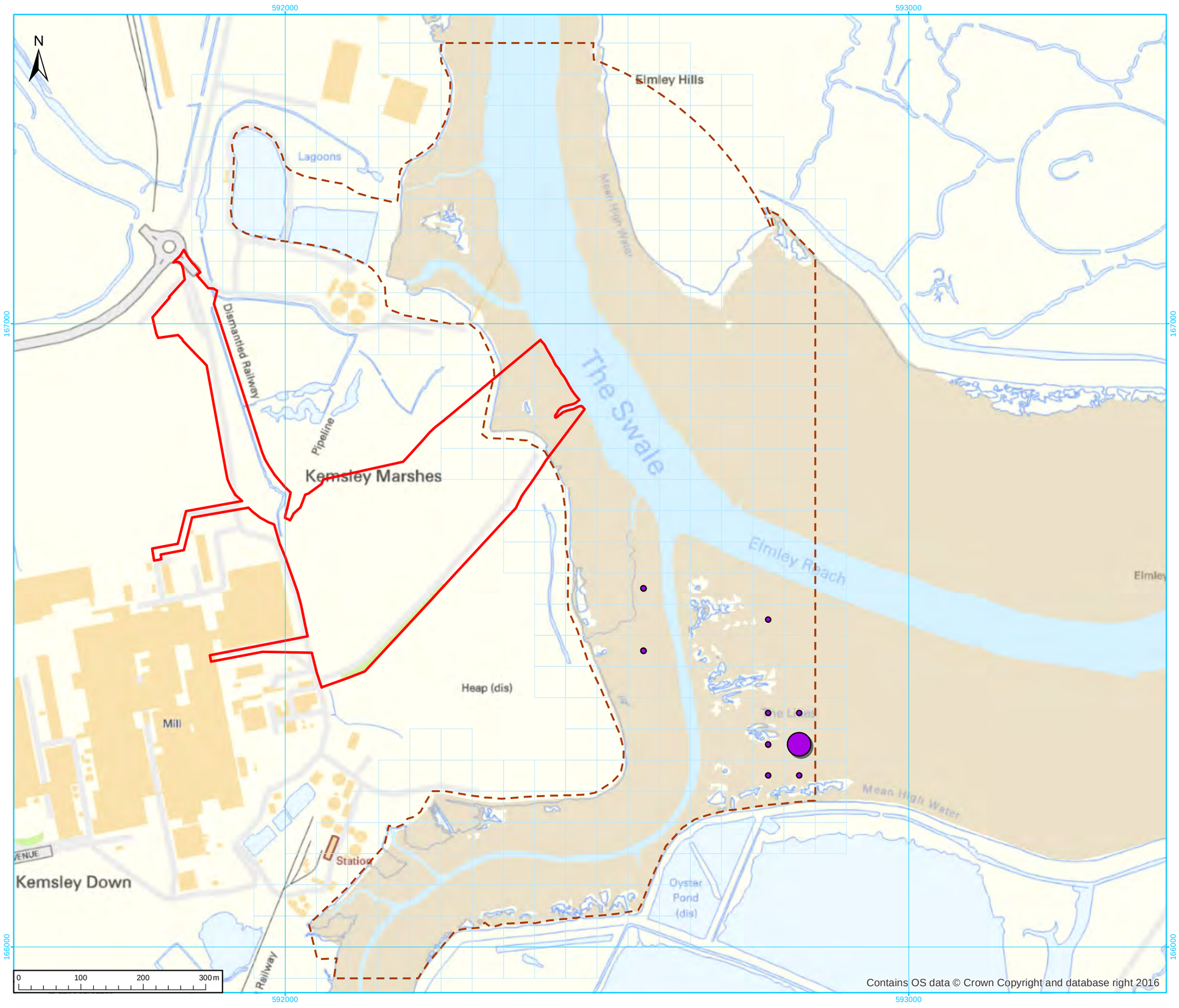

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Legend

- Application boundary
- Survey boundary

Knot

Bird Numbers

- 1 - 10
- 11 - 50
- 51 - 130

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Knot at Low Tide, in Spring (Mar, Apr, May) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.71		A

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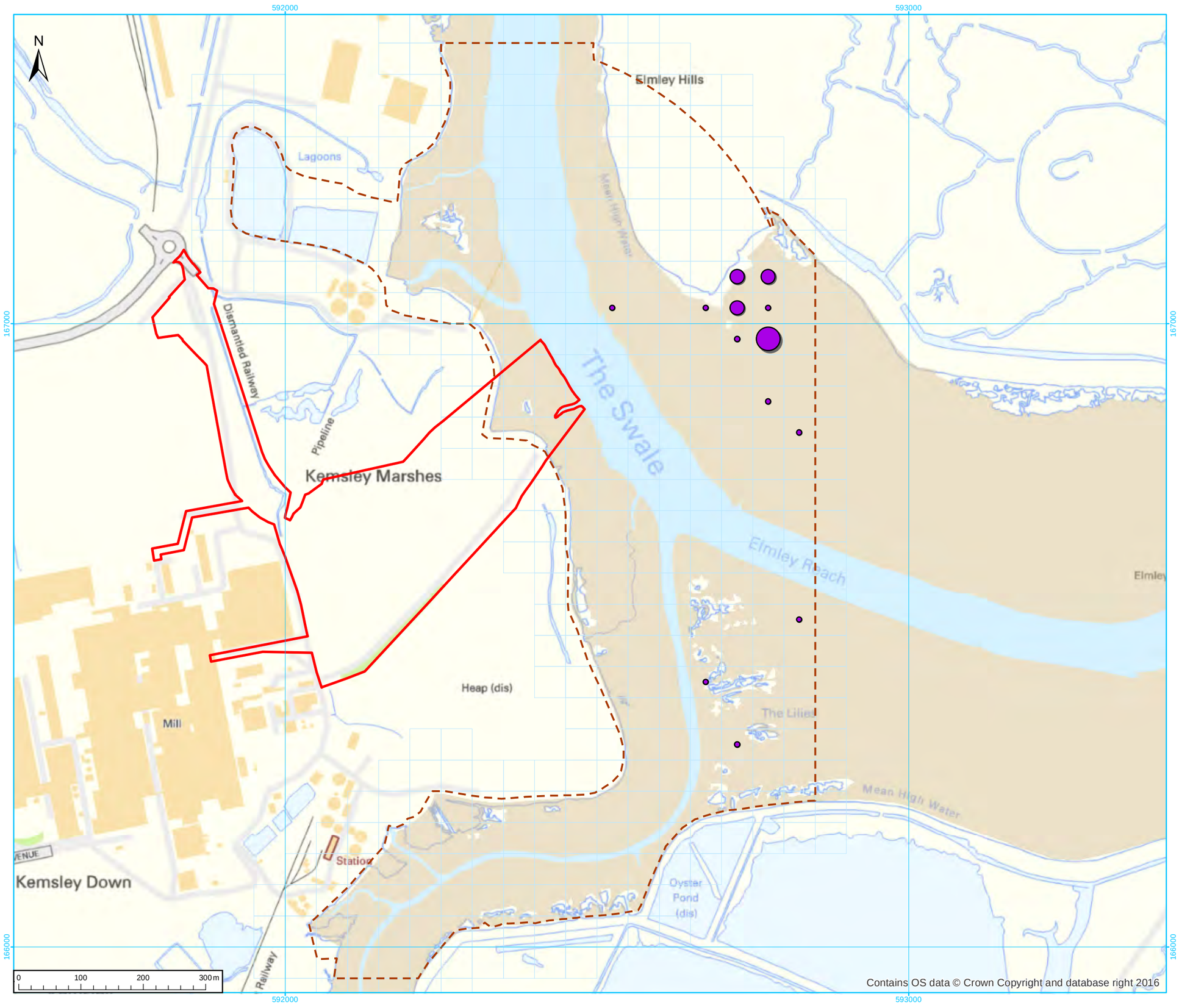

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Legend

- Application boundary
- Survey boundary

Knot

Bird Numbers

- 1 - 10
- 11 - 50
- 51 - 130

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Knot at High Tide, in Winter (Jan, Feb, Nov, Dec) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.72		A

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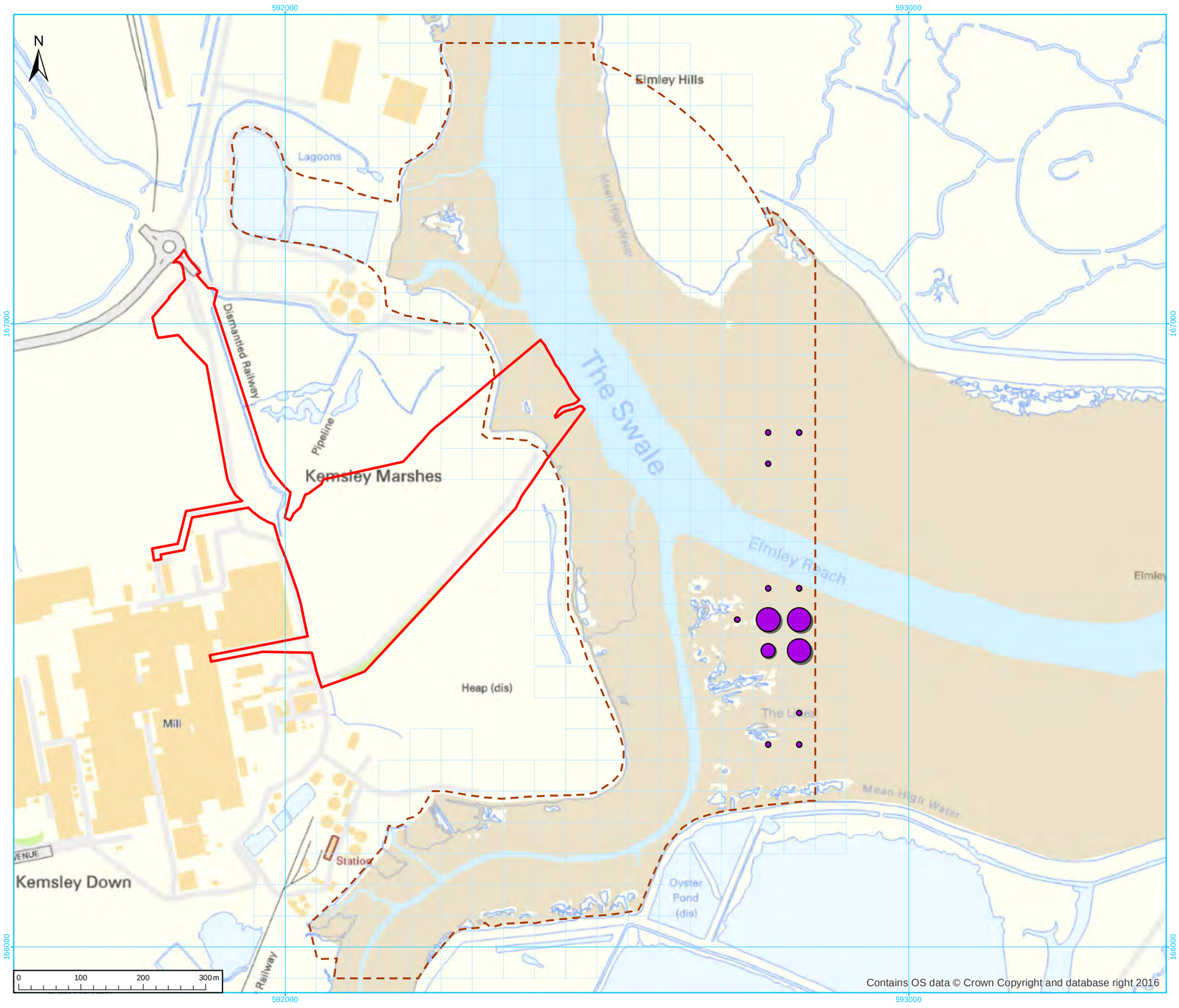

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Legend

- Application boundary
- Survey boundary

Knot

Bird Numbers

- 1 - 10
- 11 - 50
- 51 - 130

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Knot at Low Tide, in Winter (Jan, Feb, Nov, Dec) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
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Drawing Number		**Rev**
Figure 3.73		A

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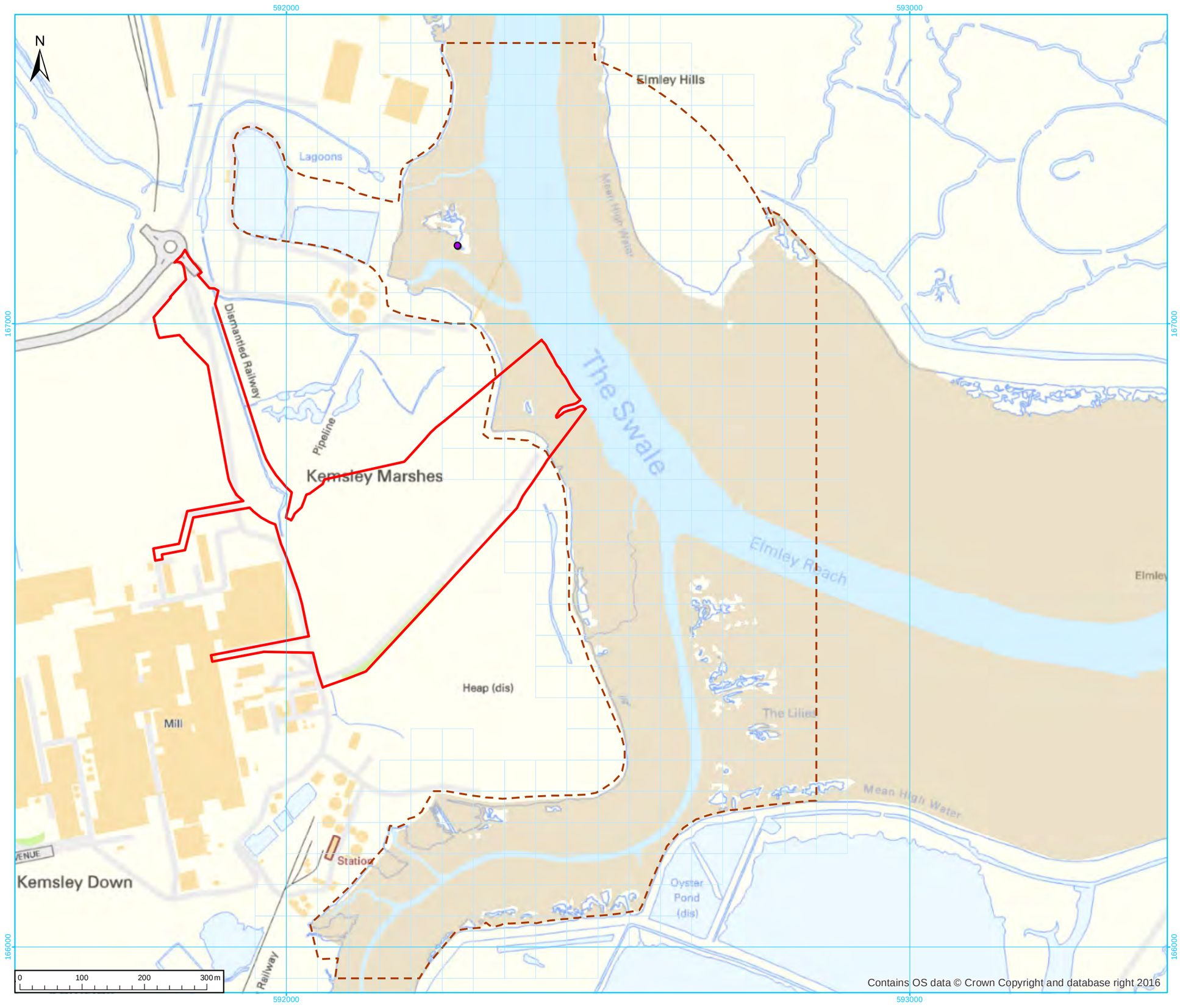

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Legend

- Application boundary
- Survey boundary

Lapwing

Bird Numbers

- 1 - 40
- 41 - 125
- 126 - 250

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Lapwing at High Tide, in Spring (Mar, Apr, May) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.74		A

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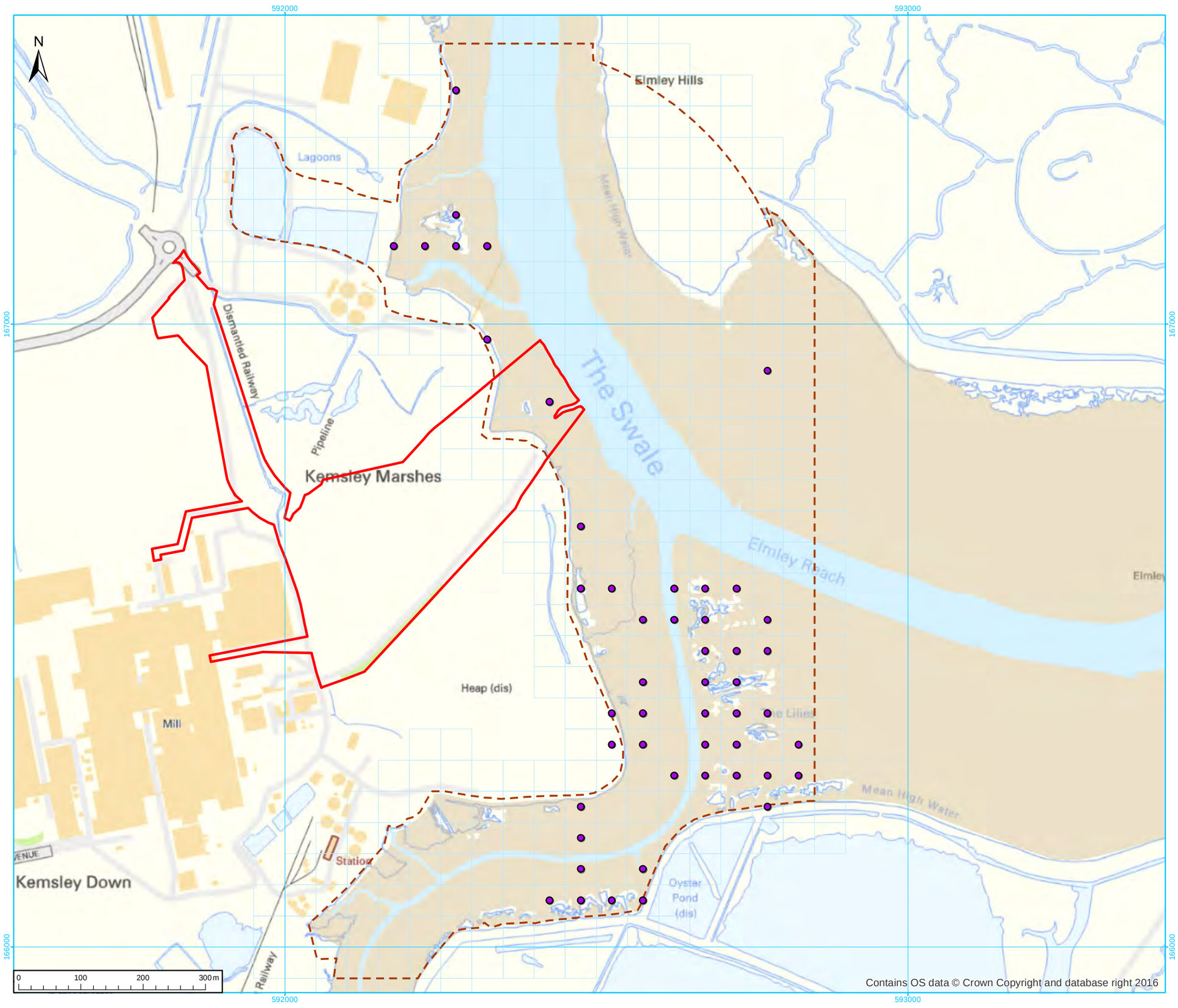

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Legend

- Application boundary
- Survey boundary

Lapwing

Bird Numbers

- 1 - 40
- 41 - 125
- 126 - 250

Rev	Description	Date	Initial	Checked

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Lapwing at High Tide, in Autumn (Jul, Aug, Sep, Oct) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.75		A

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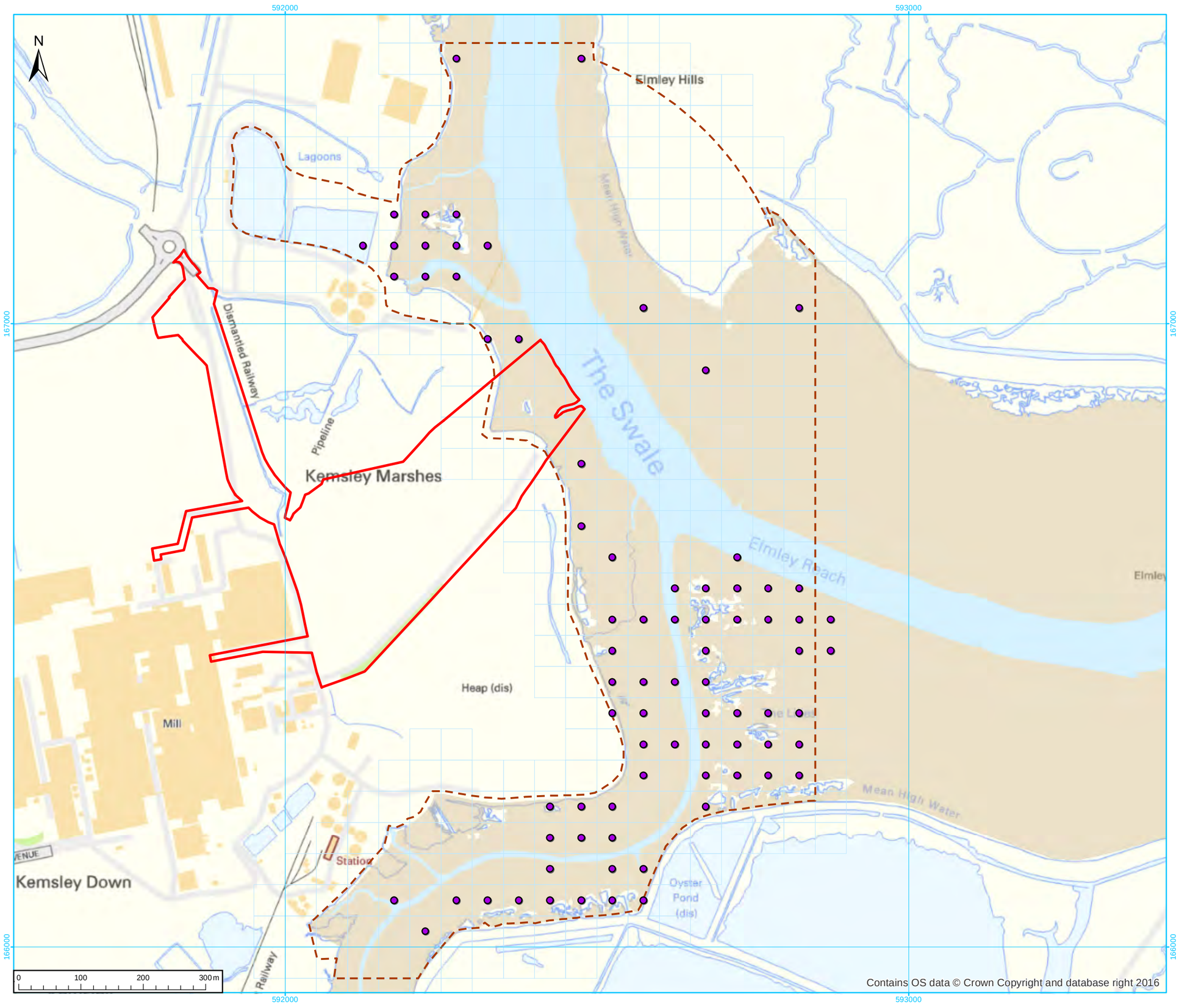

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Legend

Application boundary

Survey boundary

Lapwing

Bird Numbers

1 - 40

41 - 125

126 - 250

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Lapwing at Low Tide, in Autumn (Jul, Aug, Sep, Oct) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.76		A

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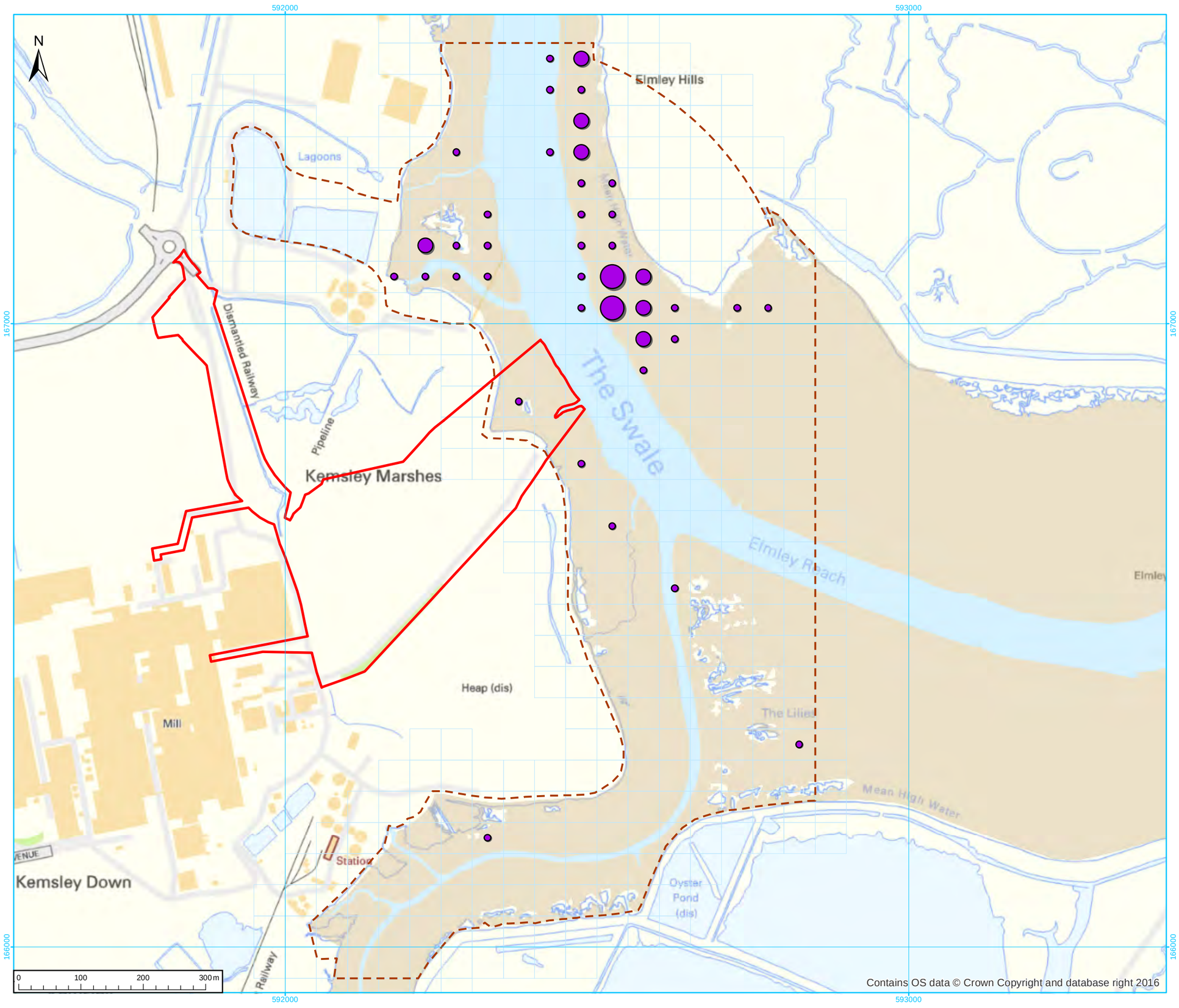

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Legend

- Application boundary
- Survey boundary

Lapwing

Bird Numbers

- 1 - 40
- 41 - 125
- 126 - 250

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Lapwing at High Tide, in Winter (Jan, Feb, Nov, Dec) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.77		A

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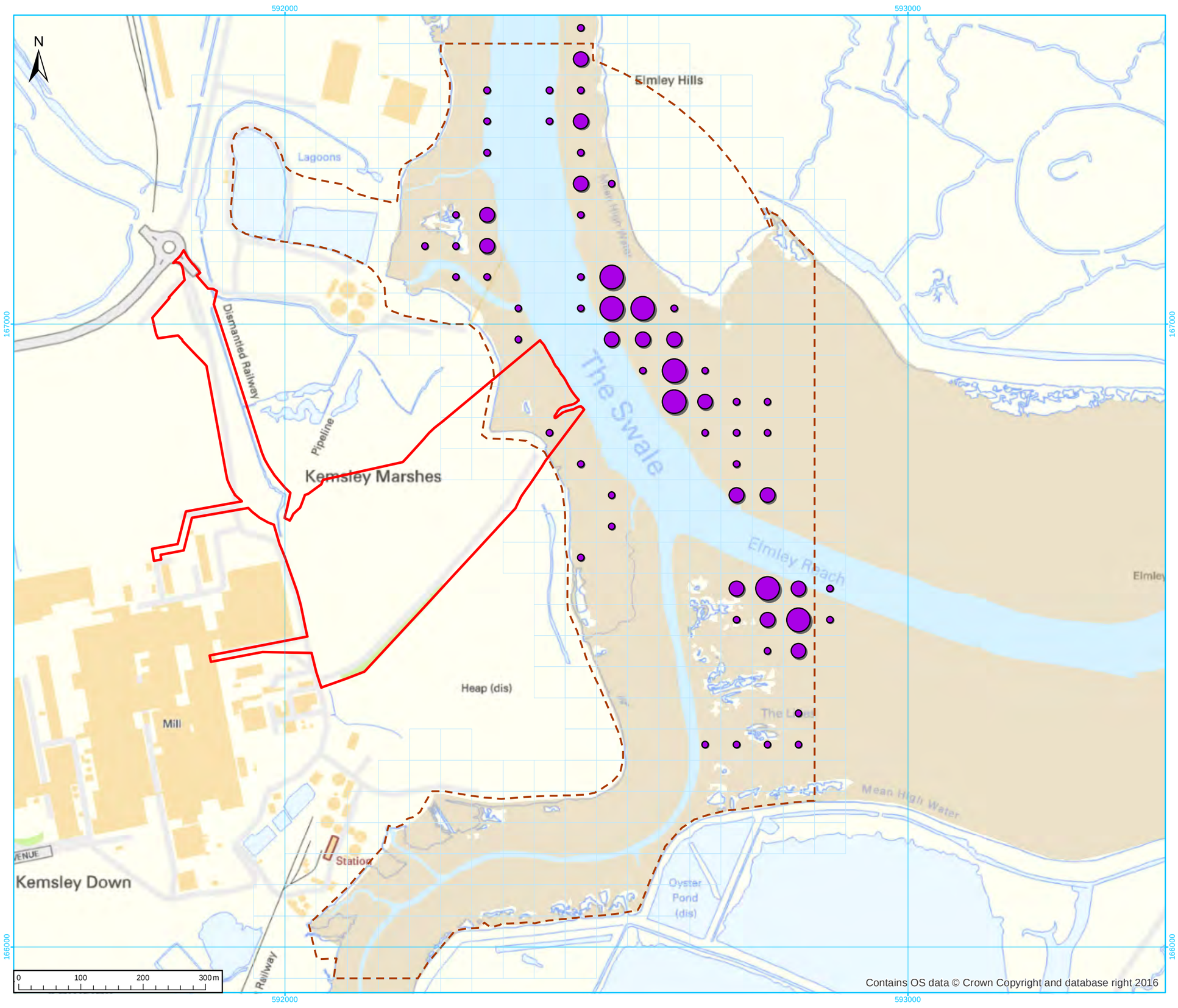

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- Survey boundary

Lapwing

Bird Numbers

- 1 - 40
- 41 - 125
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Status	Drawn By	PM/Checked By
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Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.78		A

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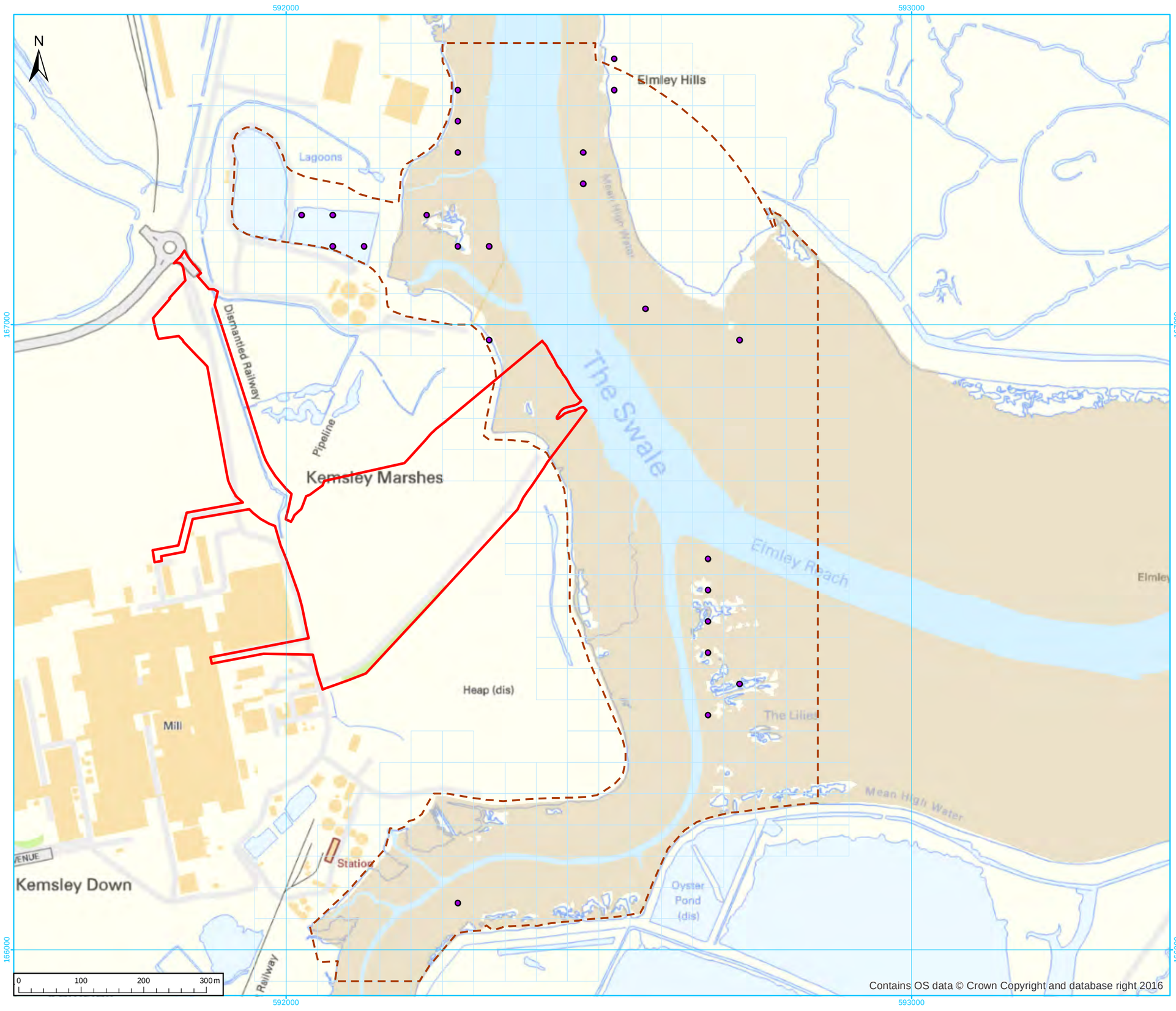

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Legend

- Application boundary
- Survey boundary

Lesser Black-backed Gull

Bird numbers

- 1 - 20
- 21 - 35
- 36 - 51

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Lesser Black-backed Gull at High Tide, in Spring (Mar, Apr, May) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.79		A

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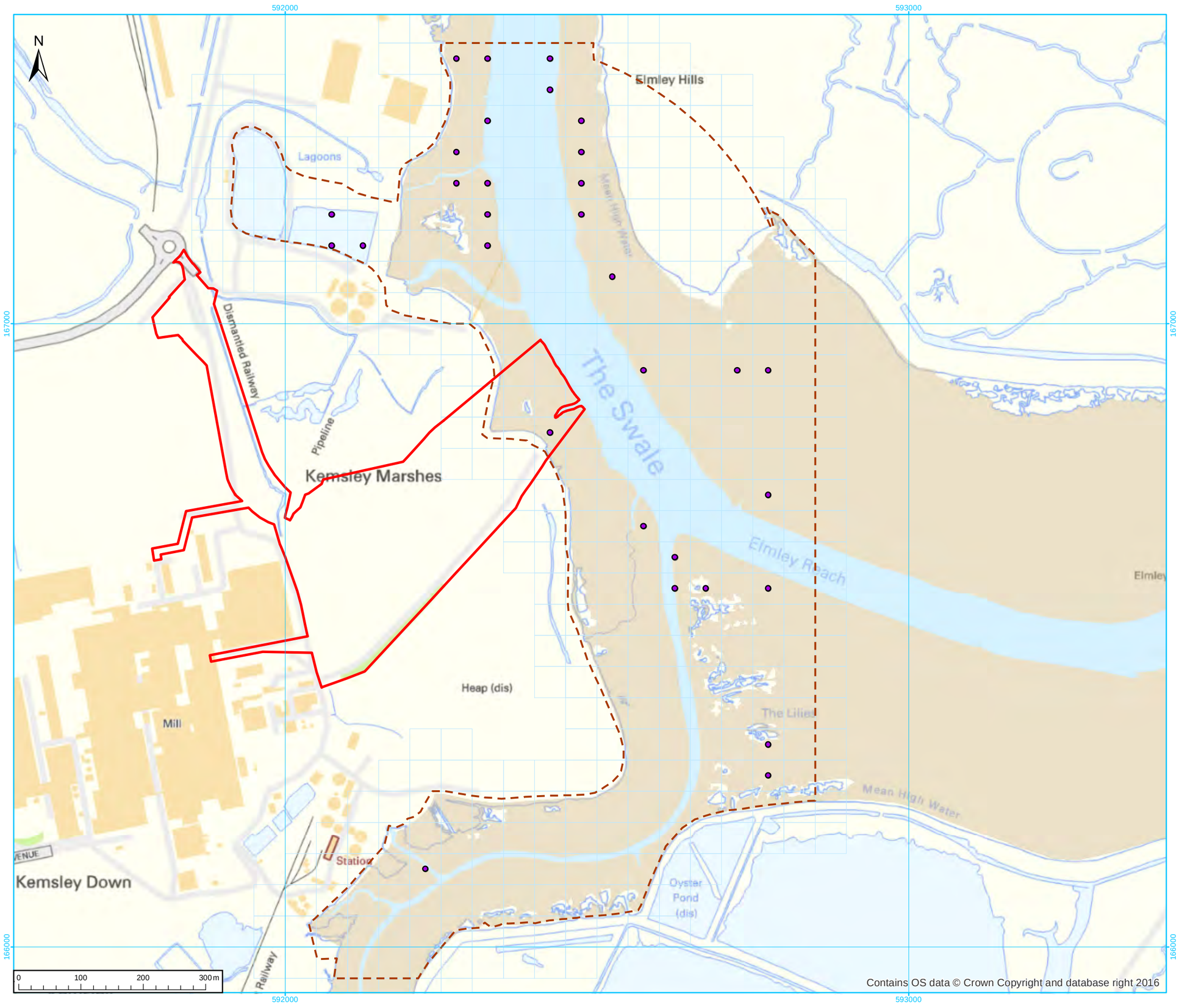

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Legend

- Application boundary
- Survey boundary

Lesser Black-backed Gull

Bird numbers

- 1 - 20
- 21 - 35
- 36 - 51

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
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Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Lesser Black-backed Gull at Low Tide, in Spring (Mar, Apr, May) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.80		A

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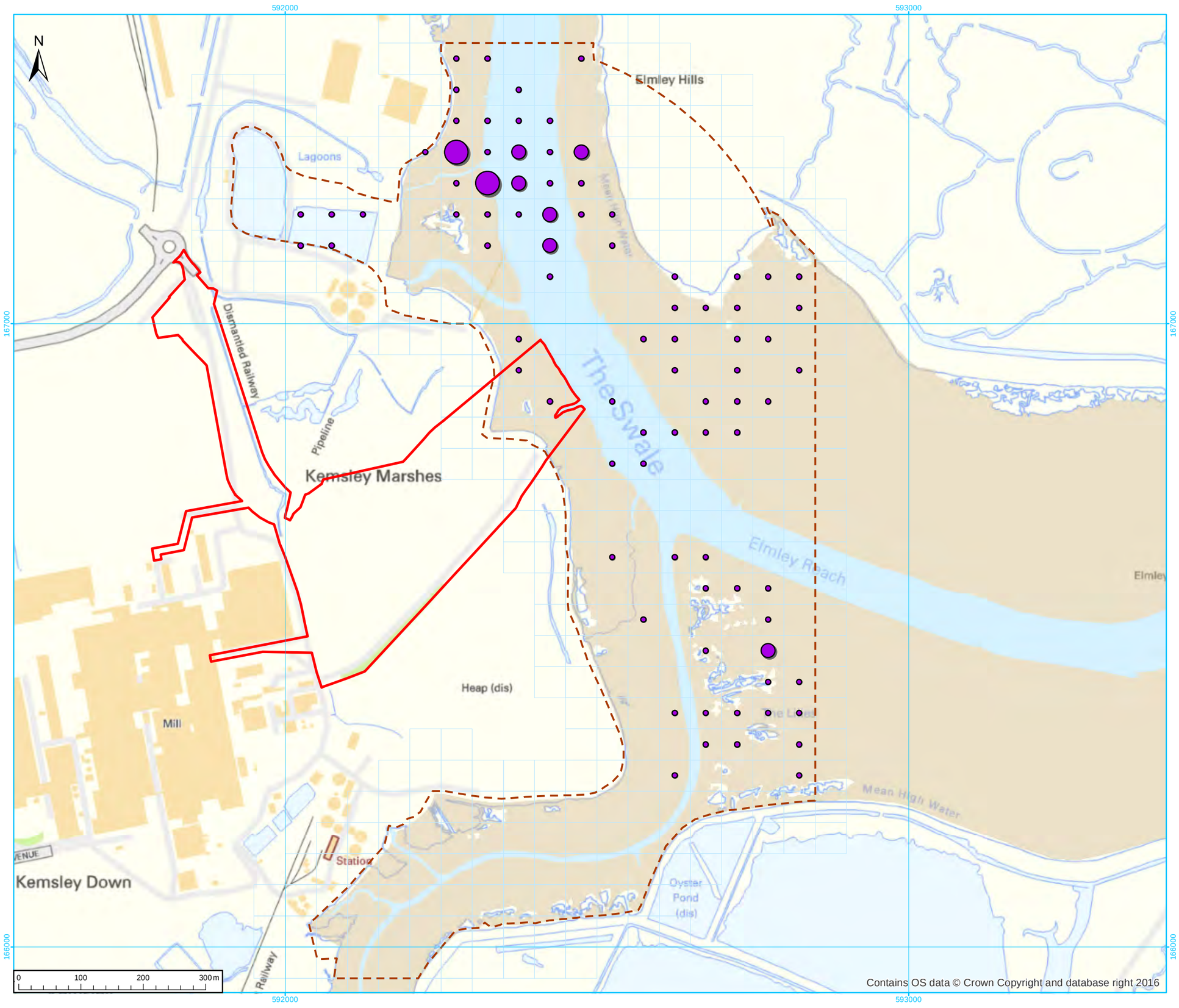

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Legend

- Application boundary
- Survey boundary

Lesser Black-backed Gull

Bird numbers

- 1 - 20
- 21 - 35
- 36 - 51

Rev	Description	Date	Initial	Checked

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Project: Kemsley

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Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.81		A

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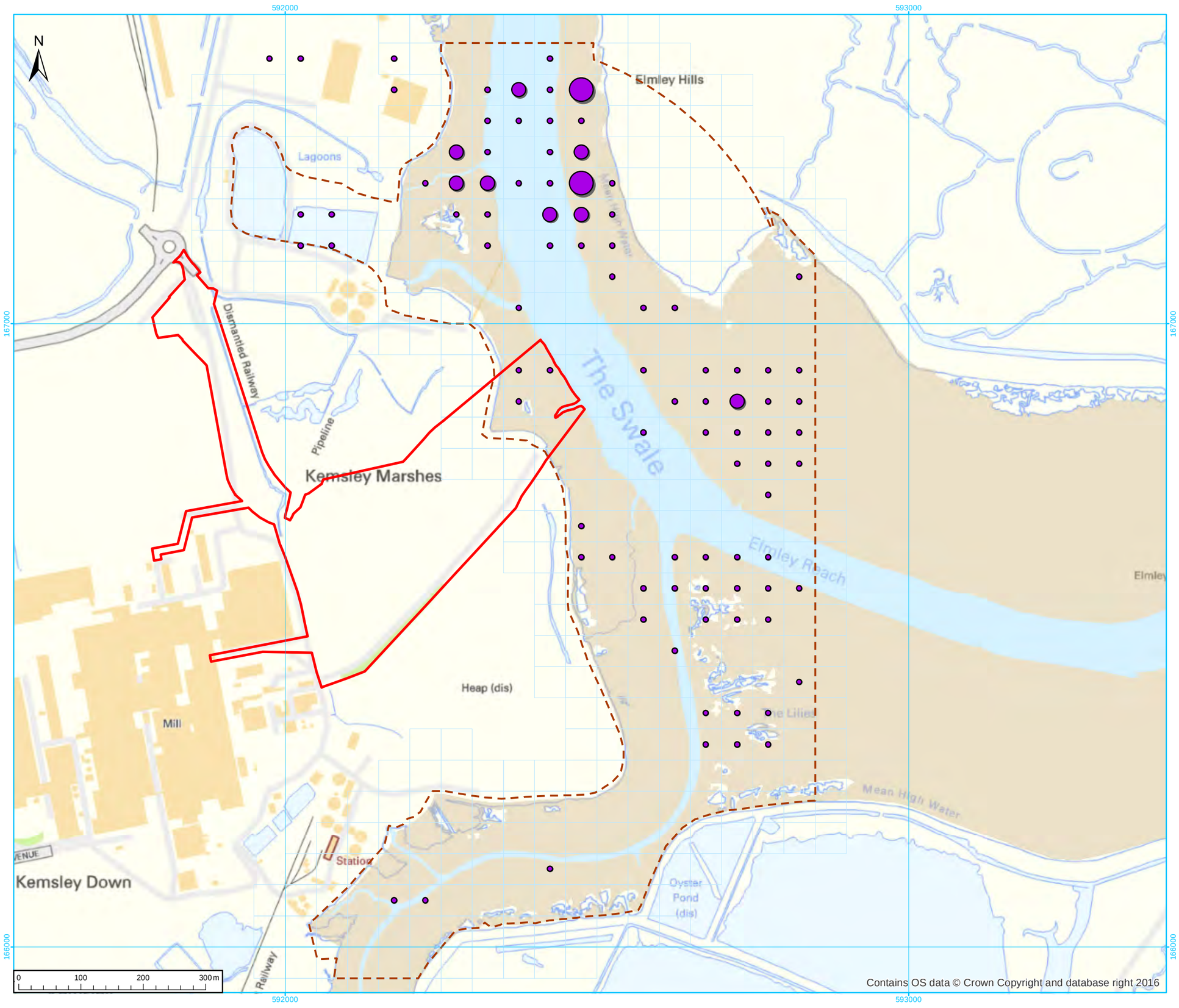

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Legend

- Application boundary
- Survey boundary

Lesser Black-backed Gull

Bird numbers

- 1 - 20
- 21 - 35
- 36 - 51

Rev	Description	Date	Initial	Checked

RPS

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Project: Kemsley

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Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.82		A

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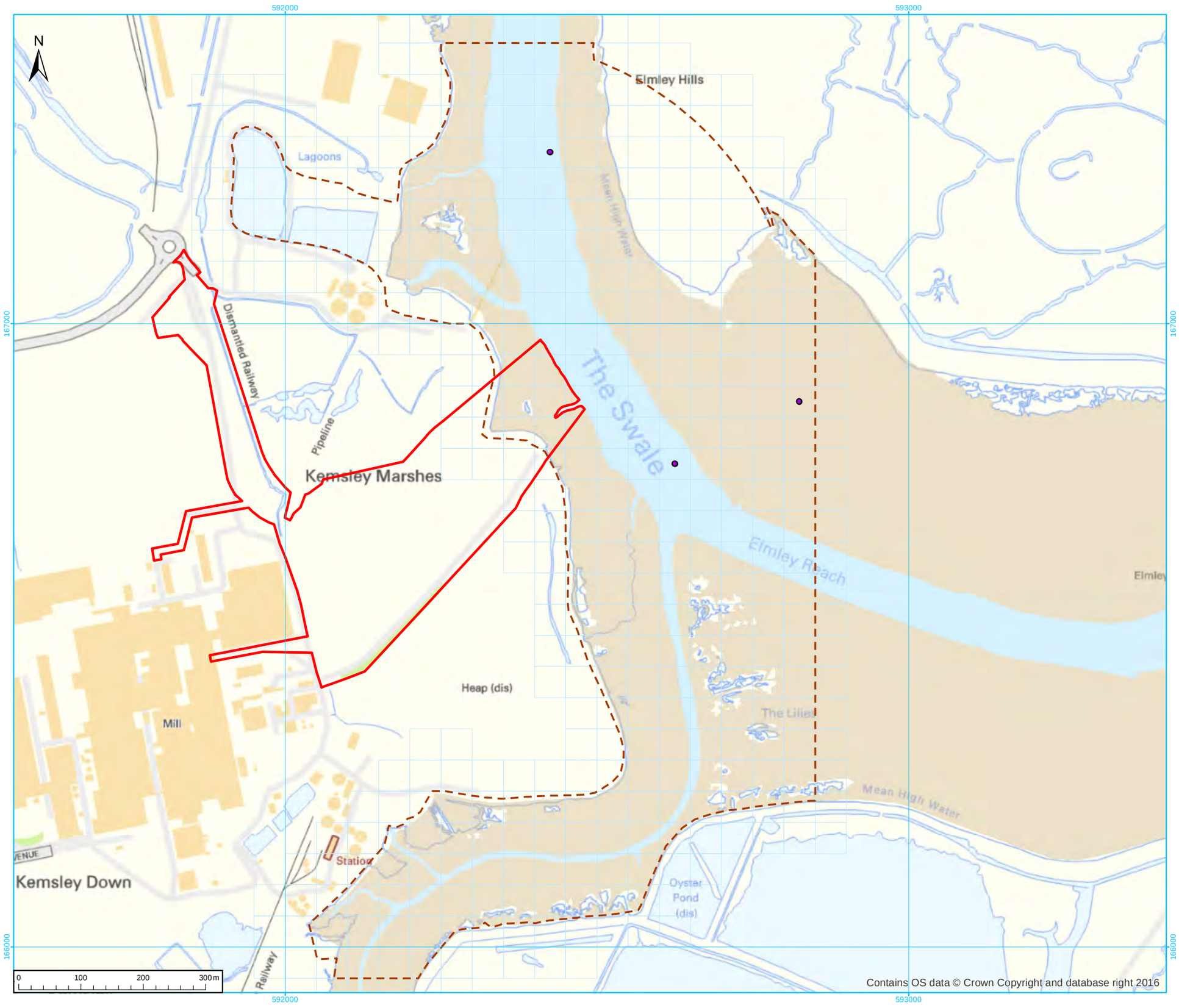

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Legend

Application boundary

Survey boundary

Lesser Black-backed Gull

Bird numbers

- 1 - 20
- 21 - 35
- 36 - 51

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Lesser Black-backed Gull at High Tide, in Winter (Jan, Feb, Nov, Dec) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.83		A

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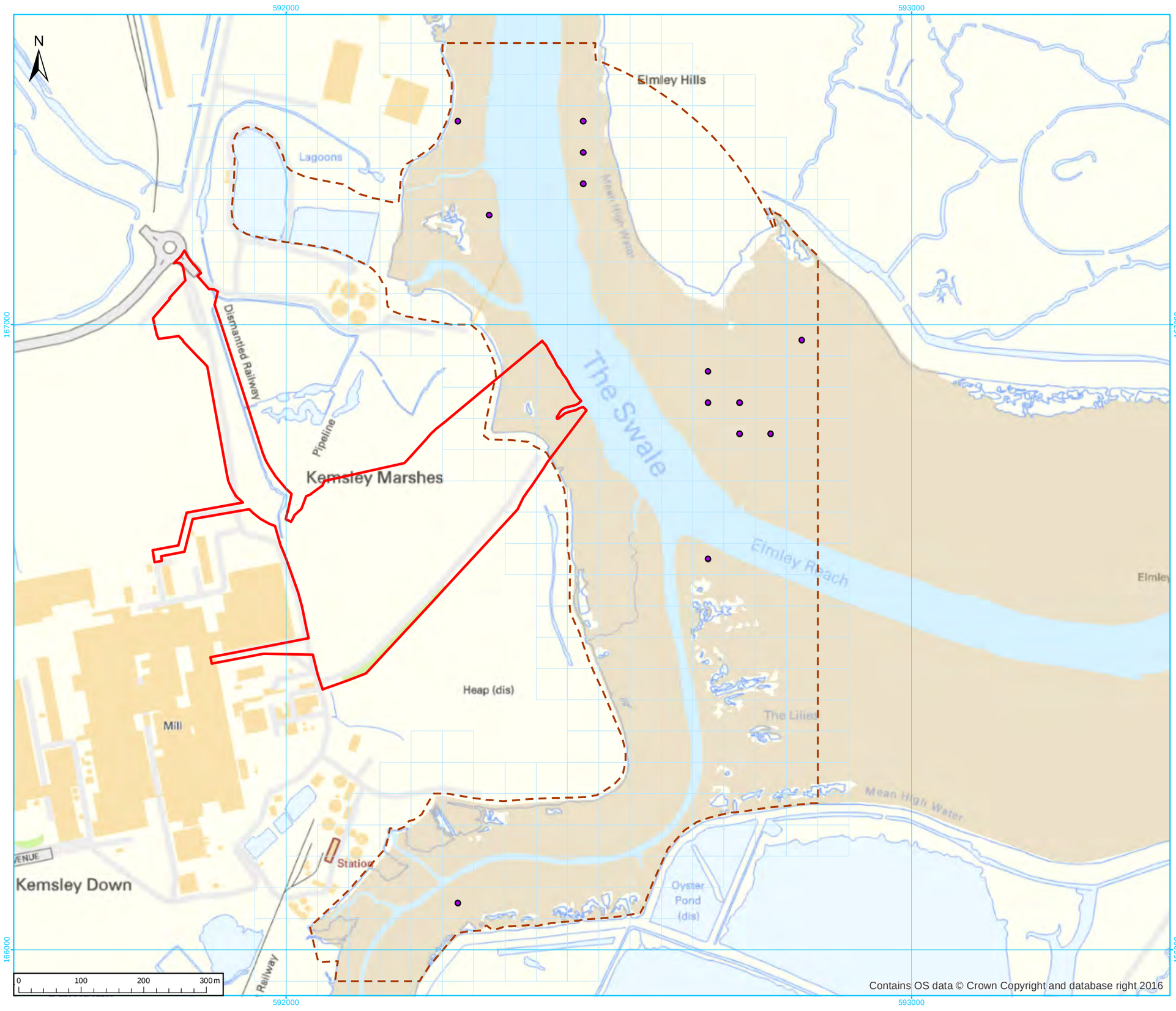

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Legend

- Application boundary
- Survey boundary

Lesser Black-backed Gull

Bird numbers

- 1 - 20
- 21 - 35
- 36 - 51

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Lesser Black-backed Gull at Low Tide, in Winter (Jan, Feb, Nov, Dec) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.84		A

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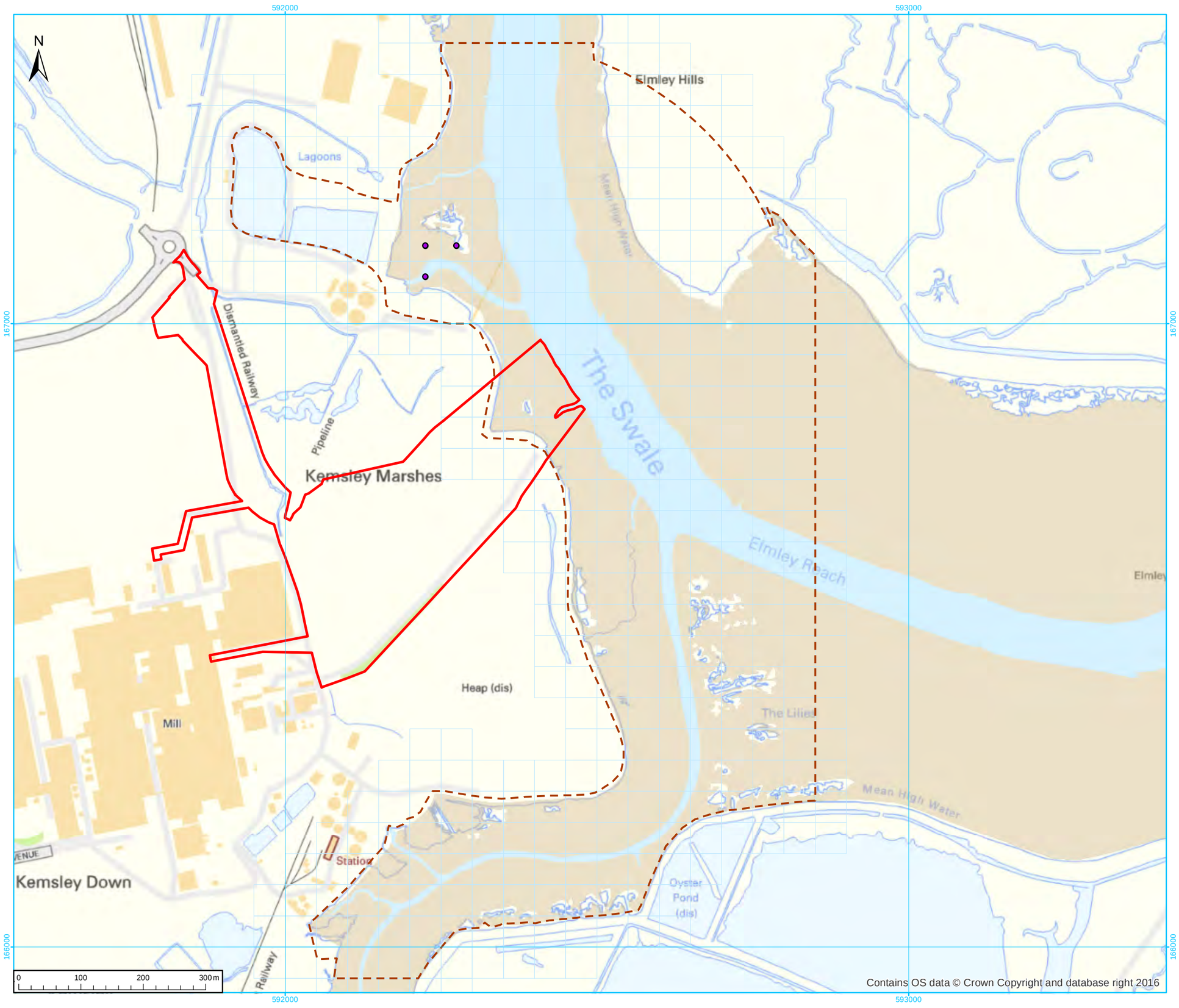

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Legend

- Application boundary
- Survey boundary

Little Egret

Bird Numbers

- 1 - 5
- 6 - 20
- 21 - 50

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Little Egret at High Tide, in Spring (Mar, Apr, May) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.85		A

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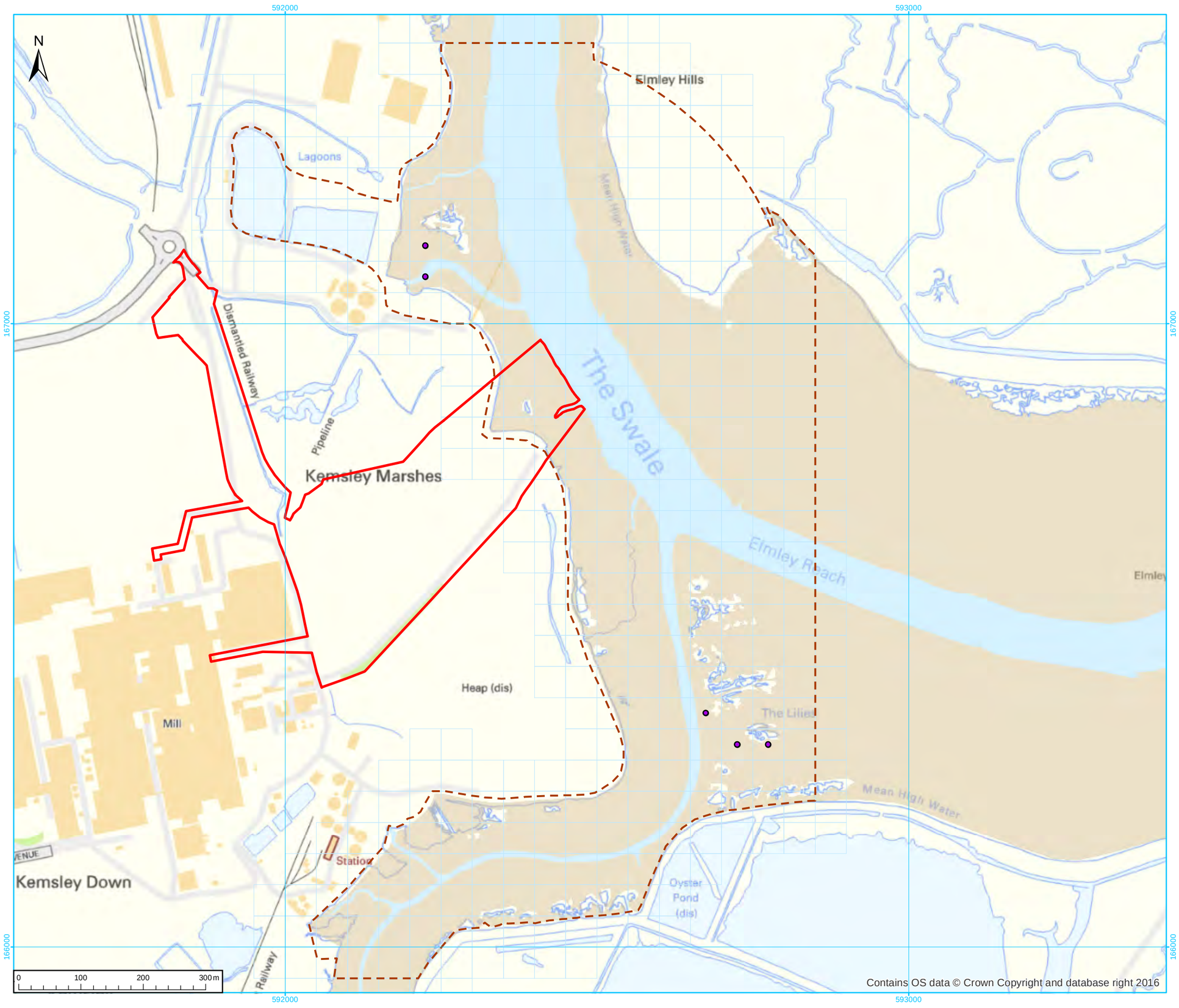

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Legend

- Application boundary
- Survey boundary

Little Egret

Bird Numbers

- 1 - 5
- 6 - 20
- 21 - 50

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Little Egret at Low Tide, in Spring (Mar, Apr, May) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.86		A

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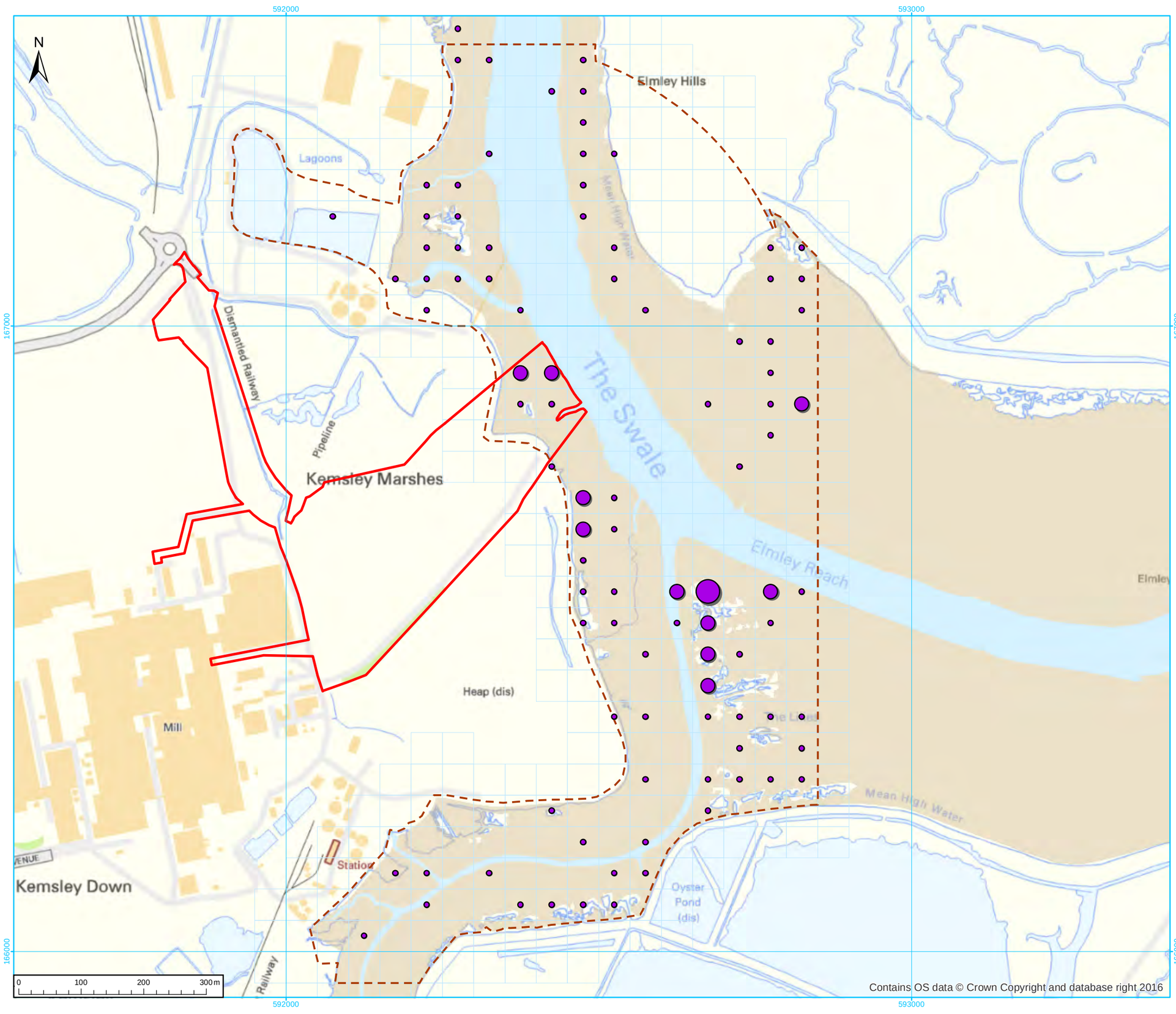

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Legend

- Application boundary
- Survey boundary

Little Egret

Bird Numbers

- 1 - 5
- 6 - 20
- 21 - 50

Rev	Description	Date	Initial	Checked

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Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Little Egret at High Tide, in Autumn (Jul, Aug, Sep, Oct) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.87		A

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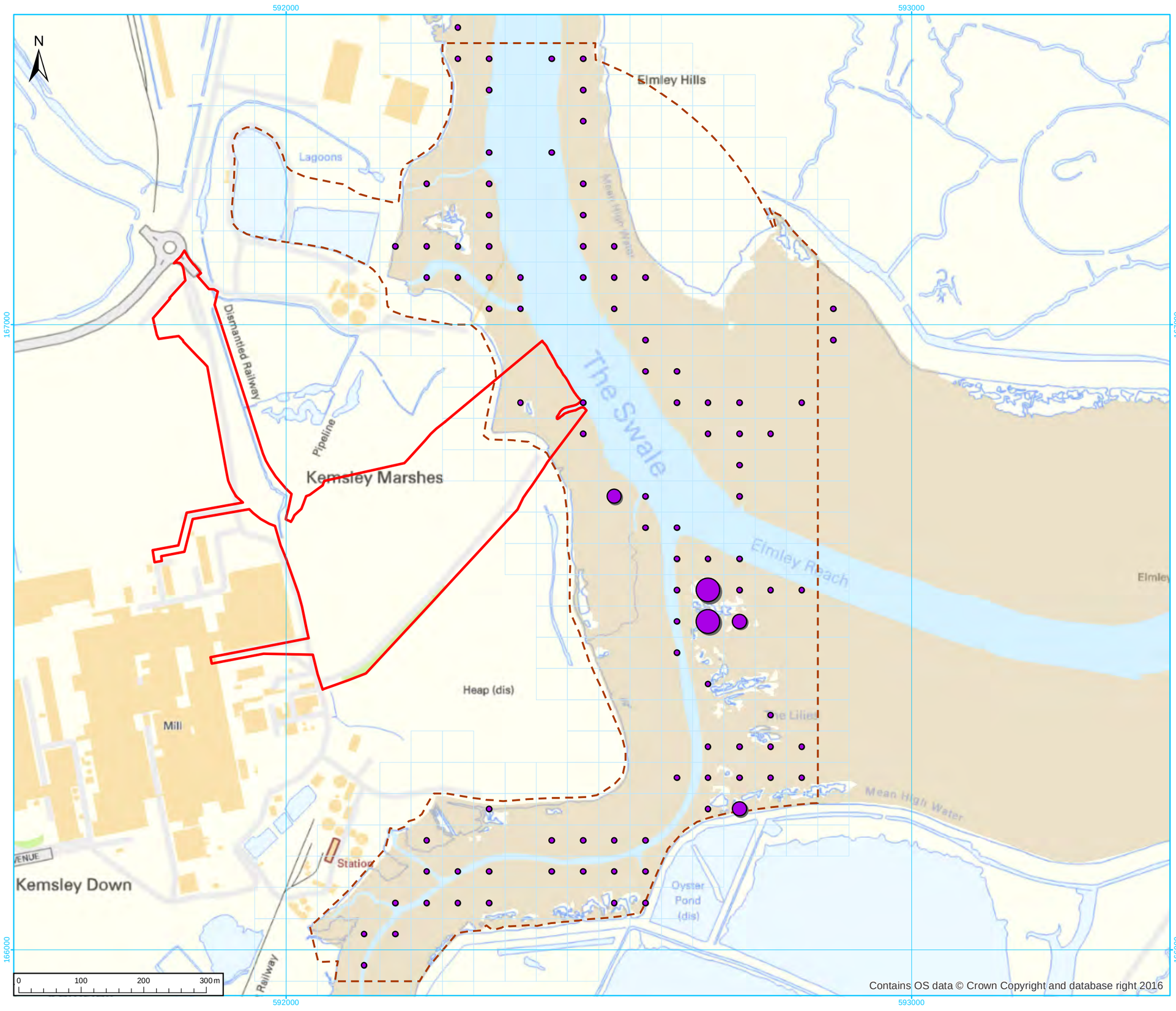

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Legend

- Application boundary
- Survey boundary

Little Egret

Bird Numbers

- 1 - 5
- 6 - 20
- 21 - 50

Rev	Description	Date	Initial	Checked

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Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Little Egret at Low Tide, in Autumn (Jul, Aug, Sep, Oct) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.88		A

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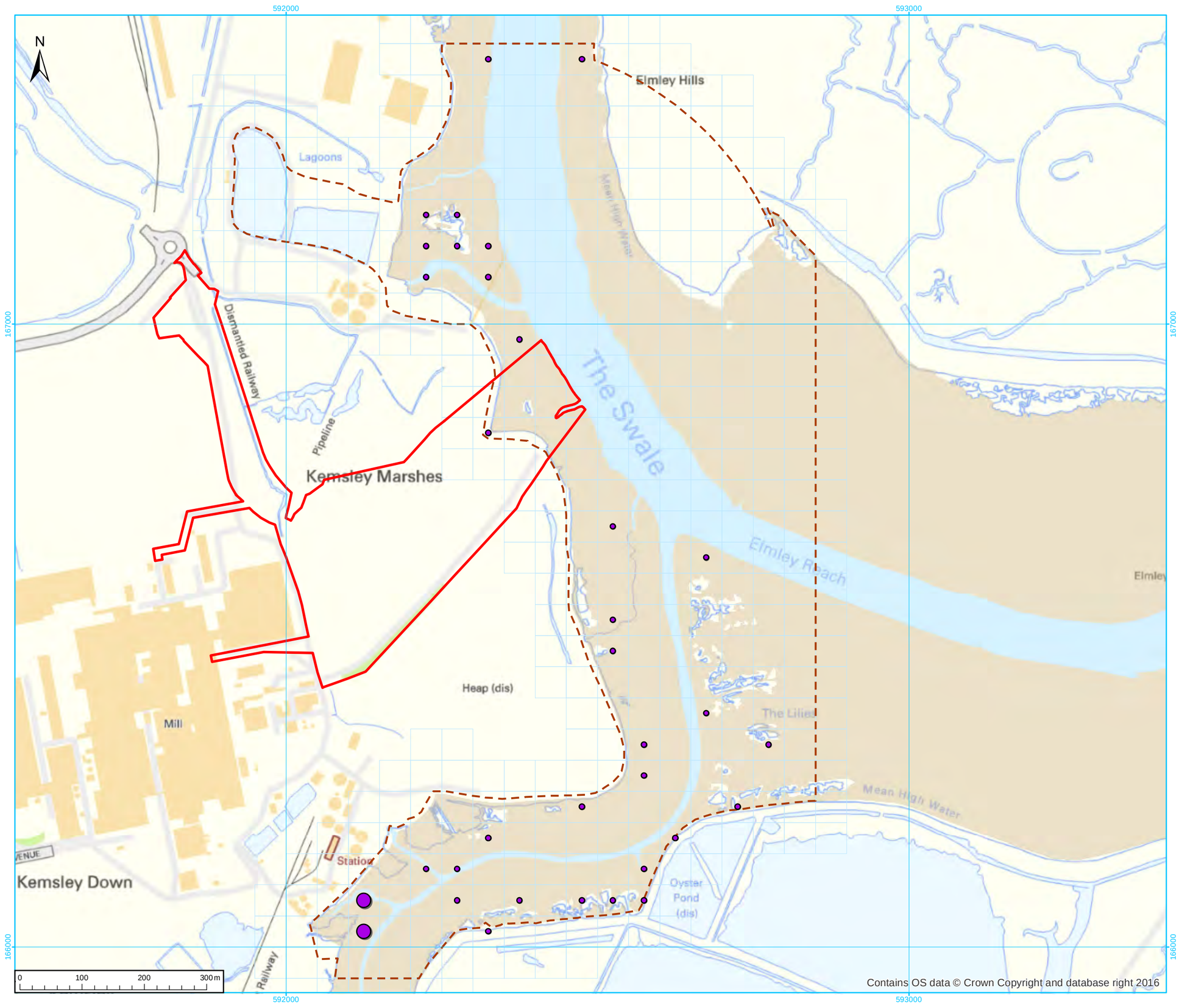

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Legend

- Application boundary
- Survey boundary

Little Egret

Bird Numbers

- 1 - 5
- 6 - 20
- 21 - 50

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Little Egret at High Tide, in Winter (Jan, Feb, Nov, Dec) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.89		A

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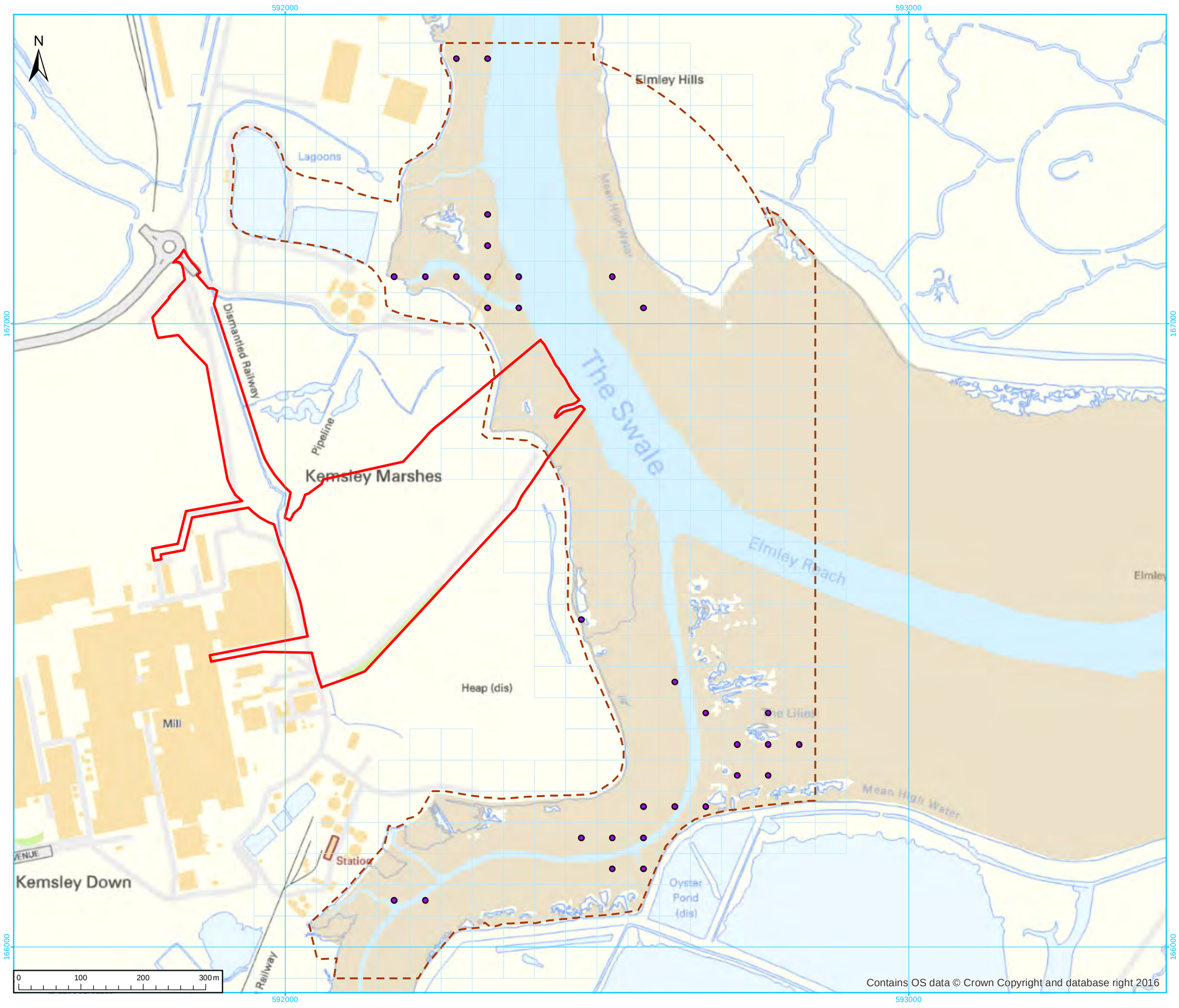

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Legend

- Application boundary
- Survey boundary

Little Egret

Bird Numbers

- 1 - 5
- 6 - 20
- 21 - 50

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Little Egret at Low Tide, in Winter (Jan, Feb, Nov, Dec) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.90		A

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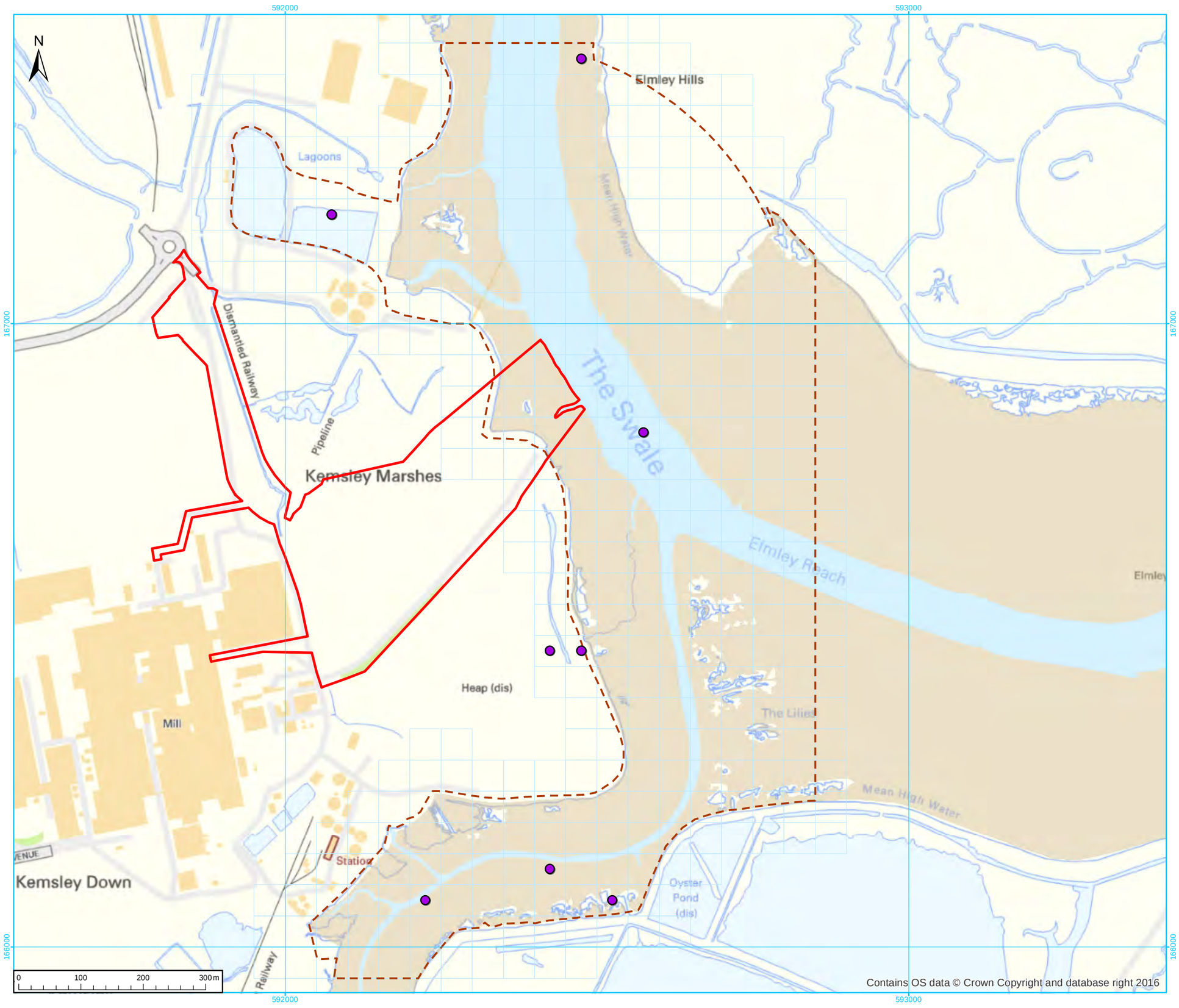

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Legend

- Application boundary
- Survey boundary

Little Grebe

Bird Numbers

- 1 - 5
- 6 - 15

Rev	Description	Date	Initial	Checked

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Little Grebe at High Tide, in Spring (Mar, Apr, May) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.91		A

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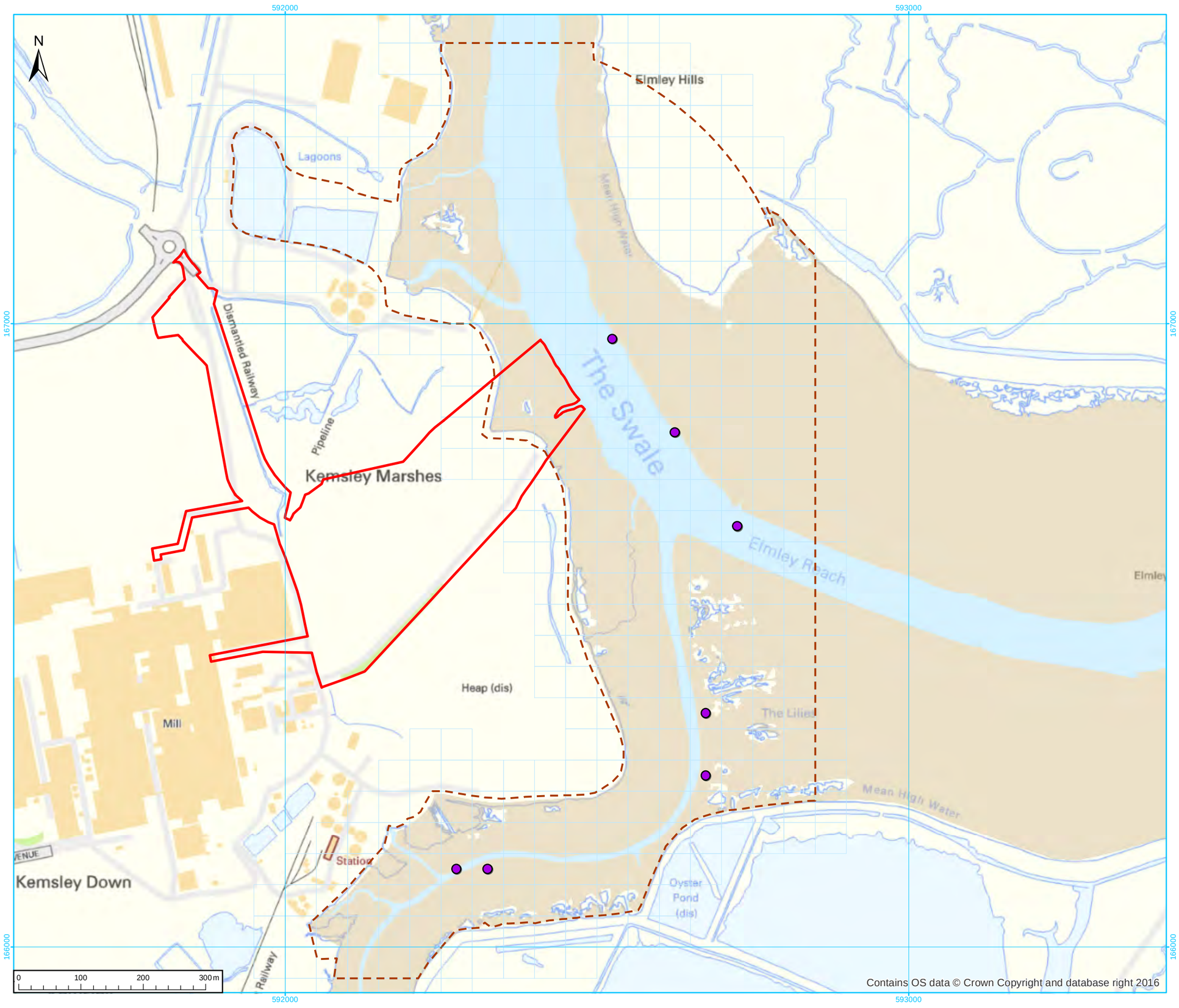

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Legend

- Application boundary
- Survey boundary

Little Grebe

Bird Numbers

- 1 - 5
- 6 - 15

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Little Grebe at Low Tide, in Spring (Mar, Apr, May) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.92		A

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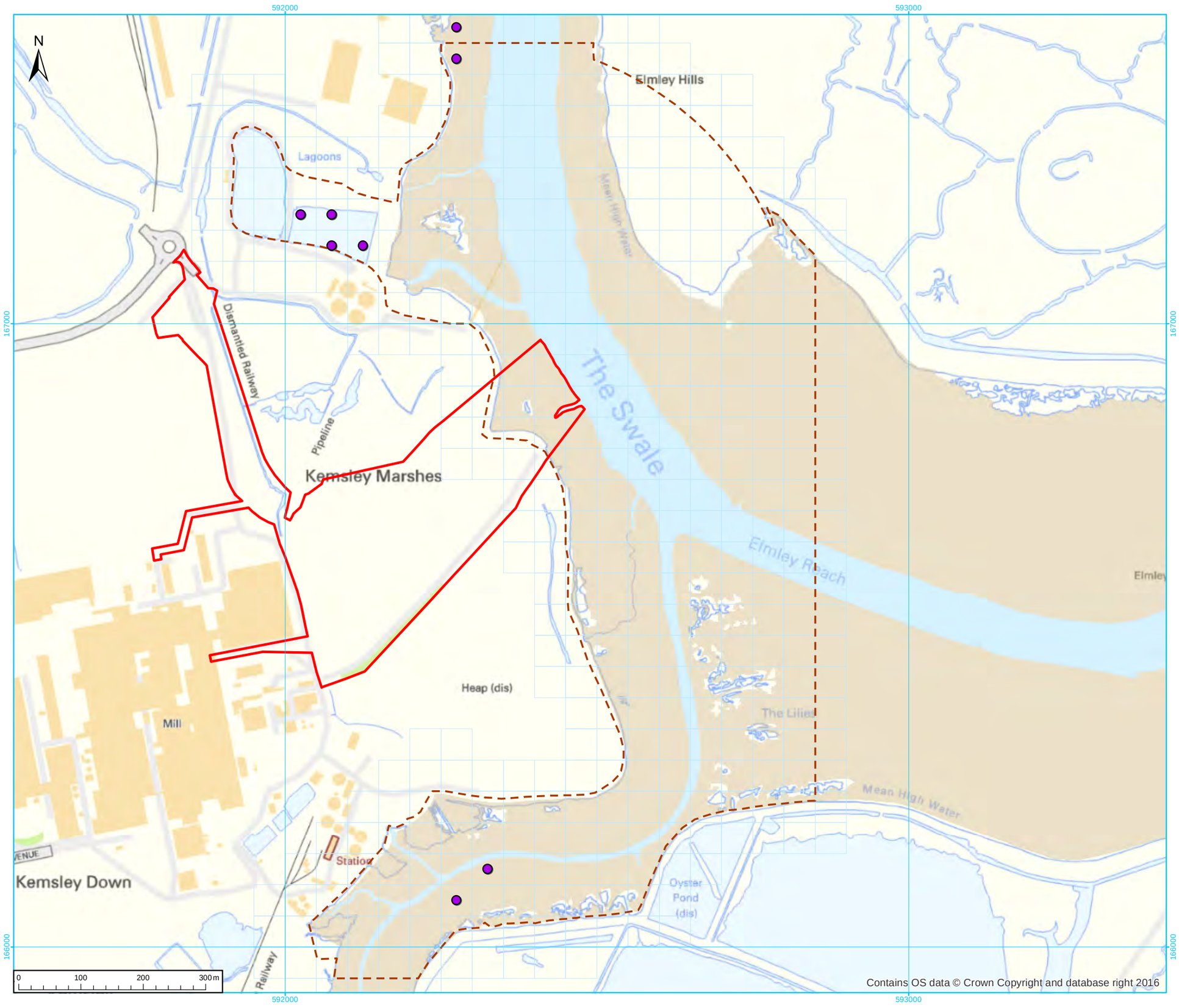

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Legend

- Application boundary
- Survey boundary

Little Grebe

Bird Numbers

- 1 - 5
- 6 - 15

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Little Grebe at High Tide, in Autumn (Jul, Aug, Sep, Oct) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.93		A

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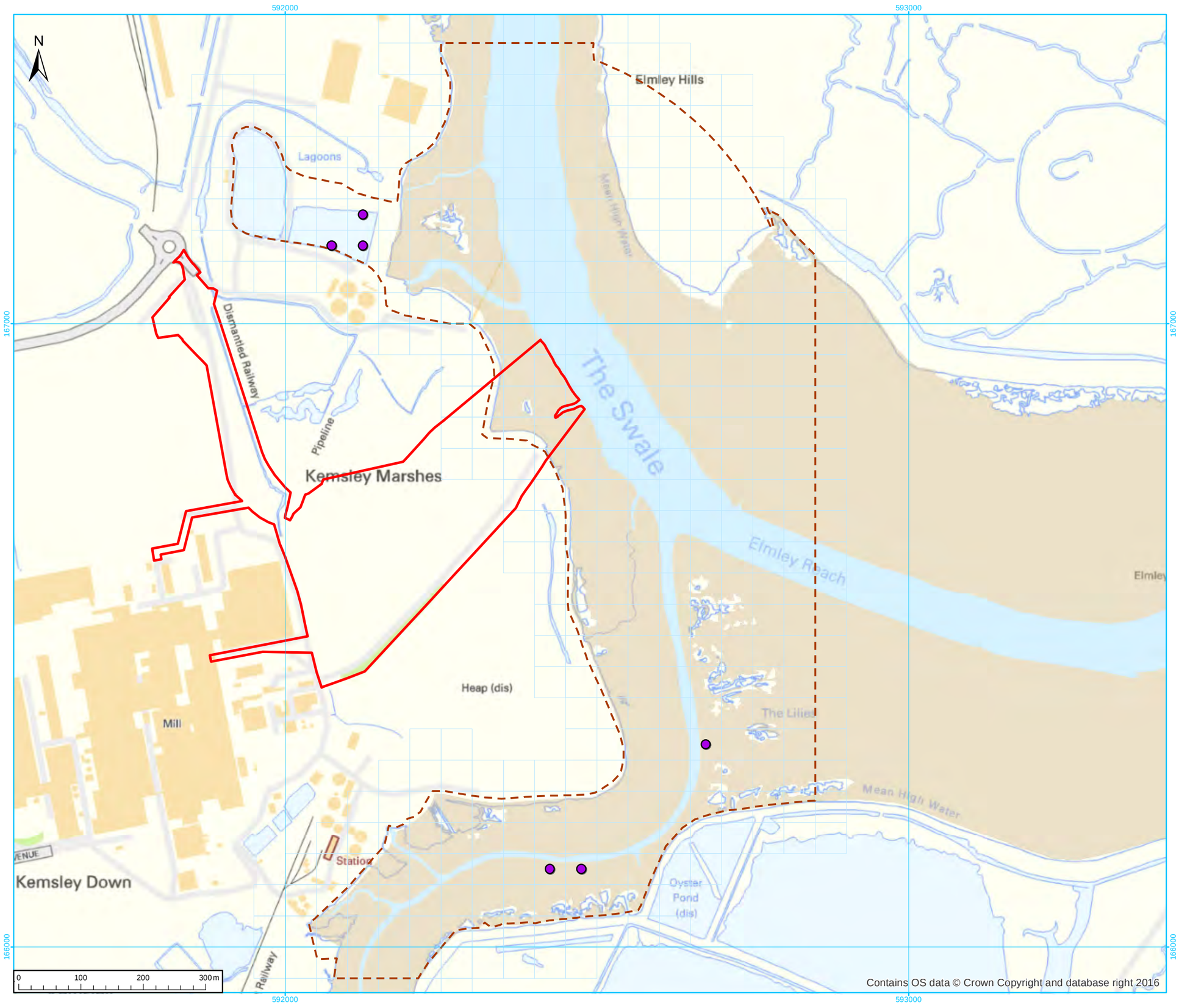

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Legend

- Application boundary
- Survey boundary

Little Grebe

Bird Numbers

- 1 - 5
- 6 - 15

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Little Grebe at Low Tide, in Autumn (Jul, Aug, Sep, Oct) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.94		A

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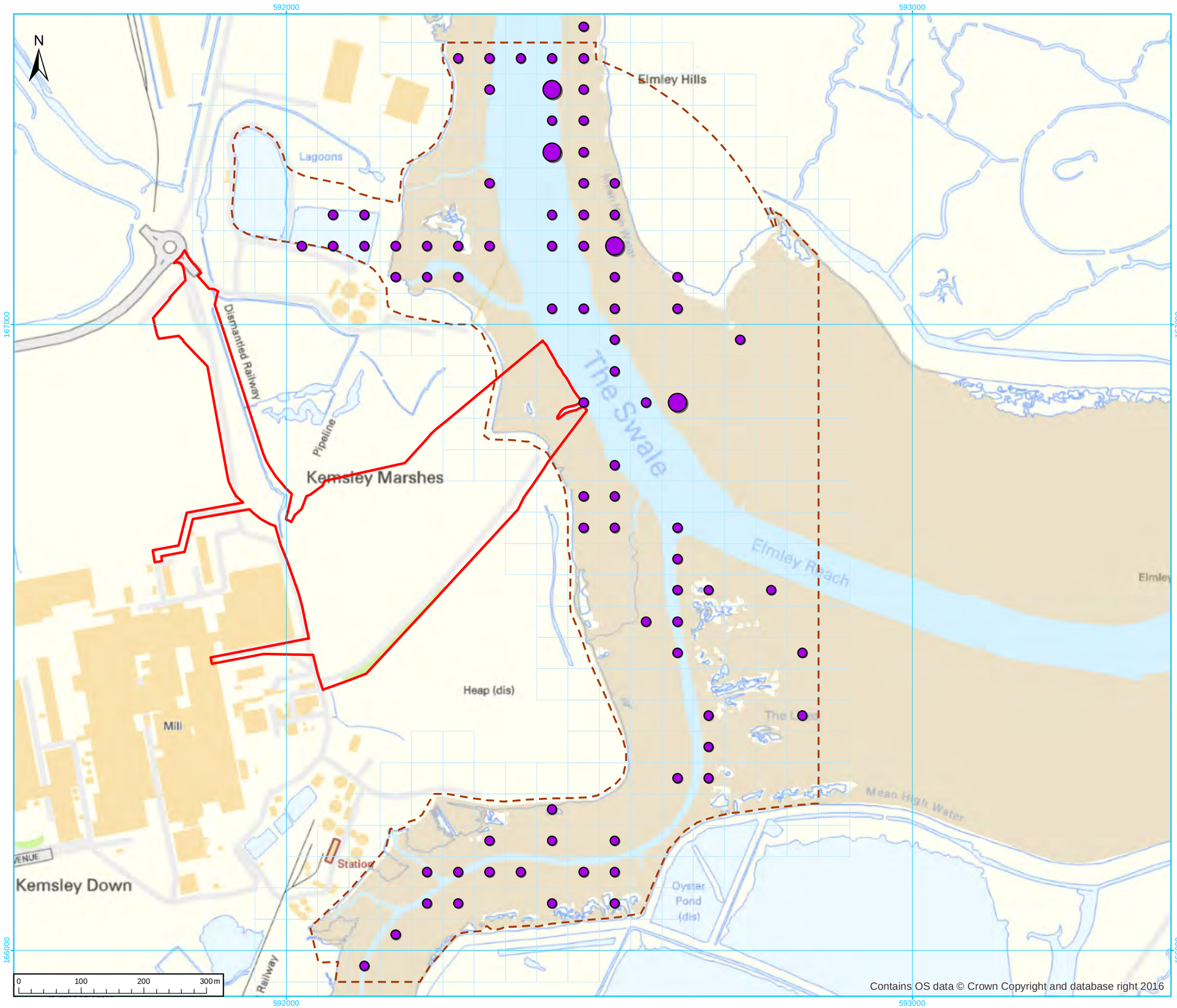

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Legend

- Application boundary
- Survey boundary

Little Grebe

Bird Numbers

- 1 - 5
- 6 - 15

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
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T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Little Grebe at High Tide, in Winter (Jan, Feb, Nov, Dec) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.95		A

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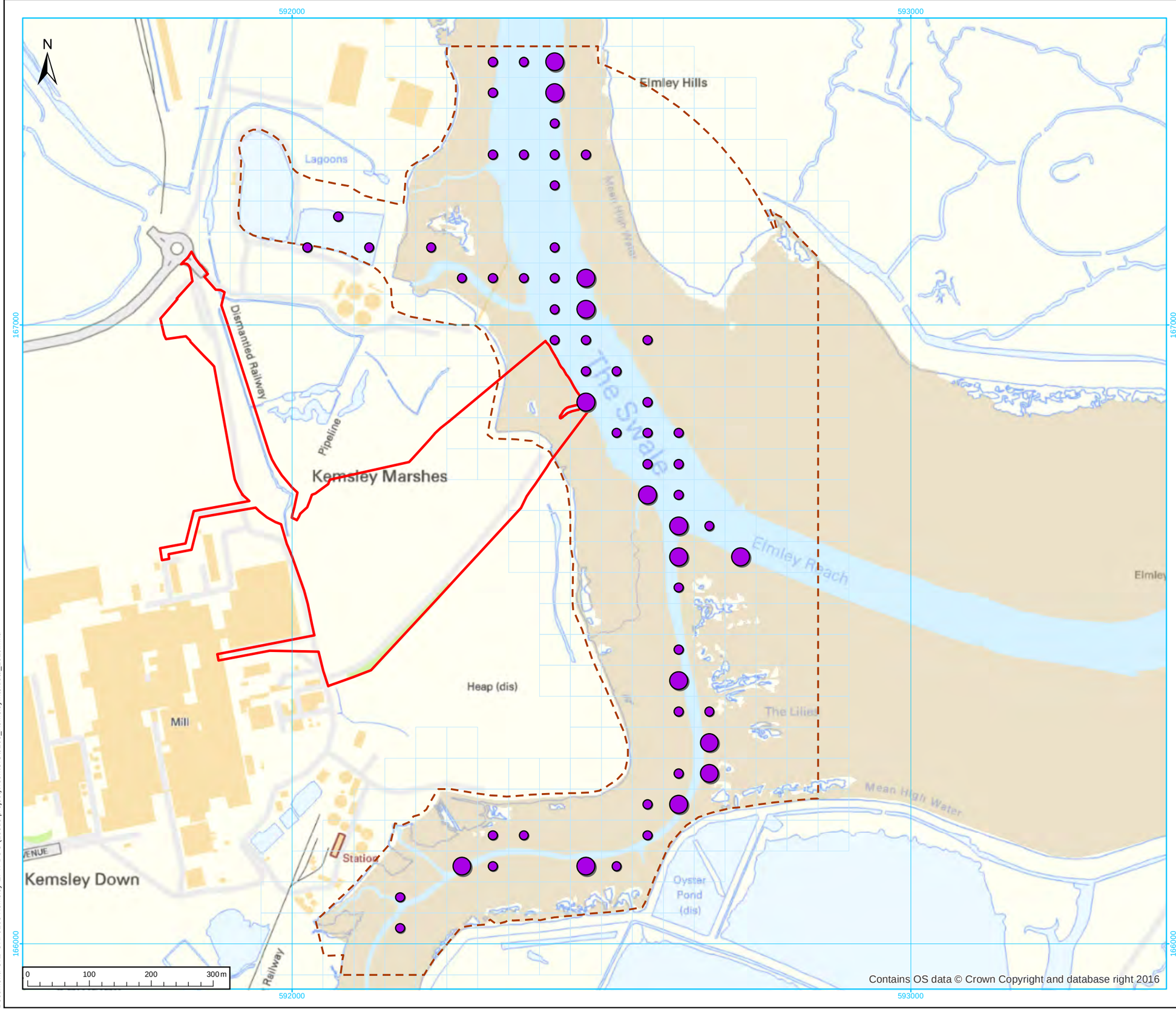

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Legend

- Application boundary
- Survey boundary

Little Grebe

Bird Numbers

- 1 - 5
- 6 - 15

Rev	Description	Date	Initial	Checked

RPS

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T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Little Grebe at Low Tide, in Winter (Jan, Feb, Nov, Dec) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.96		A

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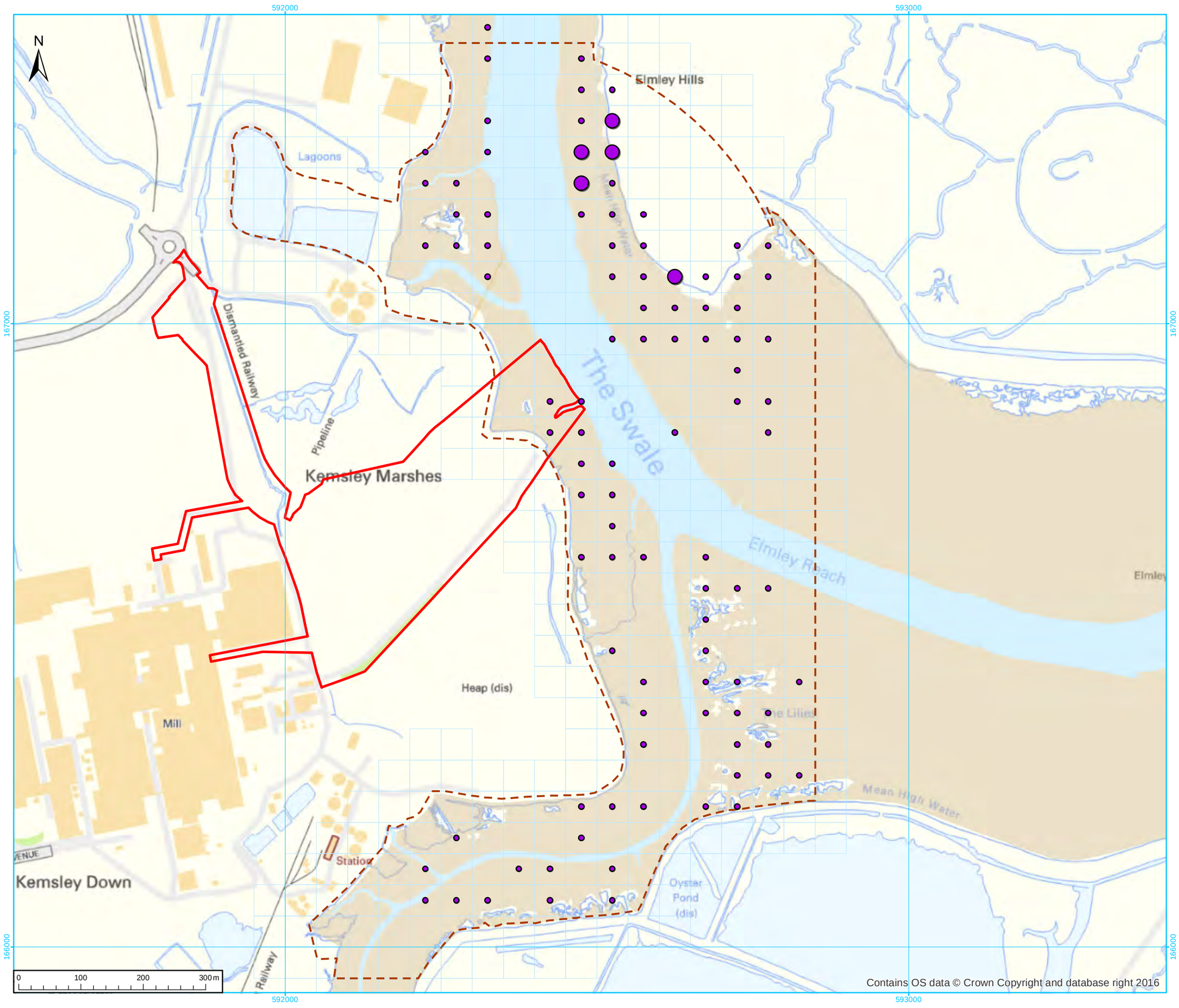

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Legend

Application boundary

Survey boundary

Oystercatcher

Bird Numbers

- 1 - 50
- 51 - 180
- 181 - 430

Rev	Description	Date	Initial	Checked

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Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Oystercatcher at High Tide, in Spring (Mar, Apr, May) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.97		A

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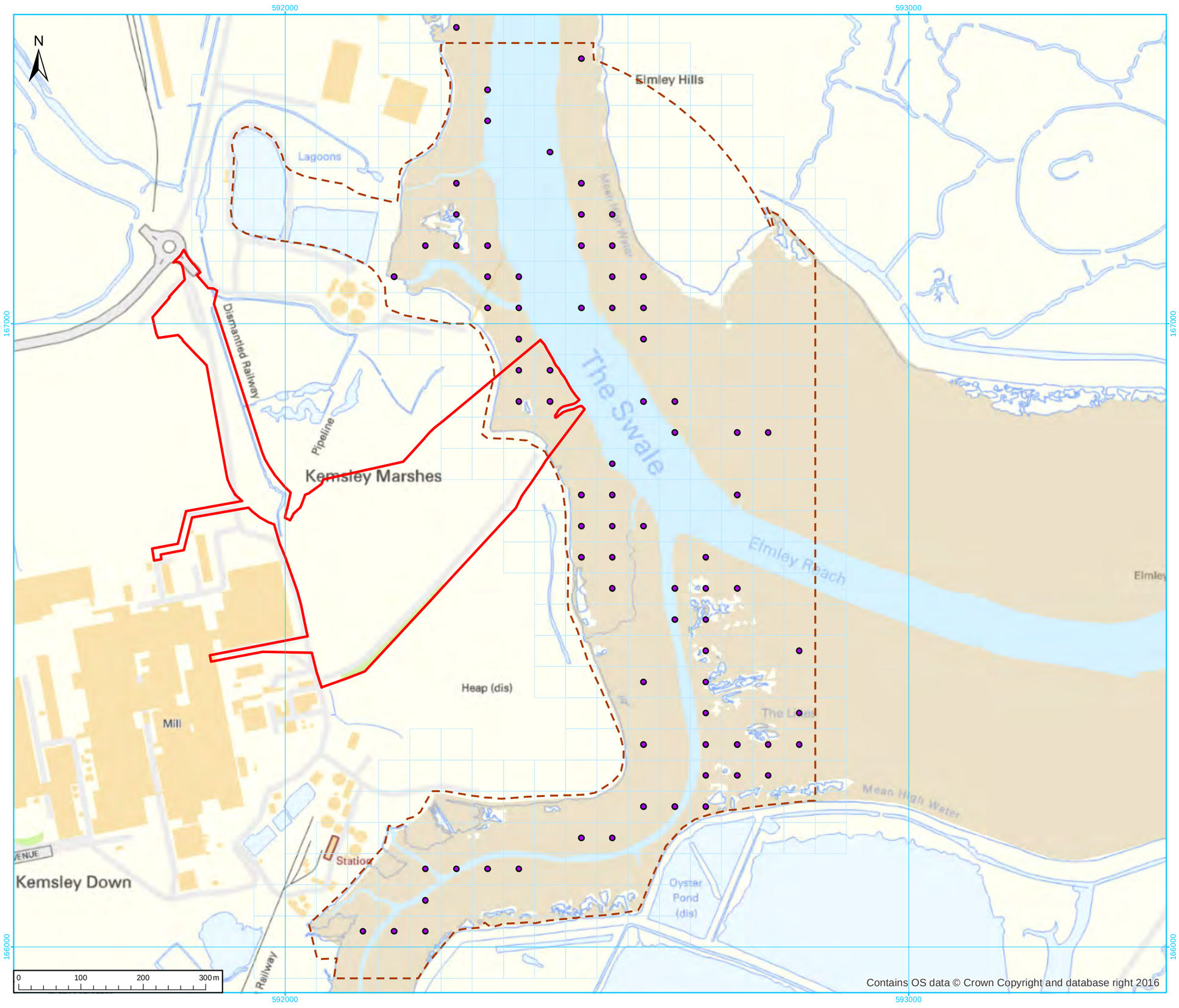

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Legend

- Application boundary
- Survey boundary

Oystercatcher

Bird Numbers

- 1 - 50
- 51 - 180
- 181 - 430

Rev	Description	Date	Initial	Checked

RPS

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Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Oystercatcher at Low Tide, in Spring (Mar, Apr, May) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.98		A

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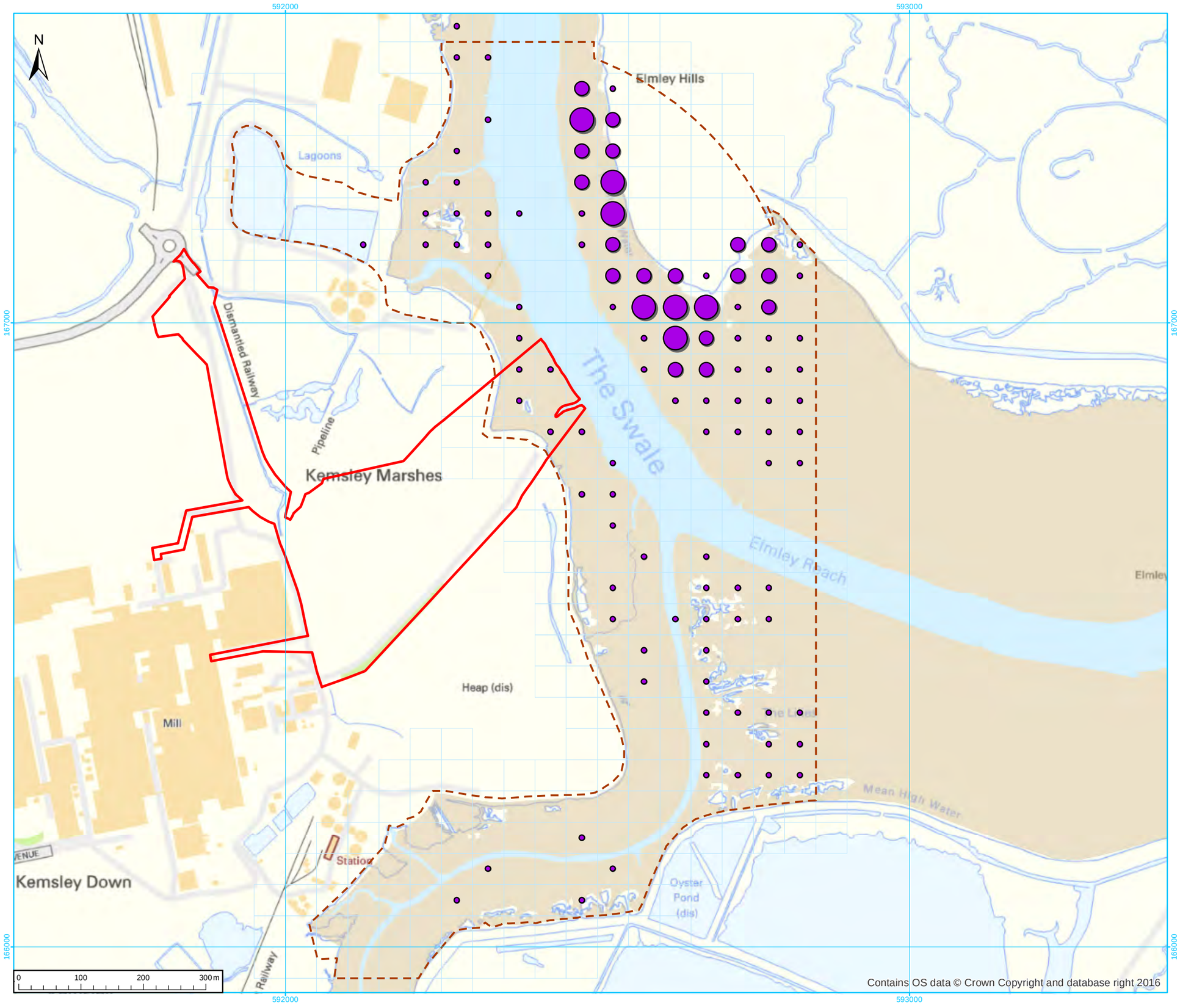

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Legend

Application boundary

Survey boundary

Oystercatcher

Bird Numbers

- 1 - 50
- 51 - 180
- 181 - 430

Rev	Description	Date	Initial	Checked

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Drawing Number		**Rev**
Figure 3.99		A

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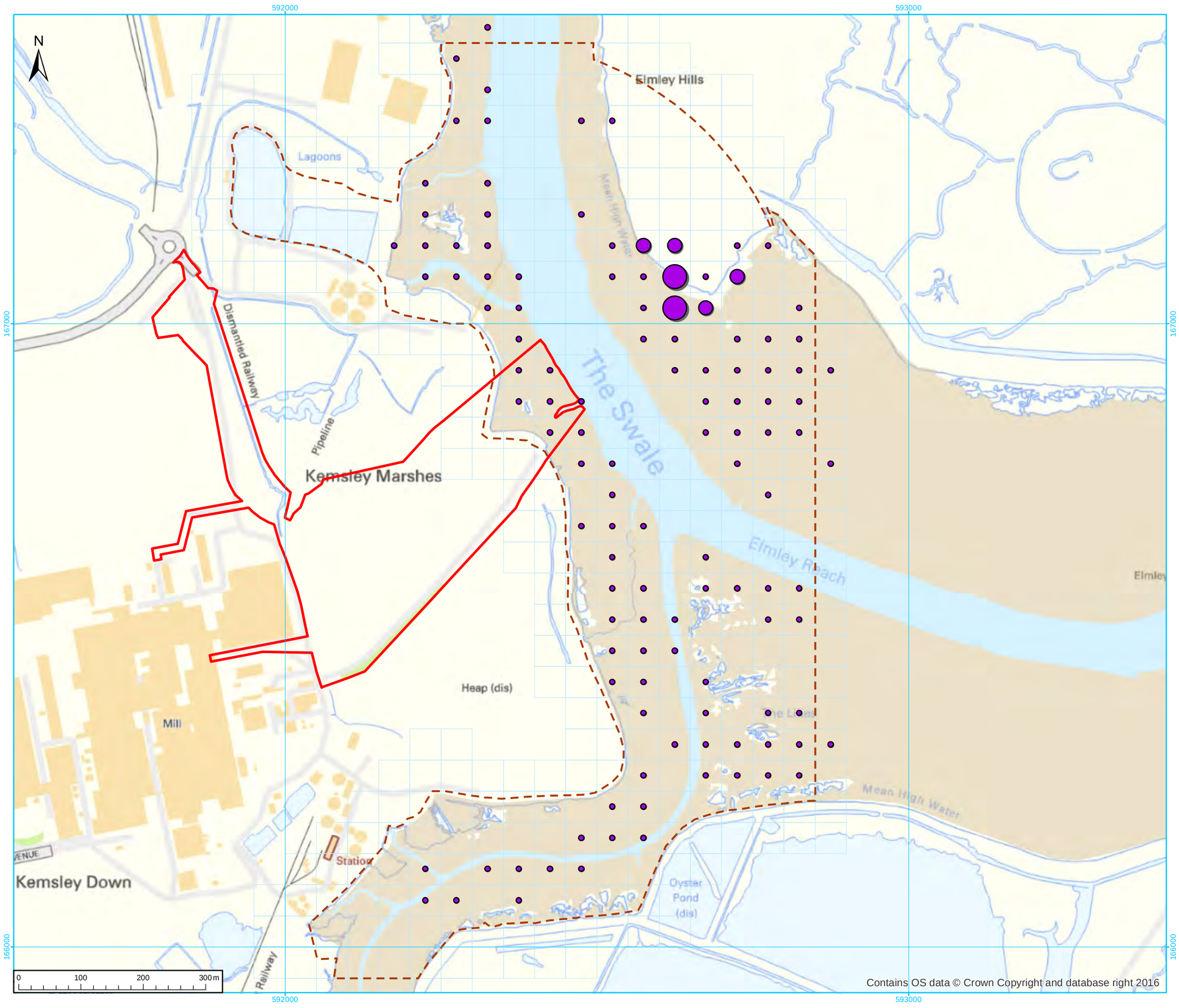

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Legend

- Application boundary
- Survey boundary

Oystercatcher

Bird Numbers

- 1 - 50
- 51 - 180
- 181 - 430

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Oystercatcher at Low Tide, in Autumn (Jul, Aug, Sep, Oct) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.100		A

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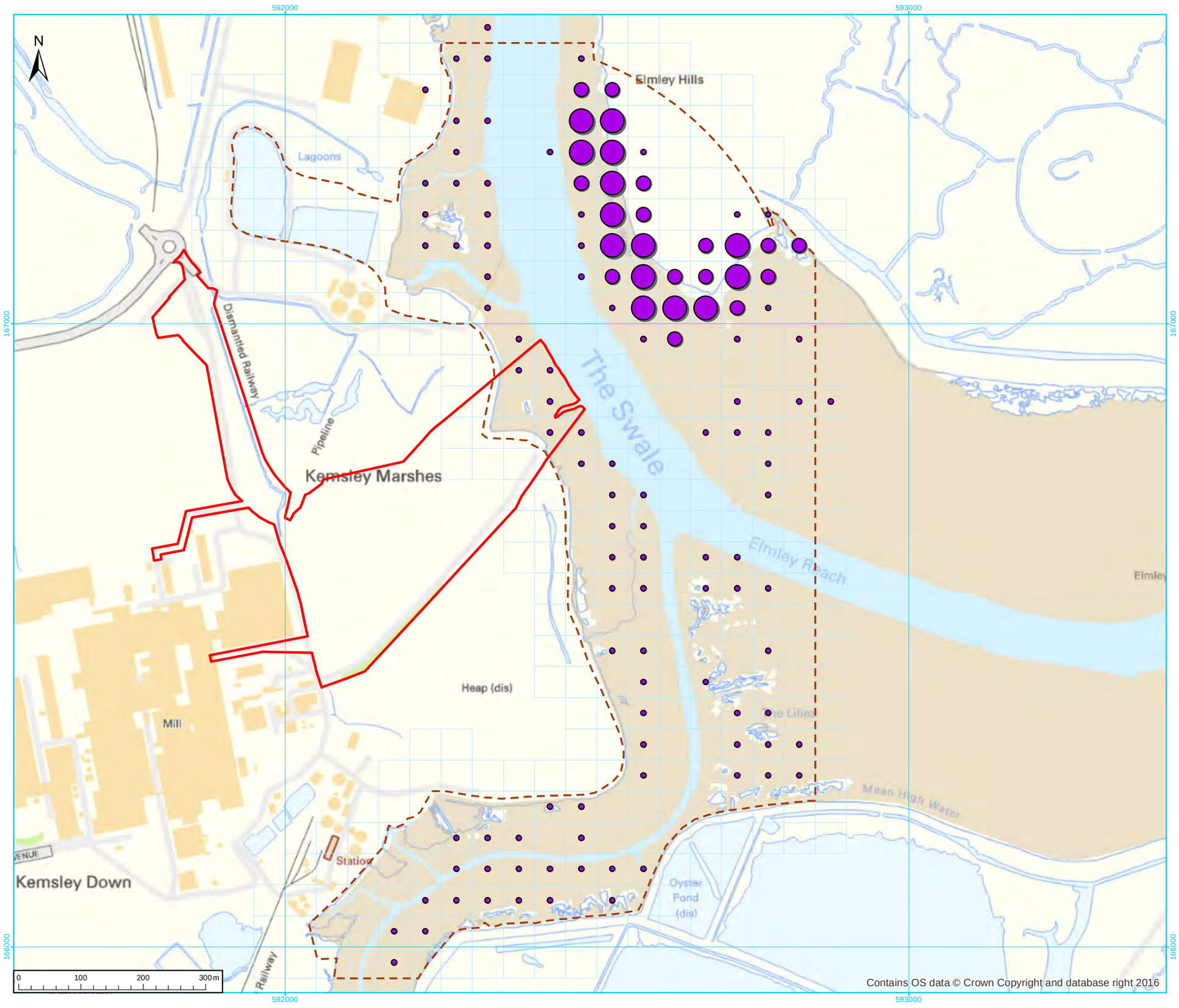

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Legend

- Application boundary
- Survey boundary

Oystercatcher

Bird Numbers

- 1 - 50
- 51 - 180
- 181 - 430

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Oystercatcher at High Tide, in Winter (Jan, Feb, Nov, Dec) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.101		A

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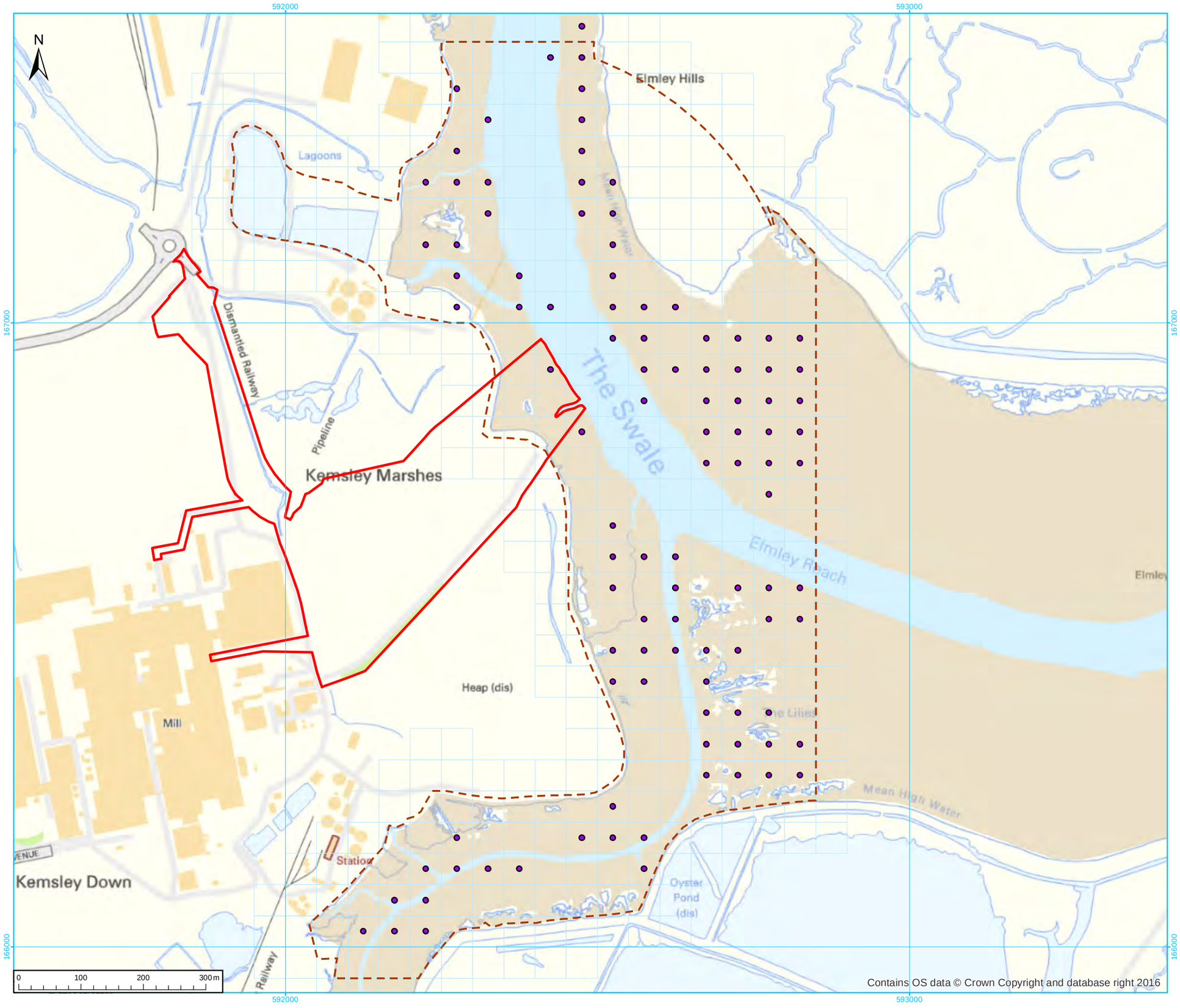

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- Application boundary
- Survey boundary

Oystercatcher

Bird Numbers

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Rev	Description	Date	Initial	Checked

RPS

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Project: Kemsley

Title: Distribution of Oystercatcher at Low Tide, in Winter (Jan, Feb, Nov, Dec) 2016

Status	Drawn By	PM/Checked By
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Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.102		A

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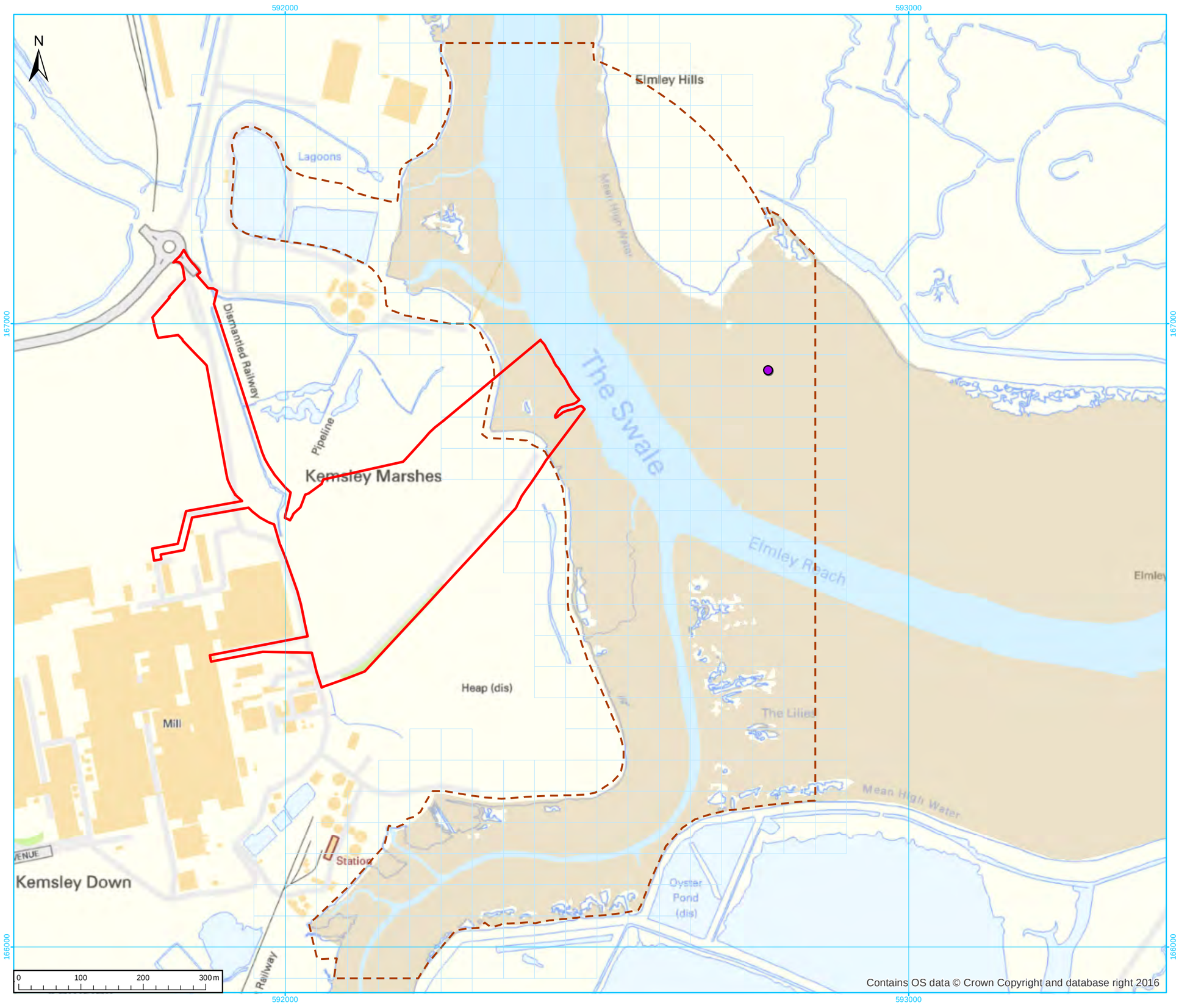

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Legend

Application boundary

Survey boundary

Pintail

Bird Numbers

1 - 5

6 - 20

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
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T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Pintail at High Tide, in Spring (Mar, Apr, May) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.103		A

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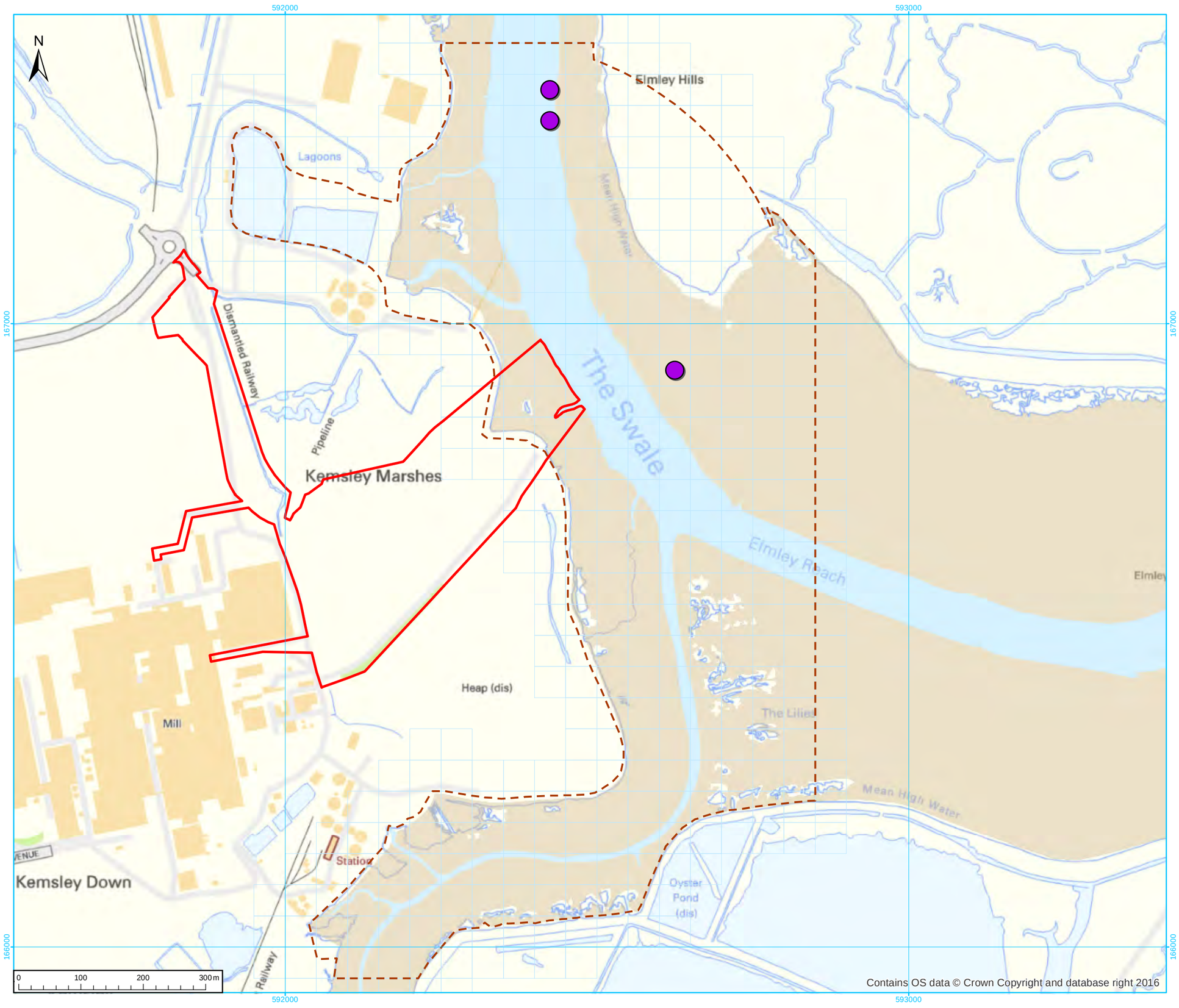

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Legend

Application boundary

Survey boundary

Pintail

Bird Numbers

1 - 5

6 - 20

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T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Pintail at Low Tide, in Spring (Mar, Apr, May) 2016

Status	Drawn By	PM/Checked By
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Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.104		A

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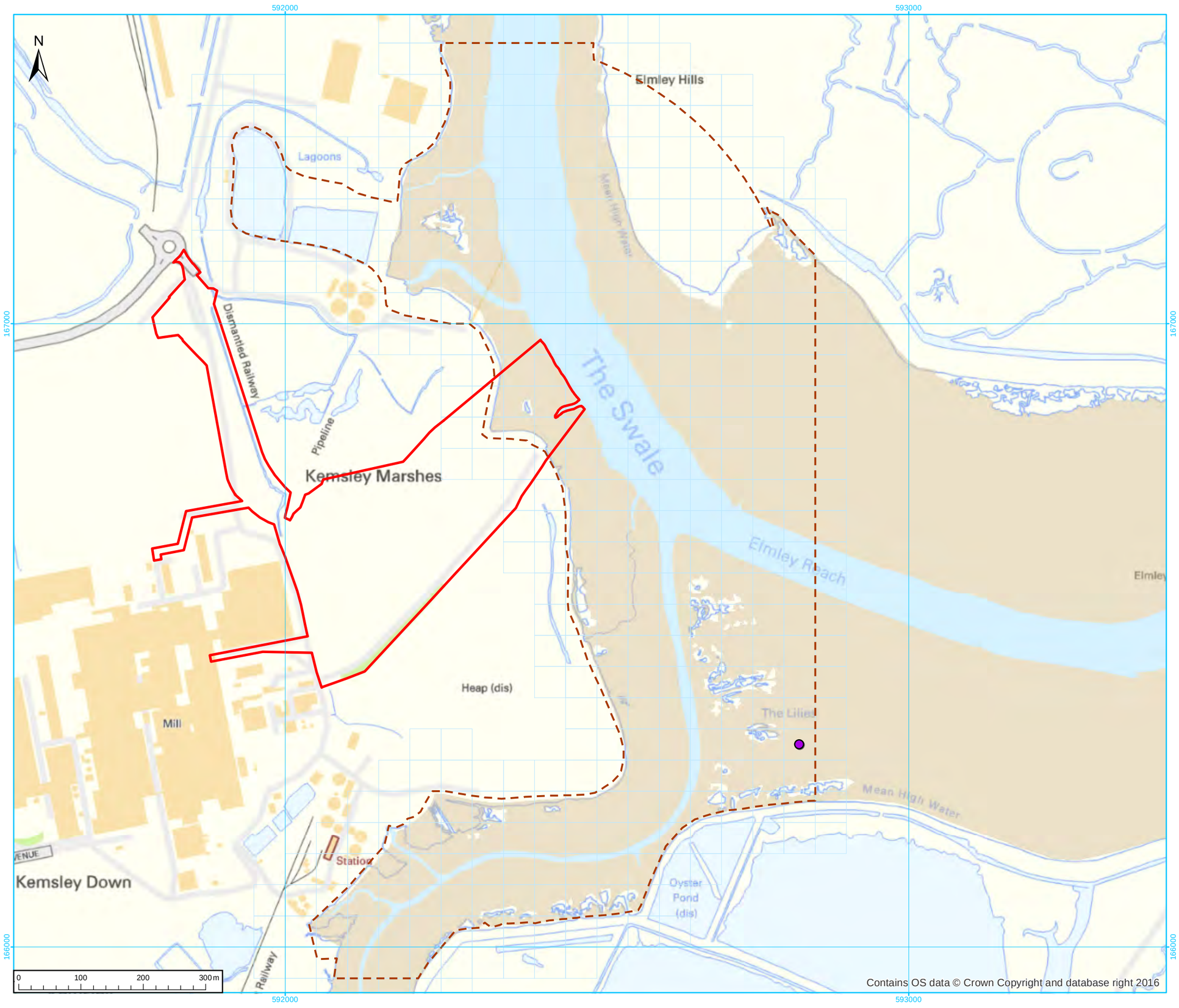

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Legend

- Application boundary
- Survey boundary

Pintail

Bird Numbers

- 1 - 5
- 6 - 20

Rev	Description	Date	Initial	Checked

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T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Pintail at High Tide, in Winter (Jan, Feb, Nov, Dec) 2016

Status	Drawn By	PM/Checked By
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Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.105		A

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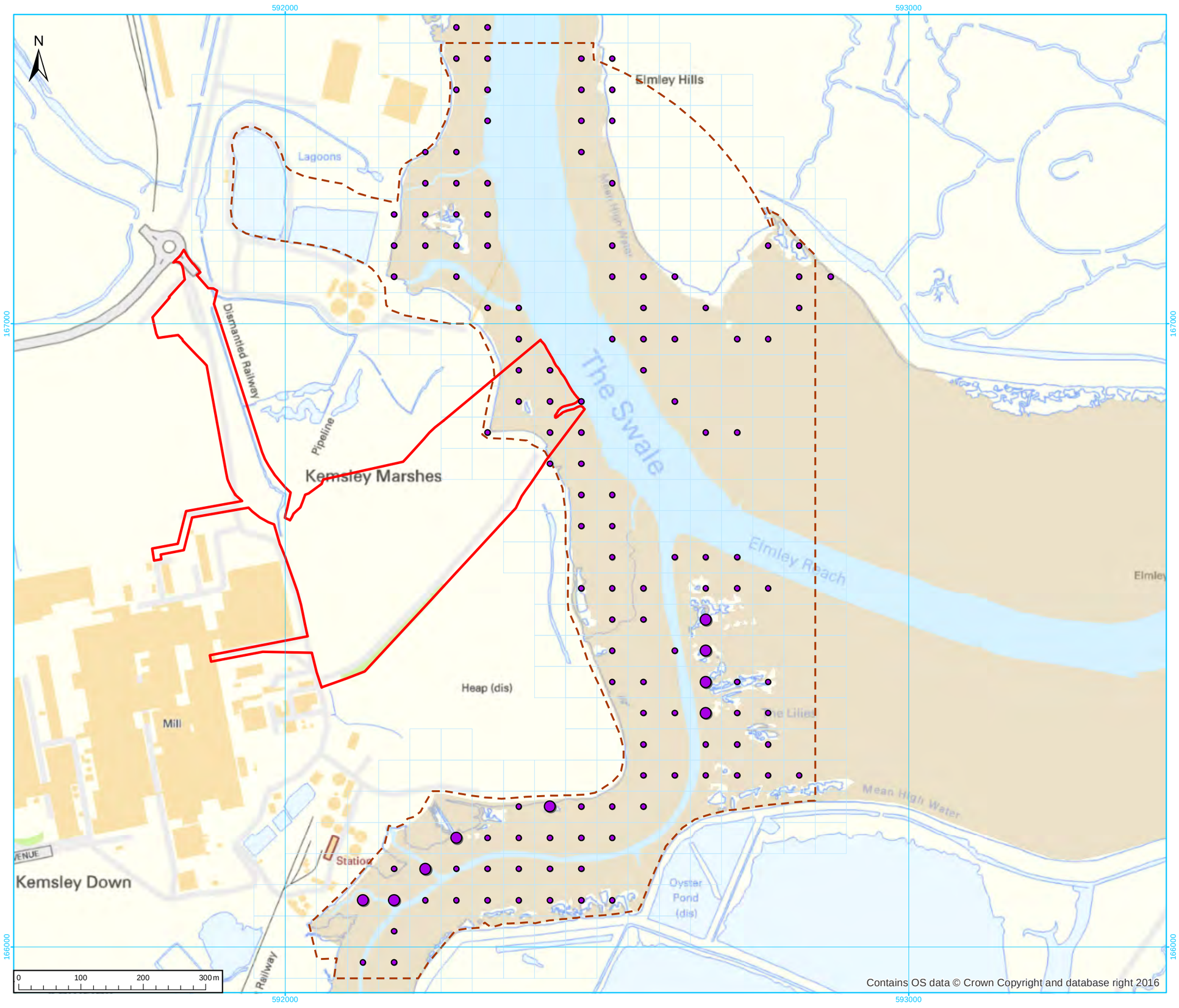

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Legend

- Application boundary
- Survey boundary

Redshank

Bird Numbers

- 1 - 15
- 16 - 50
- 51 - 120
- 121 - 270

Rev	Description	Date	Initial	Checked

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T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Redshank at High Tide, in Spring (Mar, Apr, May) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
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Drawing Number		**Rev**
Figure 3.106		A

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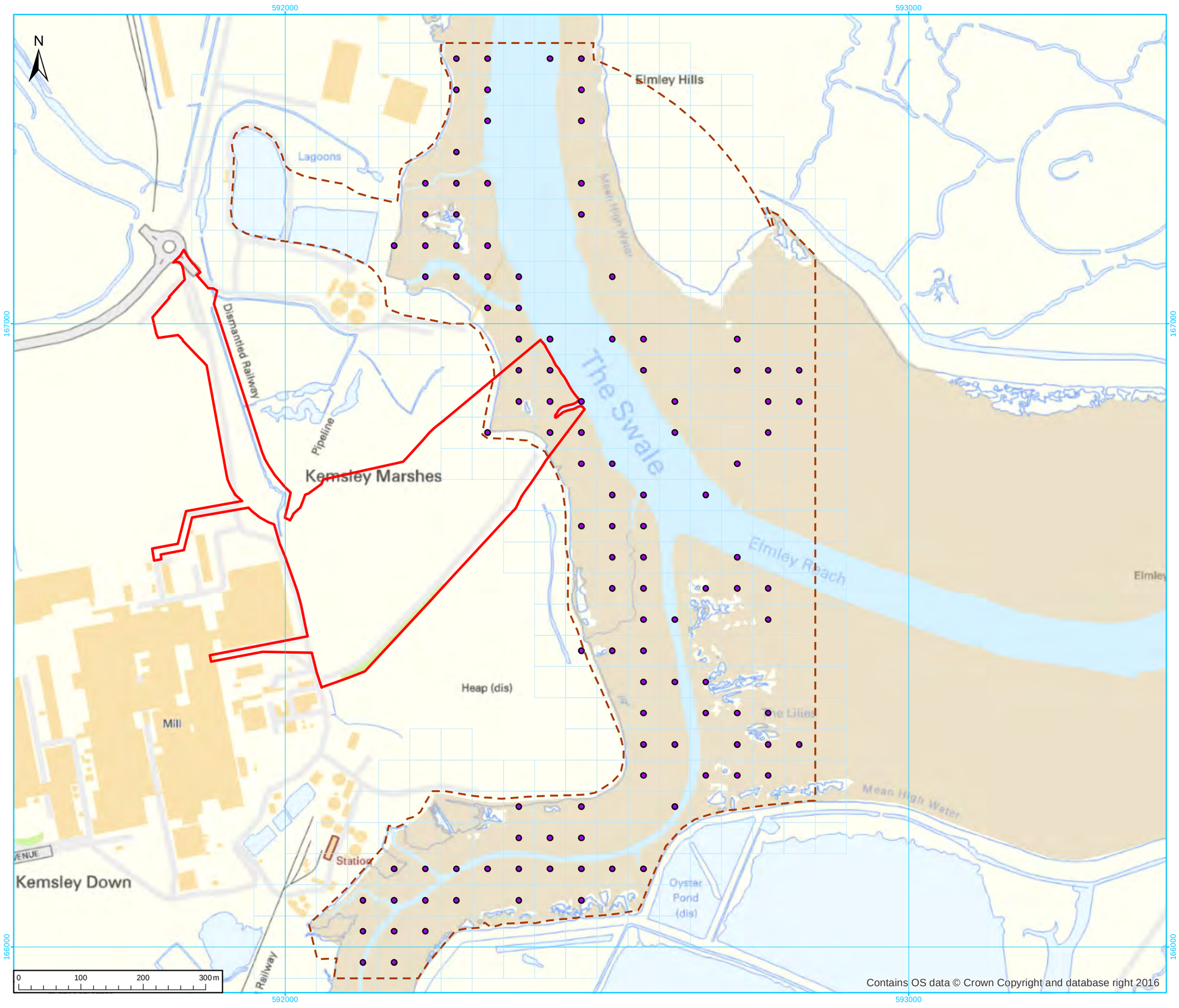

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Redshank

Bird Numbers

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Status	Drawn By	PM/Checked By
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Job Ref	**Scale @ A3**	**Date**
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Drawing Number		**Rev**
Figure 3.107		A

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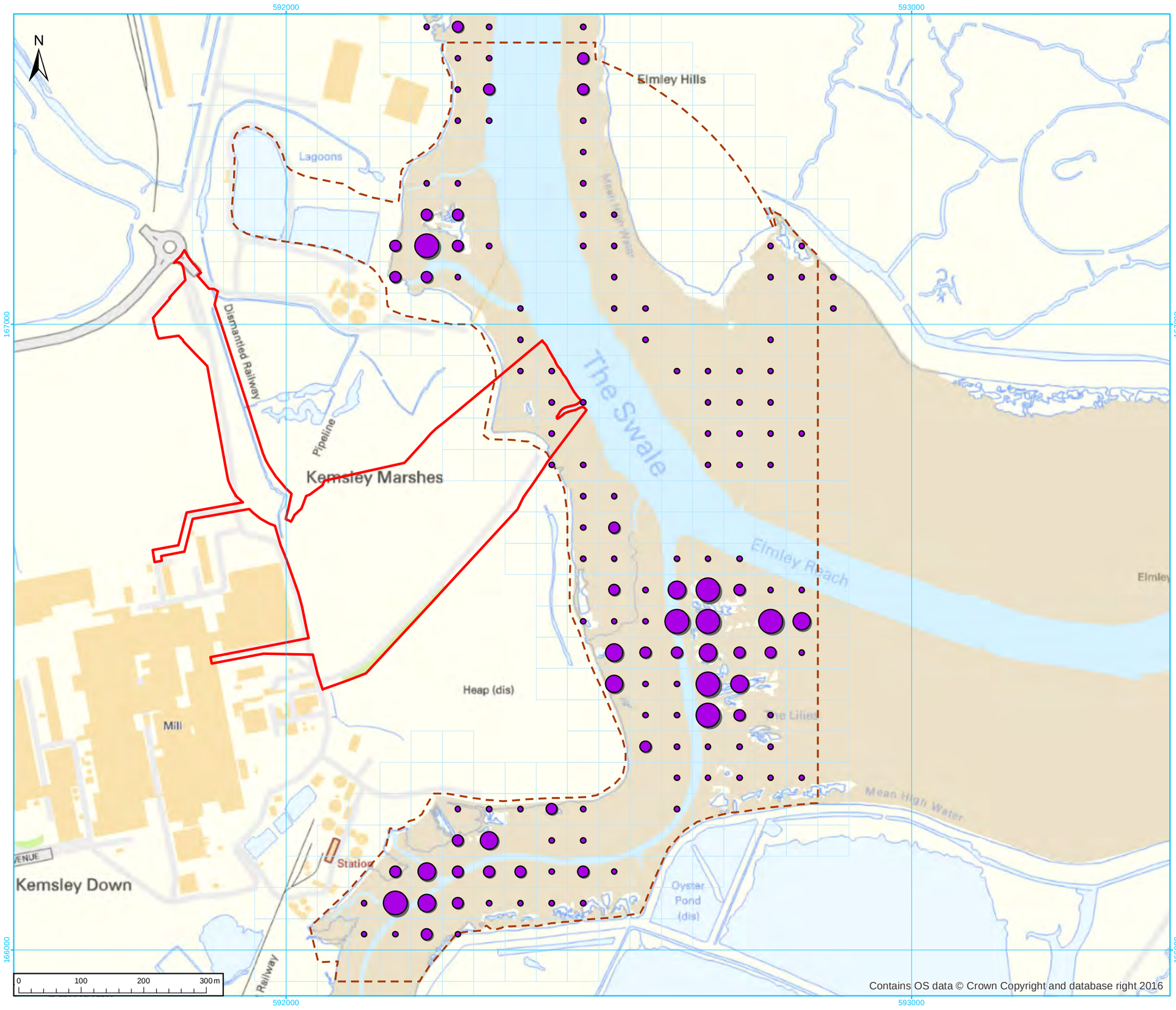

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Redshank

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Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Redshank at High Tide, in Autumn (Jul, Aug, Sep, Oct) 2016

Status	Drawn By	PM/Checked By
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Figure 3.108		A

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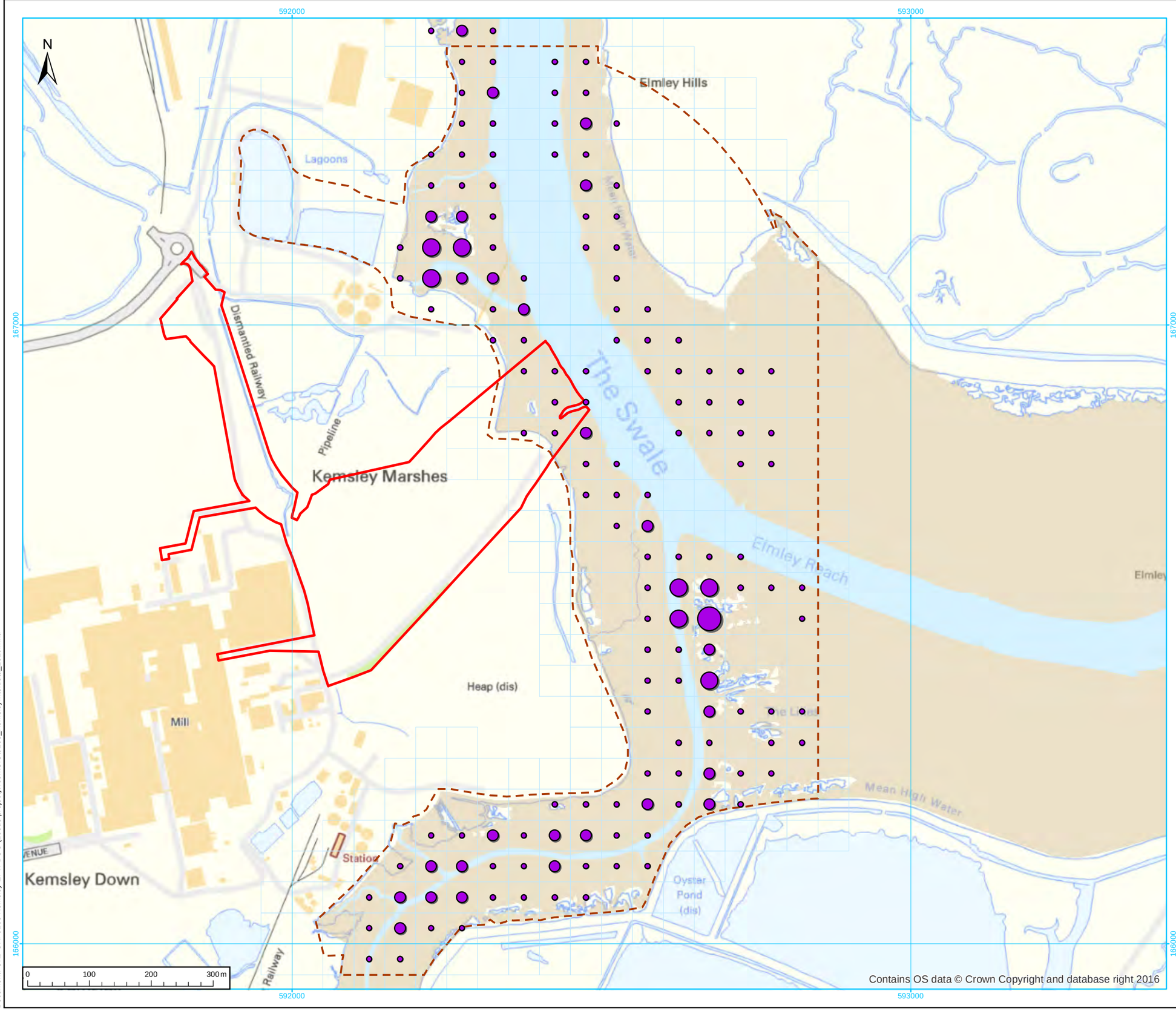

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Redshank

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Project: Kemsley

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Status	Drawn By	PM/Checked By
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OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.109		A

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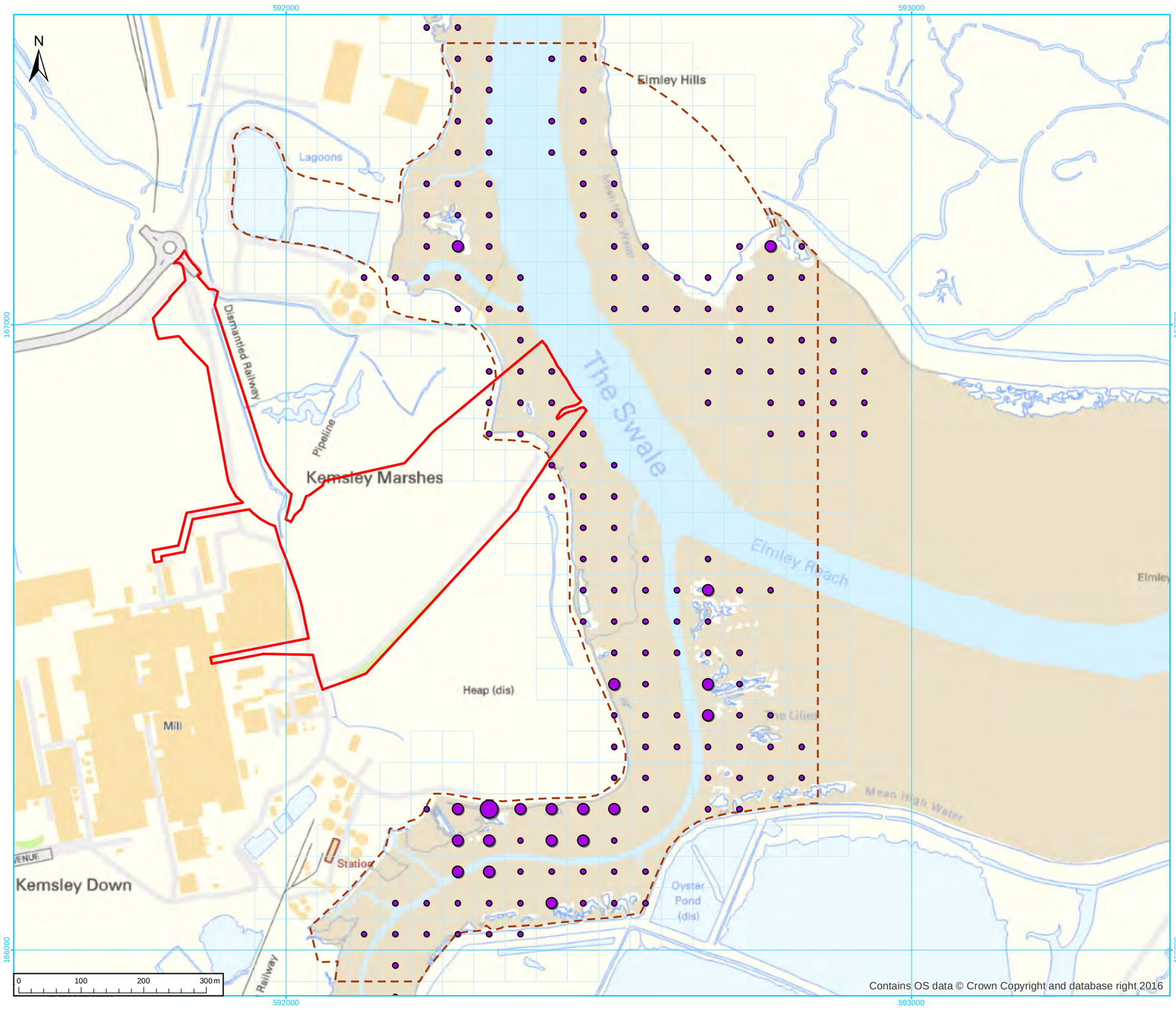

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T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Redshank at High Tide, in Winter (Jan, Feb, Nov, Dec) 2016

Status	Drawn By	PM/Checked By
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Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
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Figure 3.110		A

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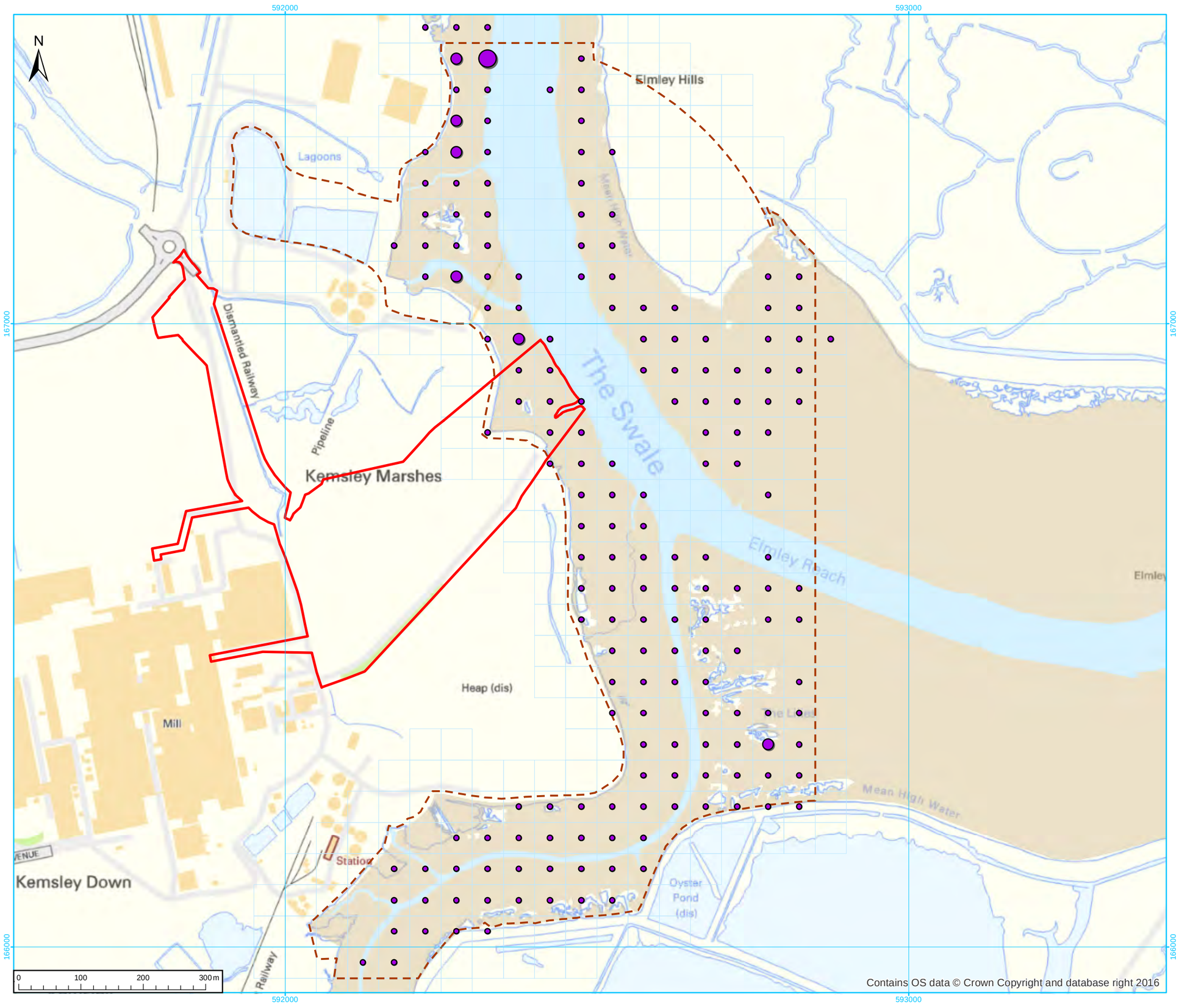

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Redshank

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Status	Drawn By	PM/Checked By
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Figure 3.111		A

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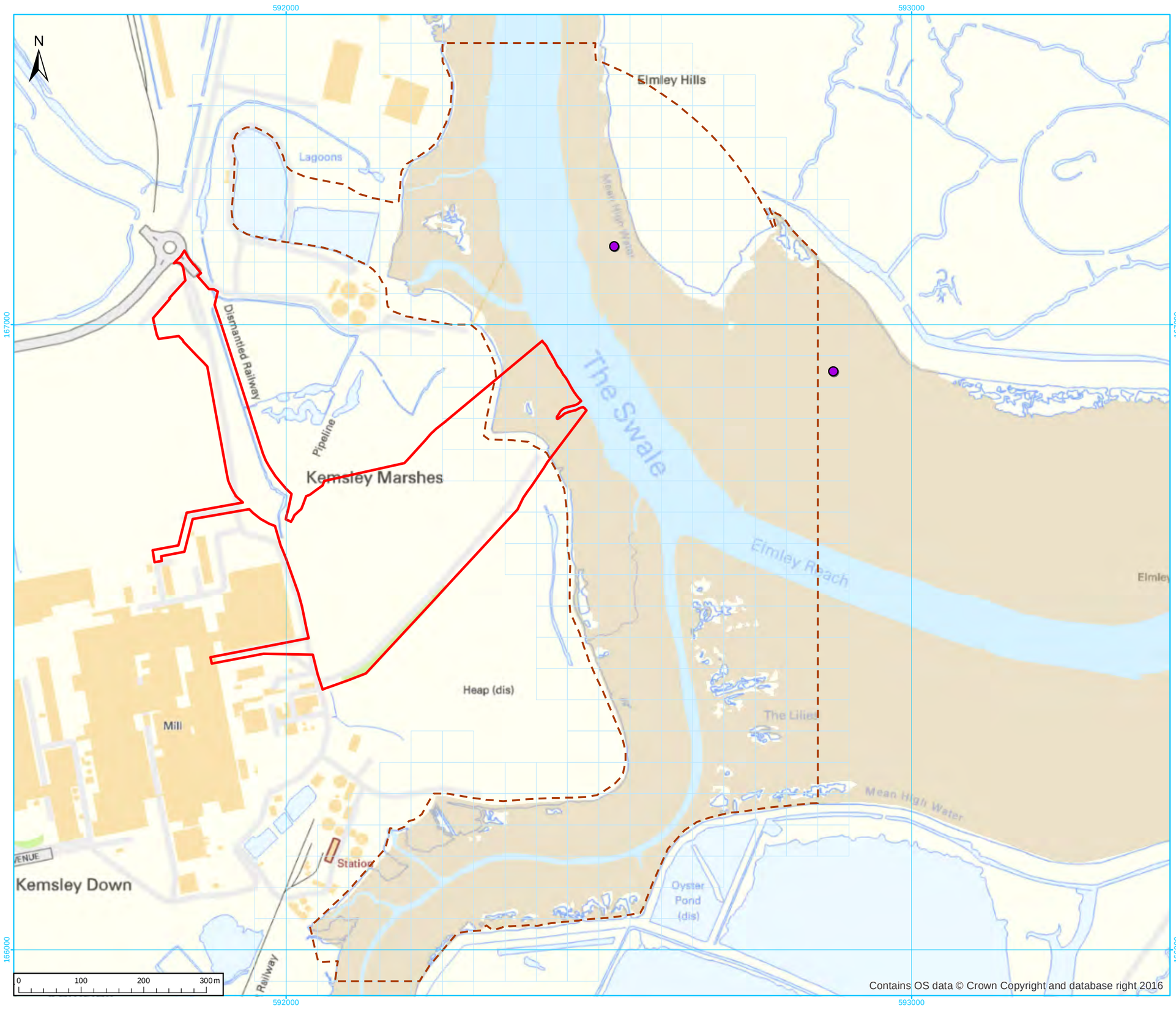

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Legend

- Application boundary
- Survey boundary

Ringed Plover

Bird Numbers

- 1 - 10
- 11 - 20

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Ringed Plover at Low Tide, in Spring (Mar, Apr, May) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.112		A

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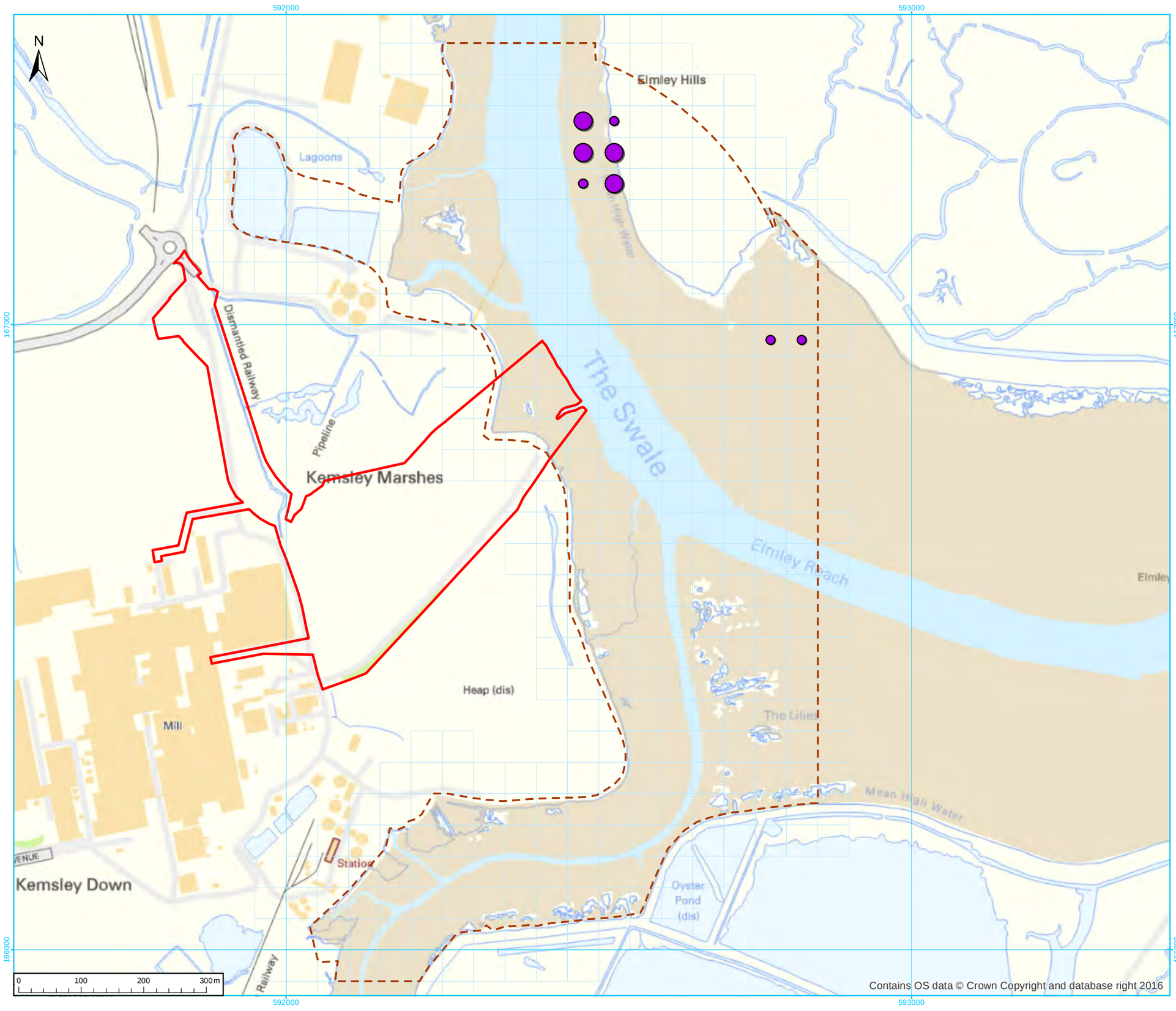

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Ringed Plover

Bird Numbers

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Figure 3.113		A

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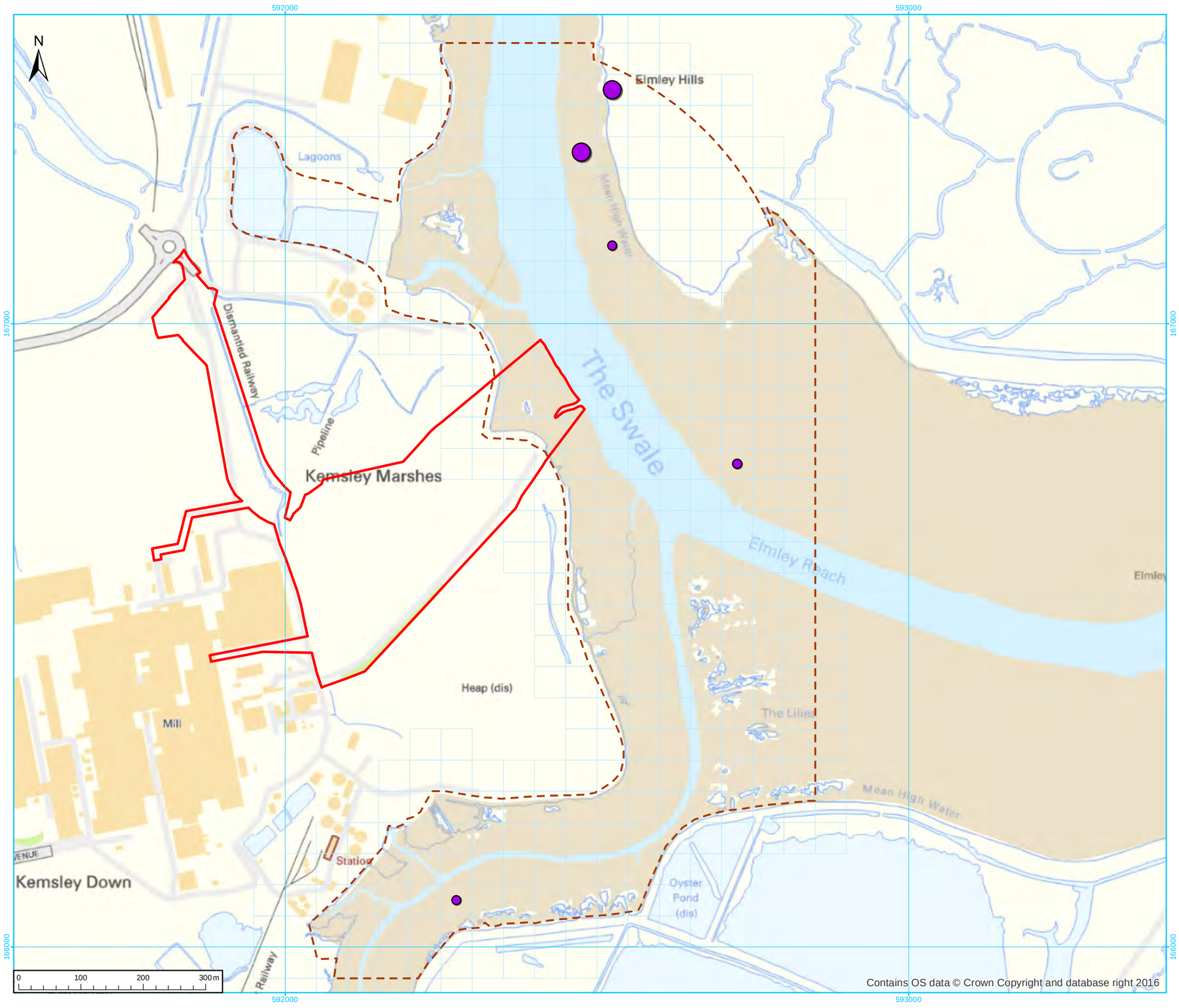

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Status	Drawn By	PM/Checked By
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OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.114		A

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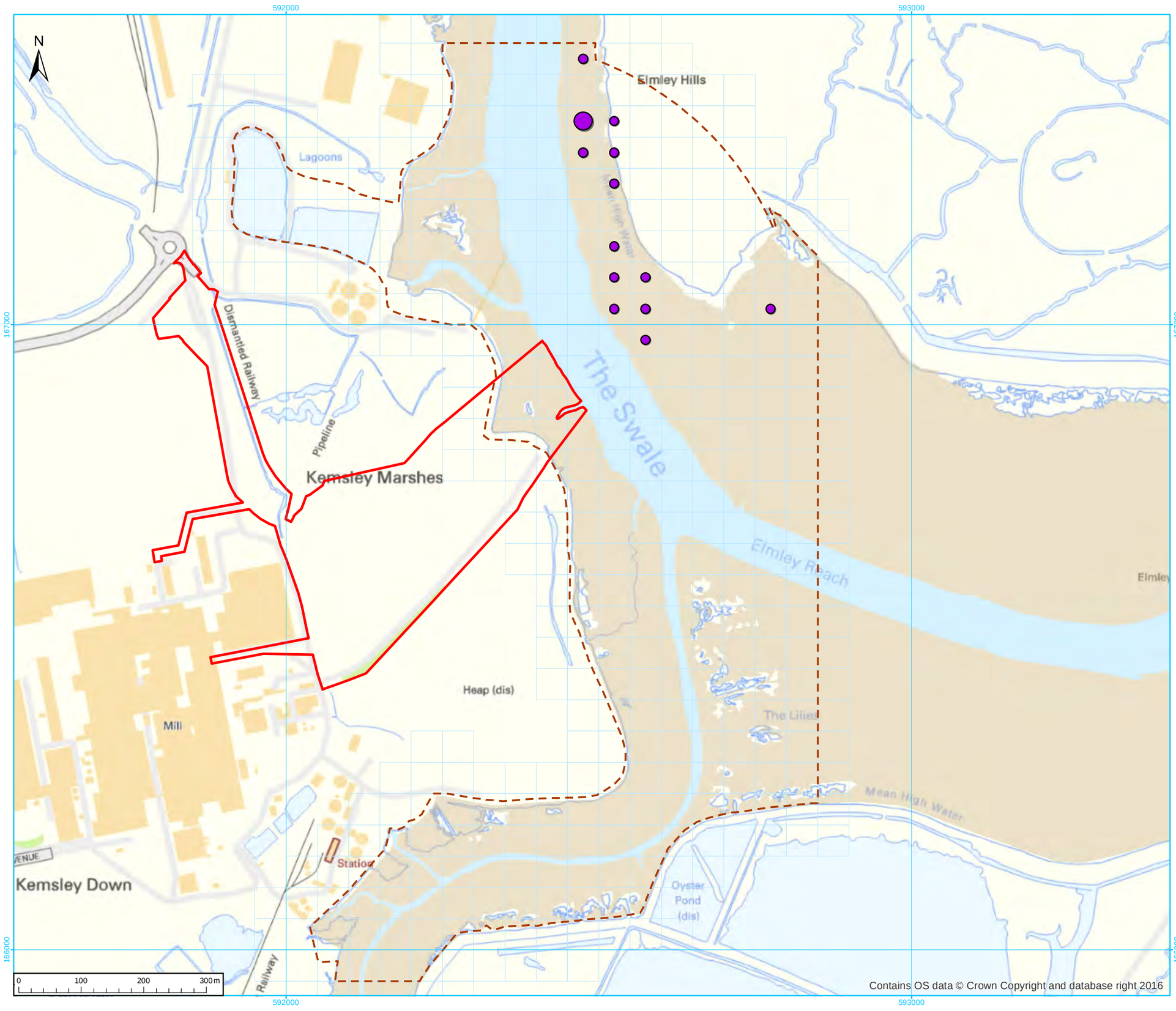

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Ringed Plover

Bird Numbers

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Drawing Number		**Rev**
Figure 3.115		A

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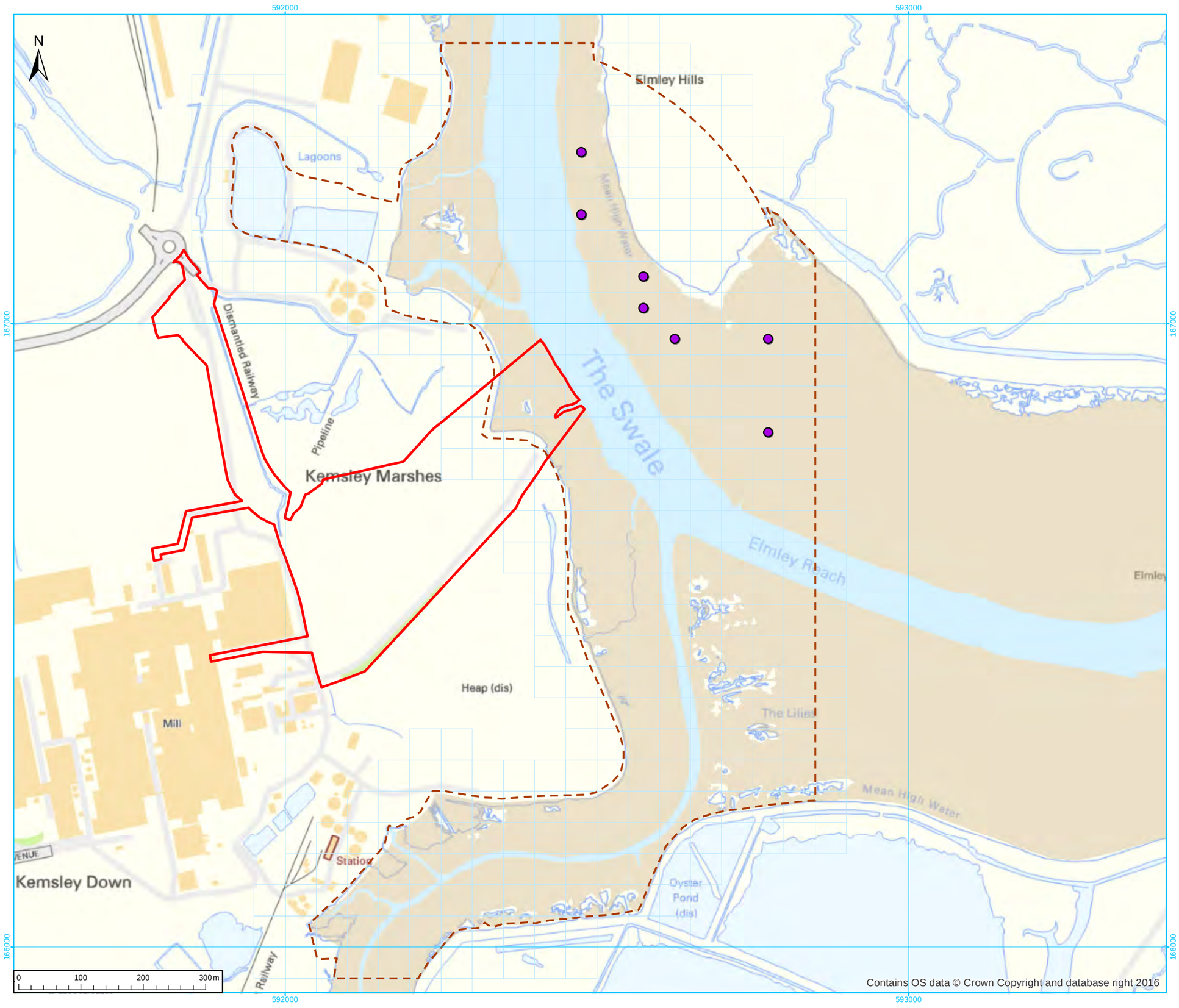

Notes

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Legend

- Application boundary
- Survey boundary

Ringed Plover

Bird Numbers

- 1 - 10
- 11 - 20

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Ringed Plover at Low Tide, in Winter (Jan, Feb, Nov, Dec) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.116		A

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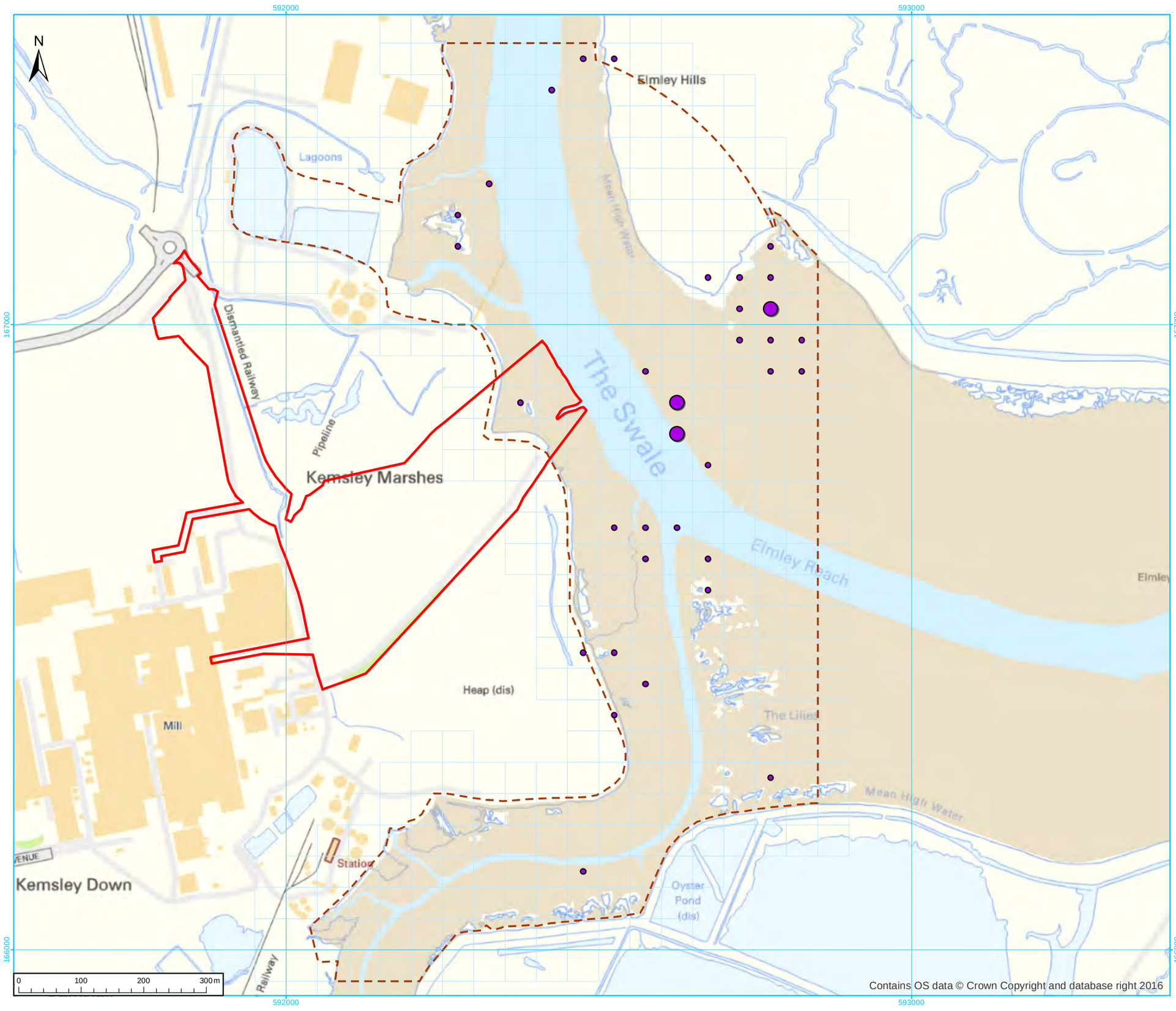

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Legend

- Application boundary
- Survey boundary

Shelduck

Bird Numbers

- 1 - 5
- 6 - 25
- 26 - 51

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Shelduck at High Tide, in Spring (Mar, Apr, May) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.117		A

rpsgroup.com/uk

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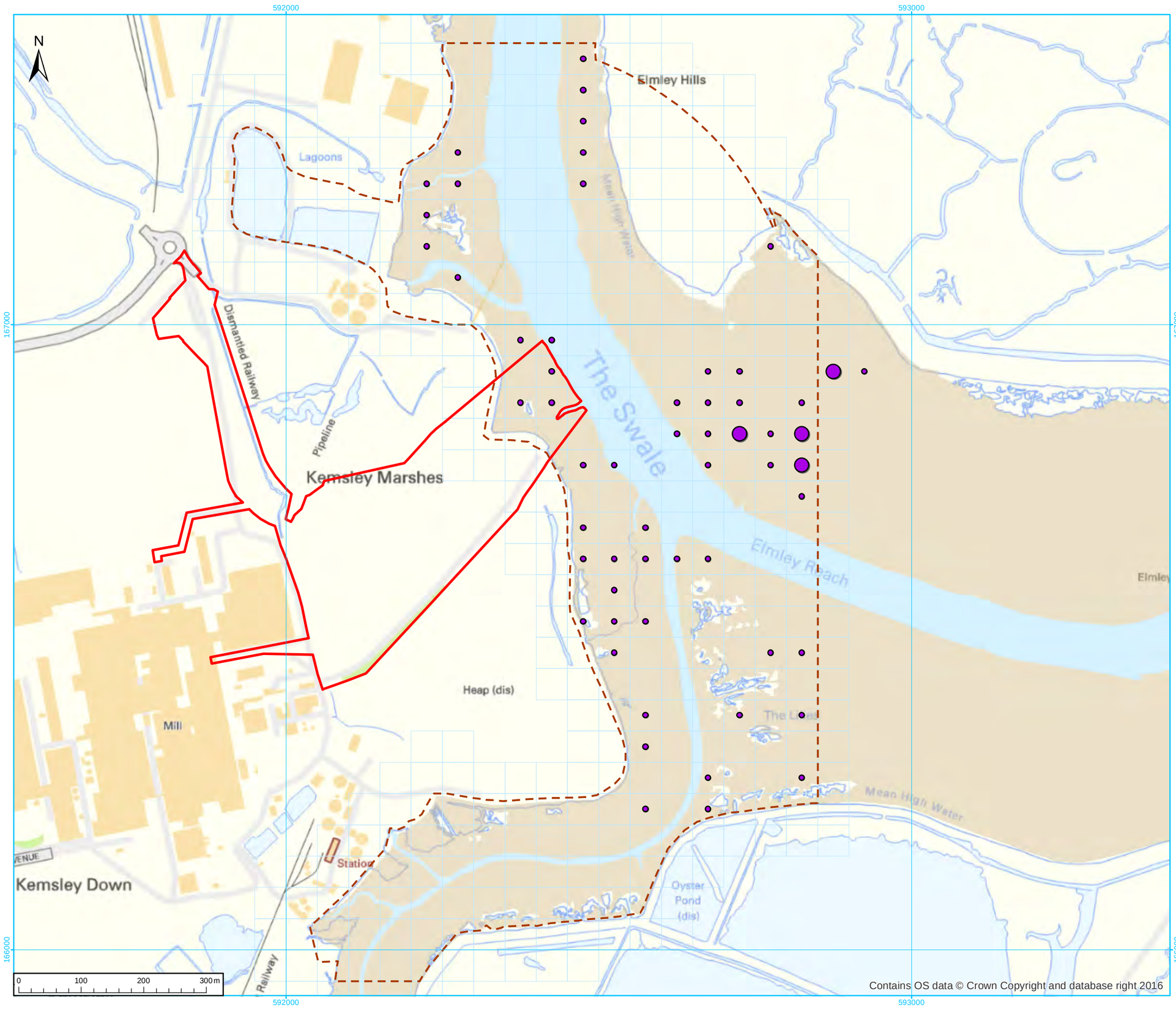

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Legend

- Application boundary
- Survey boundary

Shelduck

Bird Numbers

- 1 - 5
- 6 - 25
- 26 - 51

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Shelduck at Low Tide, in Spring (Mar, Apr, May) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.118		A

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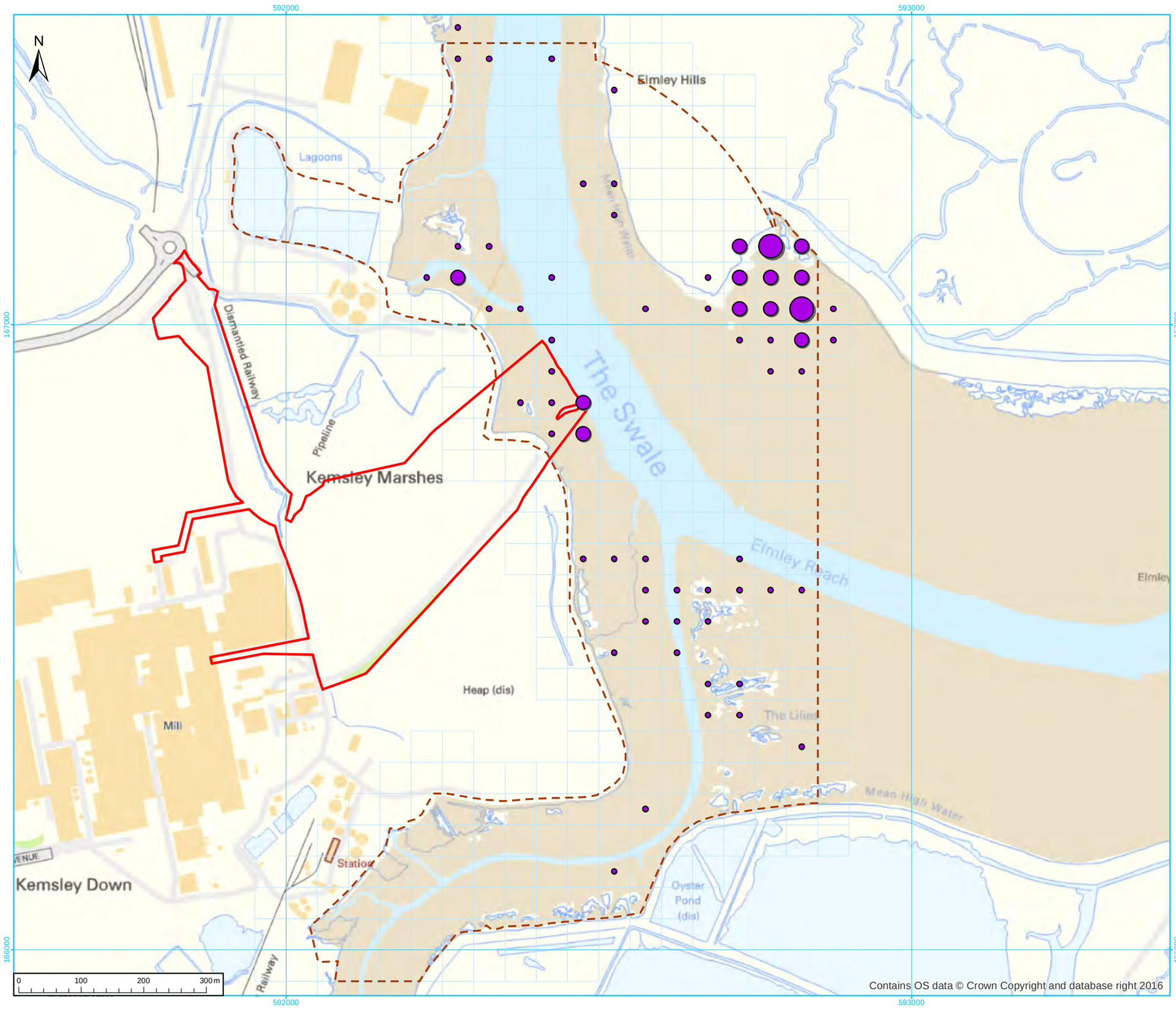

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Legend

- Application boundary
- Survey boundary

Shelduck

Bird Numbers

- 1 - 5
- 6 - 25
- 26 - 51

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Shelduck at High Tide, in Autumn (Jul, Aug, Sep, Oct) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.119		A

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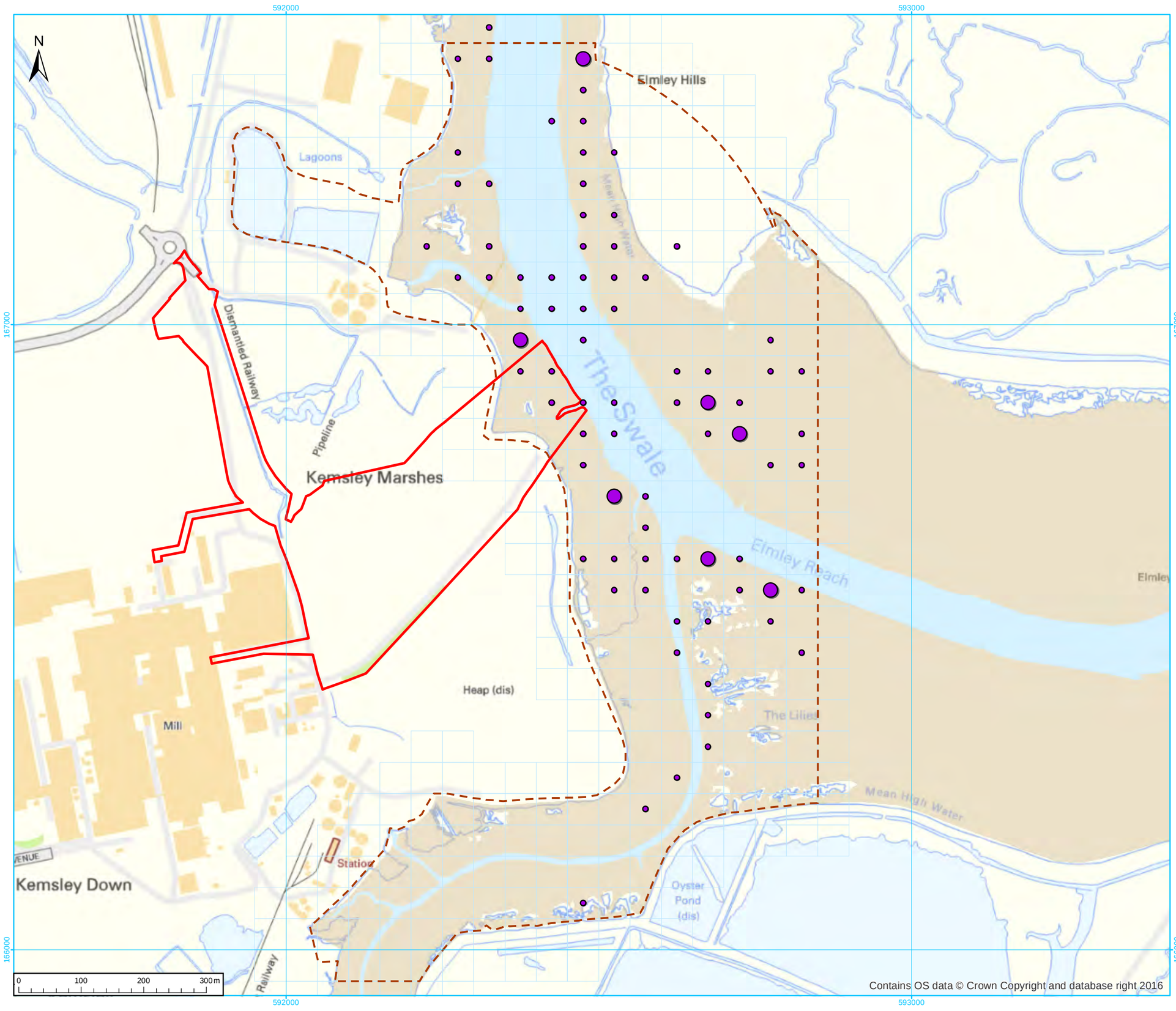

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Legend

- Application boundary
- Survey boundary

Shelduck

Bird Numbers

- 1 - 5
- 6 - 25
- 26 - 51

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Shelduck at Low Tide, in Autumn (Jul, Aug, Sep, Oct) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.120		A

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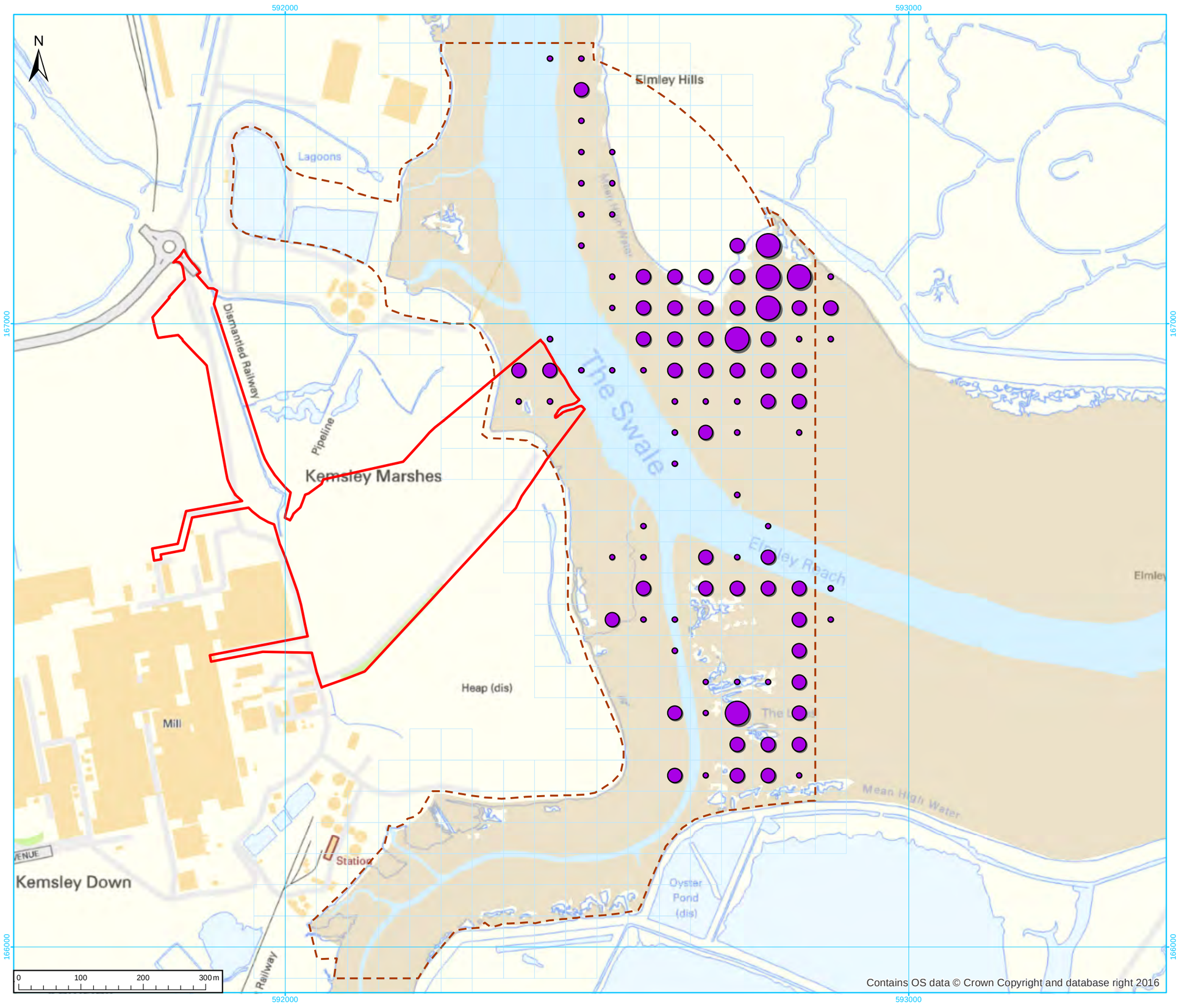

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Legend

- Application boundary
- Survey boundary

Shelduck

Bird Numbers

- 1 - 5
- 6 - 25
- 26 - 51

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Shelduck at High Tide, in Winter (Jan, Feb, Nov, Dec) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.121		A

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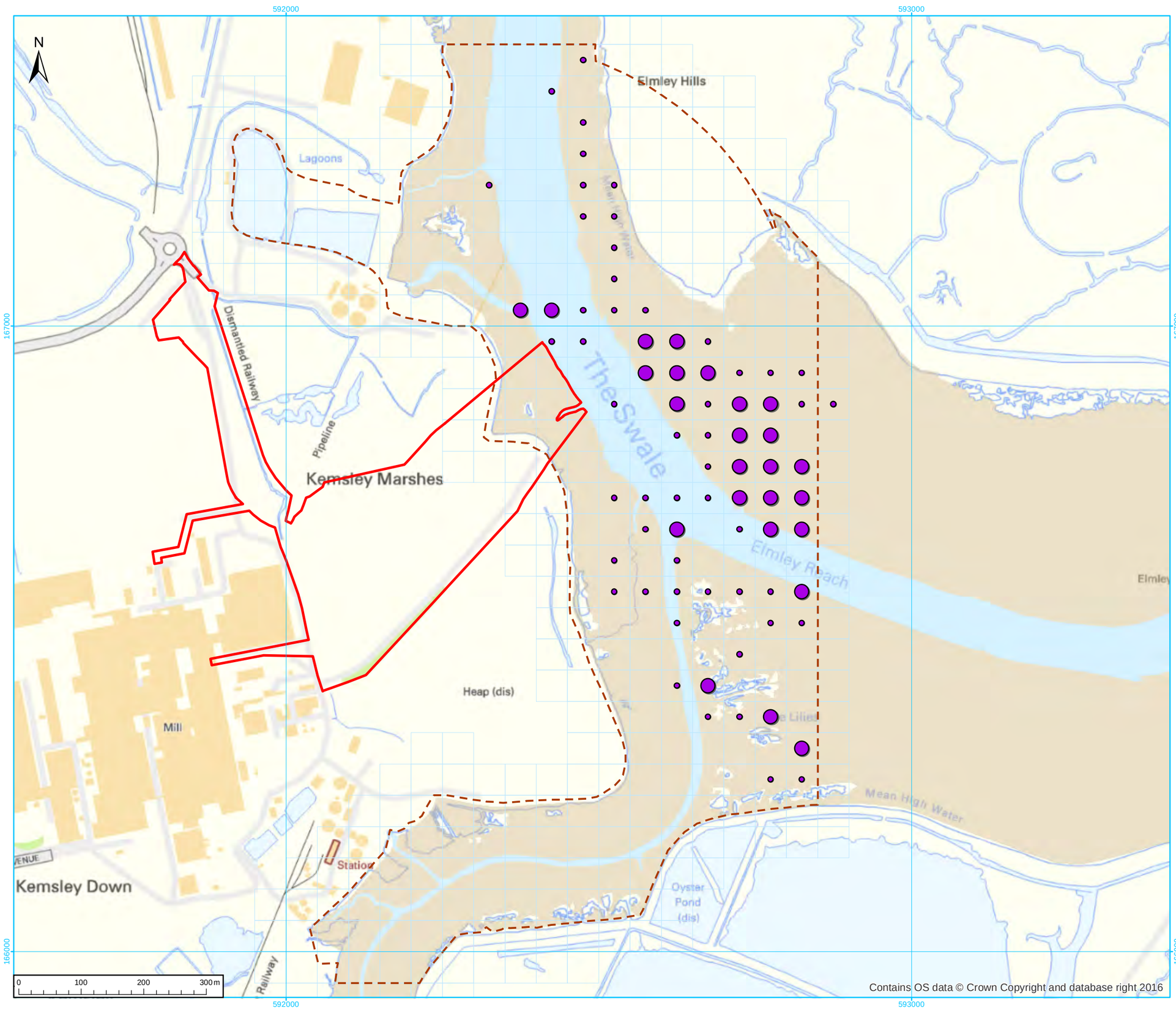

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Legend

- Application boundary
- Survey boundary

Shelduck
Bird Numbers

- 1 - 5
- 6 - 25
- 26 - 51

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
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T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Shelduck at Low Tide, in Winter (Jan, Feb, Nov, Dec) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.122		A

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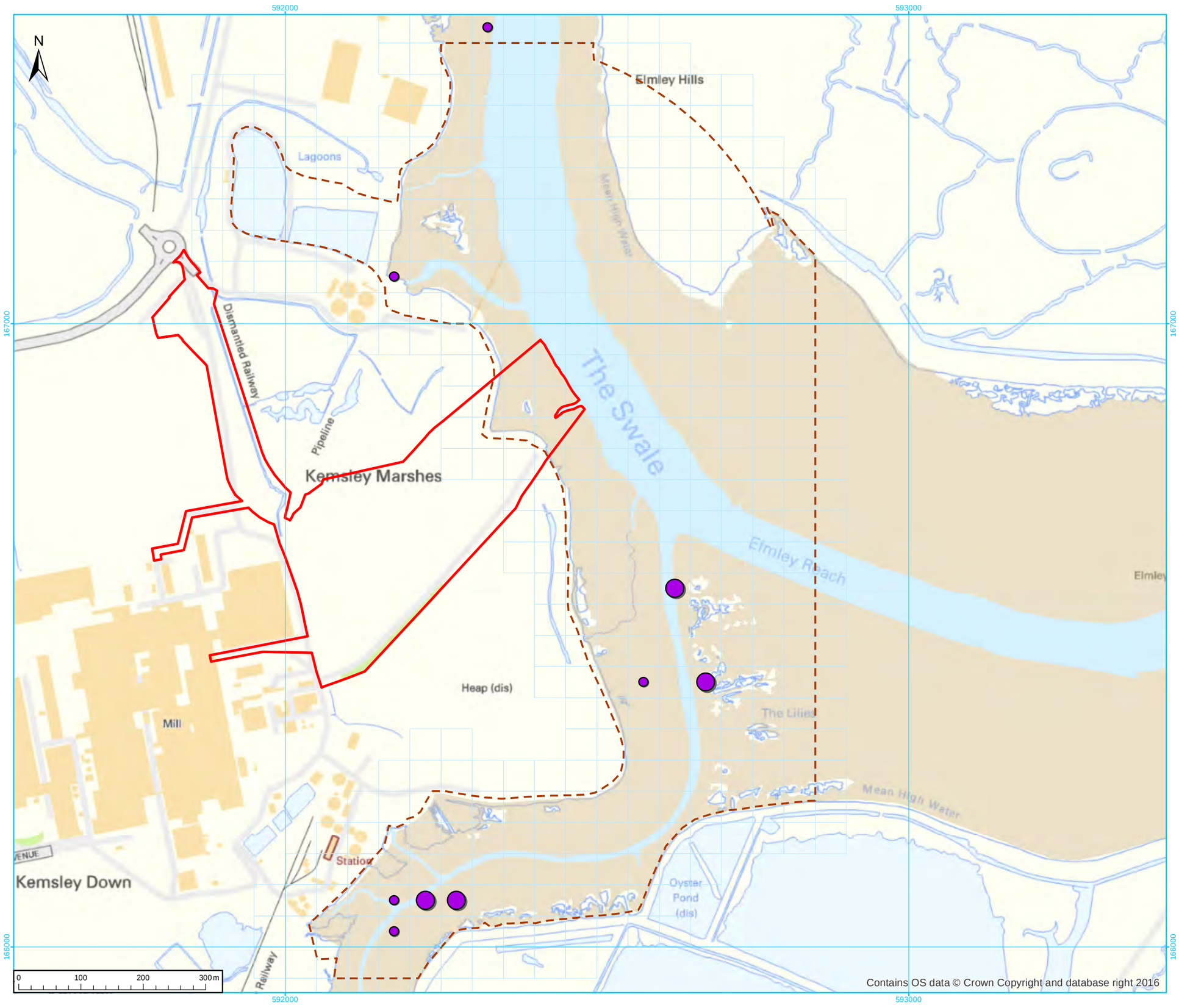

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Legend

- Application boundary
- Survey boundary

Spotted Redshank

Bird numbers

- 1 - 3
- 4 - 10

Rev	Description	Date	Initial	Checked

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Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Spotted Redshank at Low Tide, in Autumn (Jul, Aug, Sep, Oct) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.123		A

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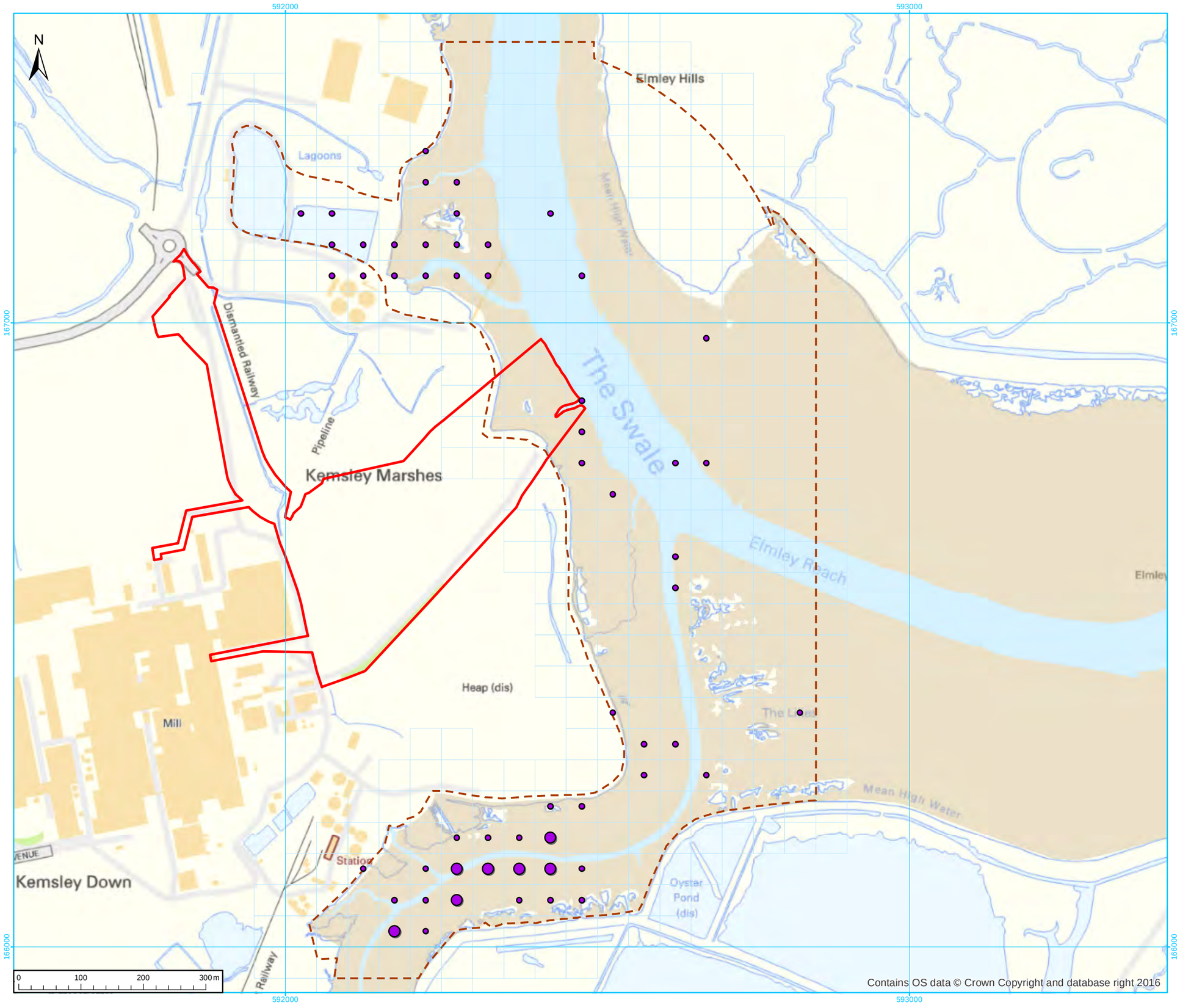

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Legend

- Application boundary
- Survey boundary

Teal

Bird Numbers

- 1 - 10
- 11 - 50
- 51 - 100
- 101 - 190

Rev	Description	Date	Initial	Checked

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T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Teal at High Tide, in Spring (Mar, Apr, May) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.124		A

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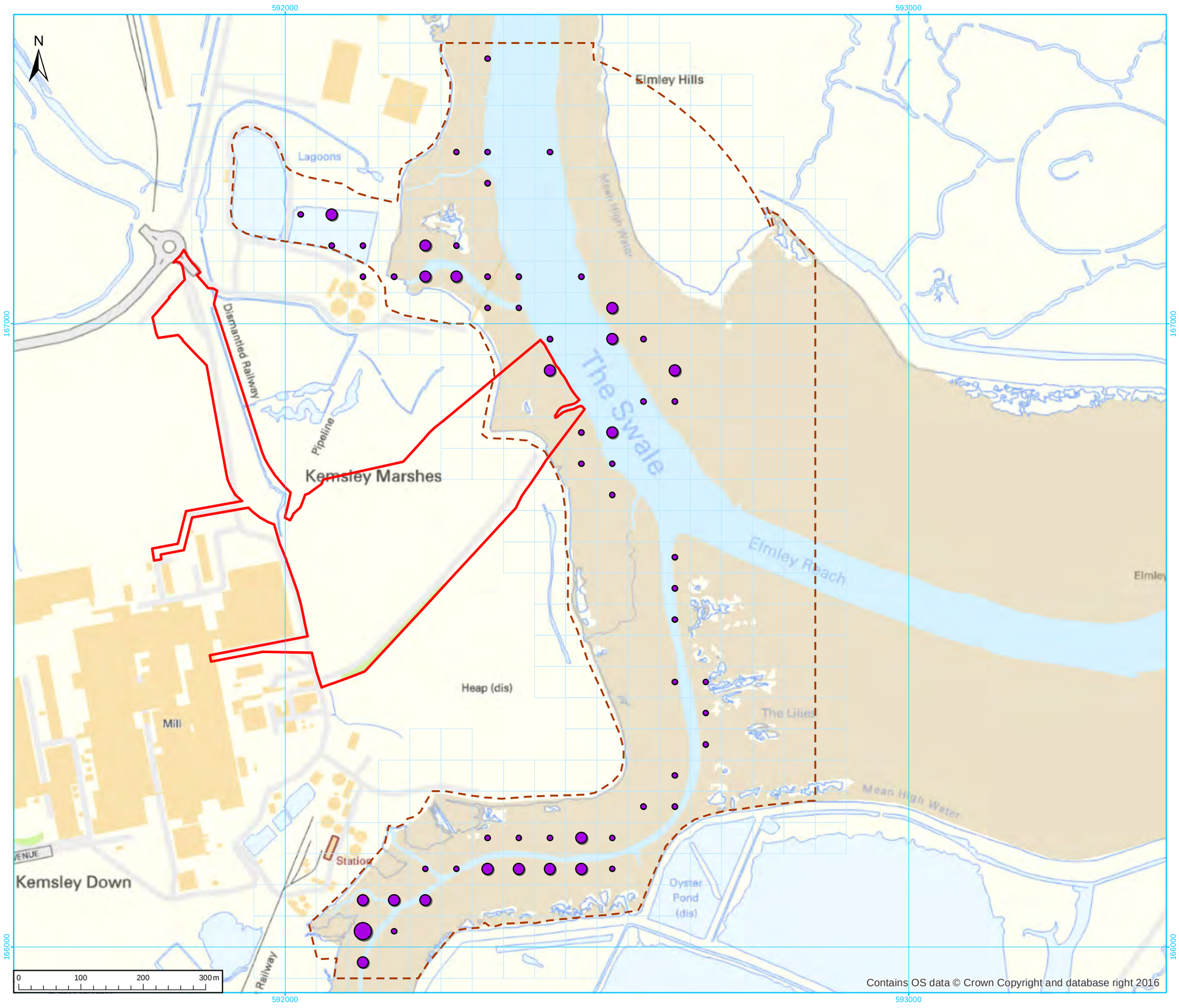

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Legend

- Application boundary
- Survey boundary

Teal

Bird Numbers

- 1 - 10
- 11 - 50
- 51 - 100
- 101 - 190

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
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T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Teal at Low Tide, in Spring (Mar, Apr, May) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.125		A

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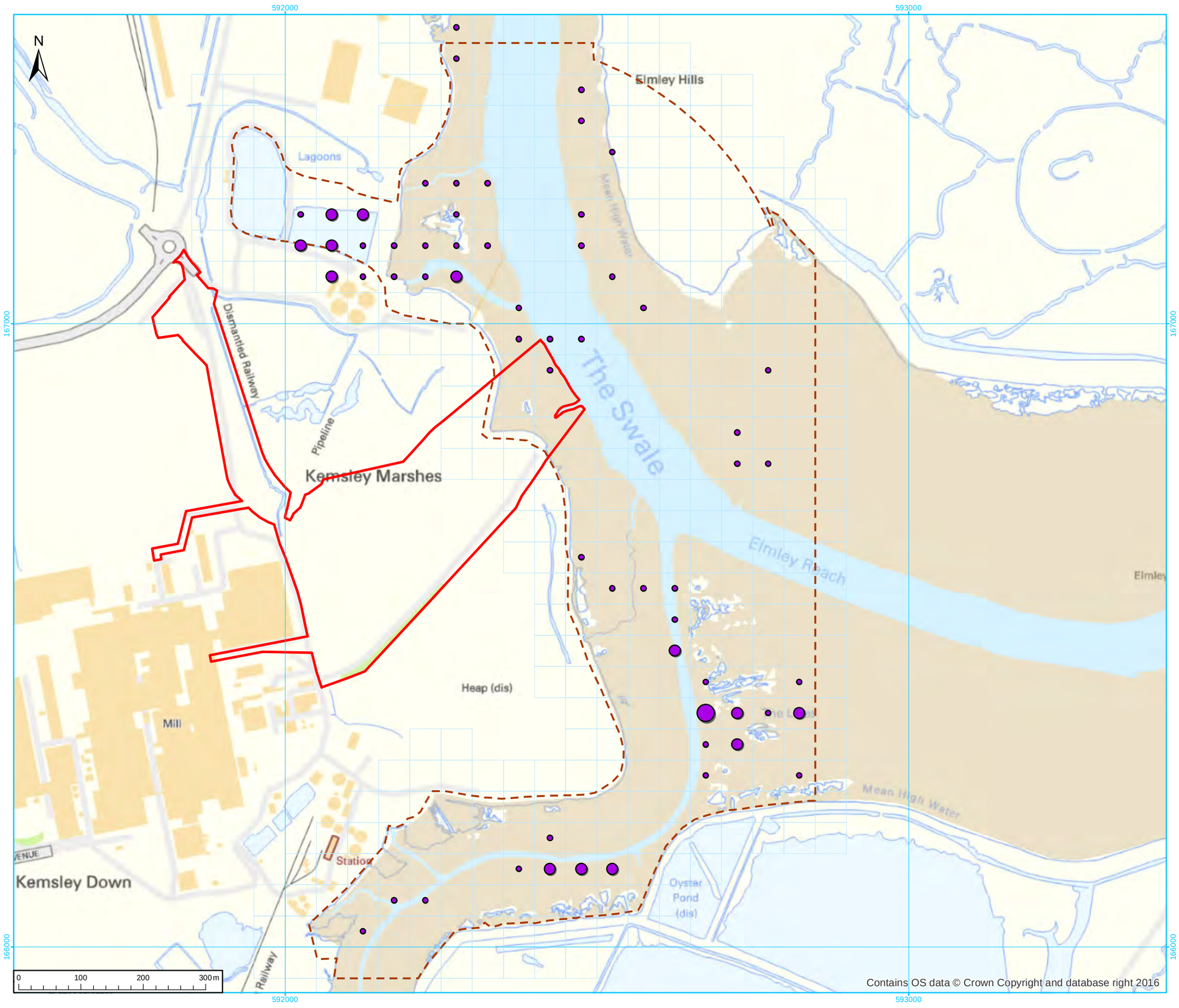

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Legend

Application boundary

Survey boundary

Teal

Bird Numbers

- 1 - 10
- 11 - 50
- 51 - 100
- 101 - 190

Rev	Description	Date	Initial	Checked

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Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Teal at High Tide, in Autumn (Jul, Aug, Sep, Oct) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.126		A

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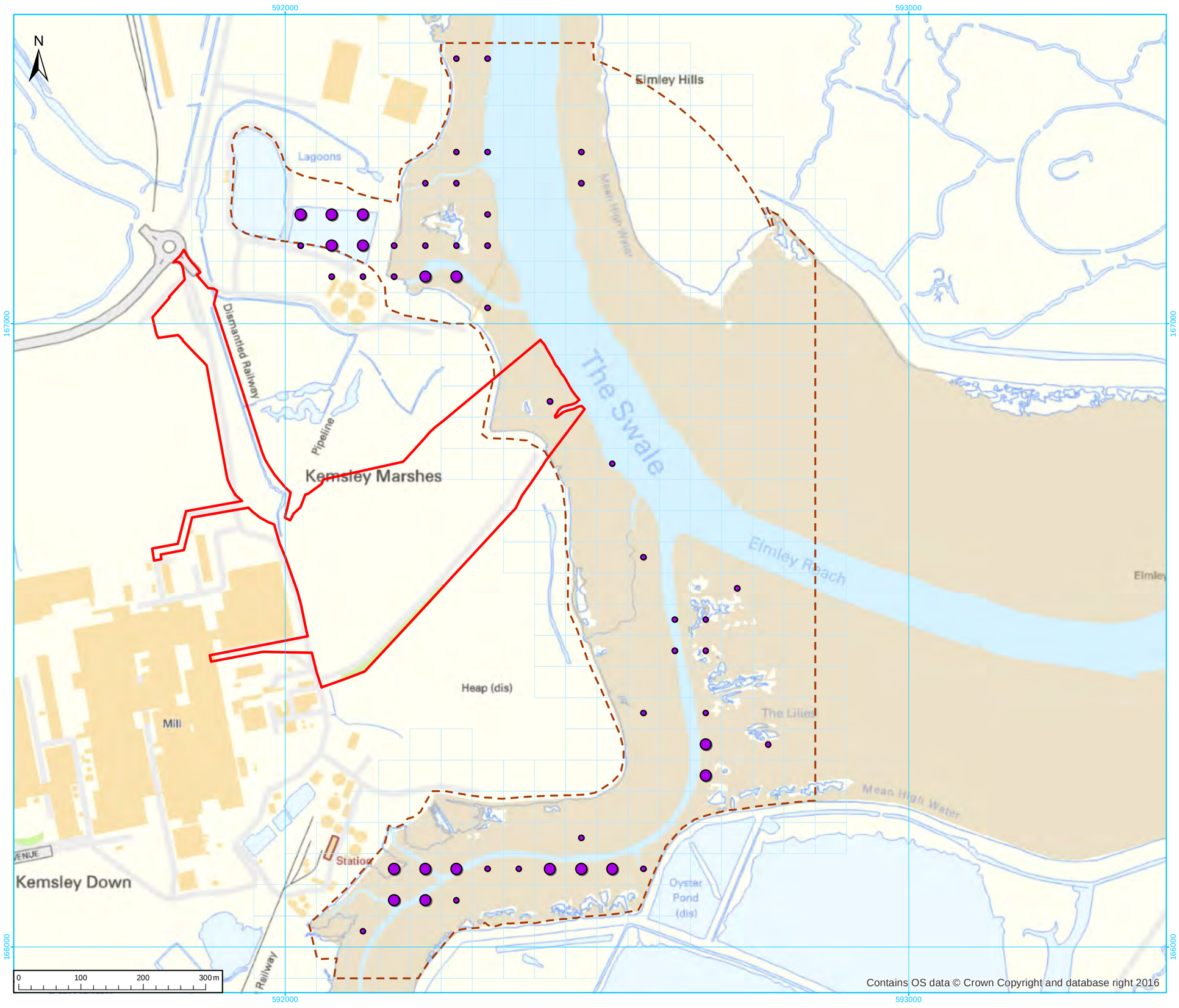

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Legend

- Application boundary
- Survey boundary

Teal

Bird Numbers

- 1 - 10
- 11 - 50
- 51 - 100
- 101 - 190

Rev	Description	Date	Initial	Checked

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Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Teal at Low Tide, in Autumn (Jul, Aug, Sep, Oct) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.127		A

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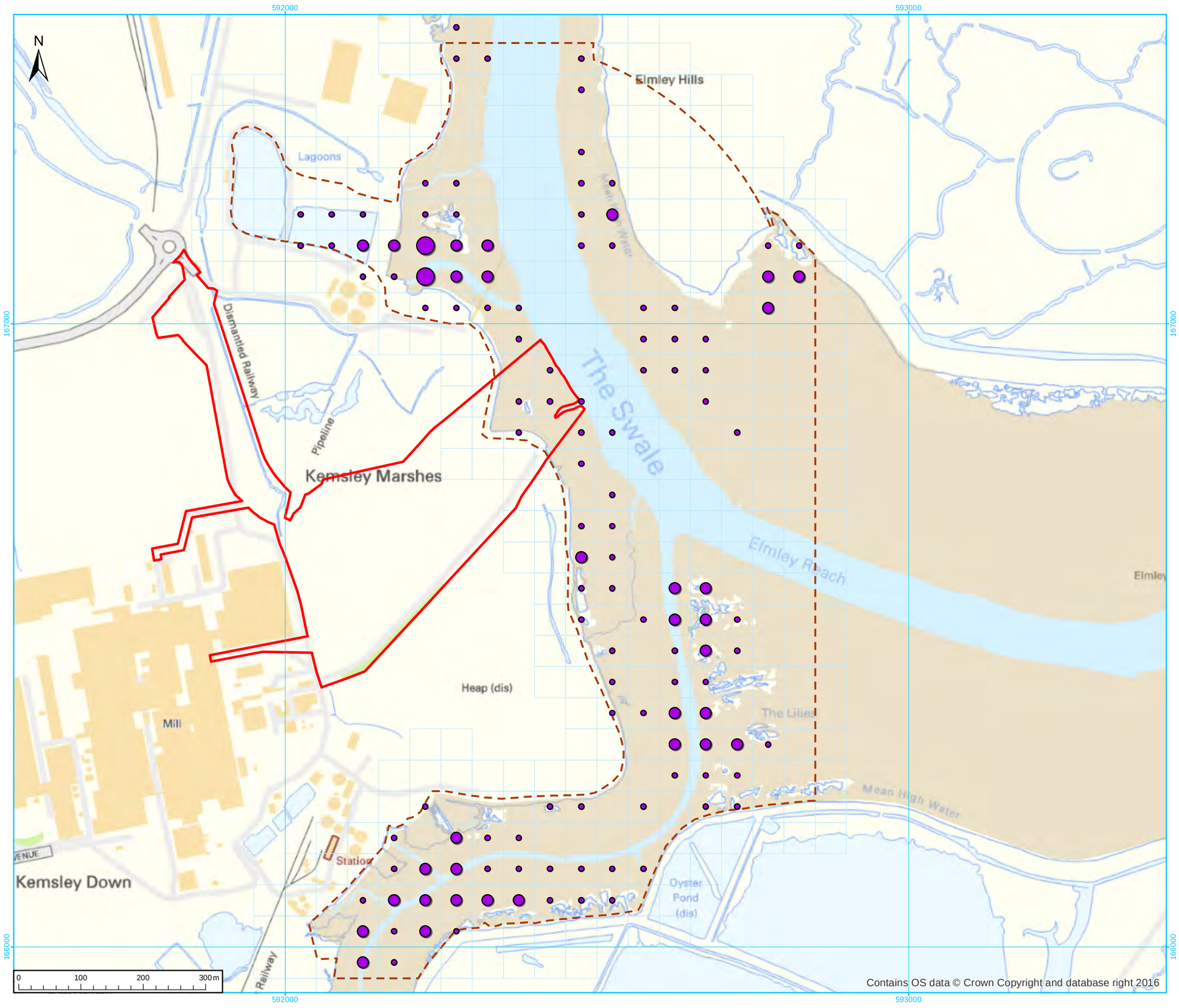

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Legend

- Application boundary
- Survey boundary

Teal

Bird Numbers

- 1 - 10
- 11 - 50
- 51 - 100
- 101 - 190

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Teal at High Tide, in Winter (Jan, Feb, Nov, Dec) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.128		A

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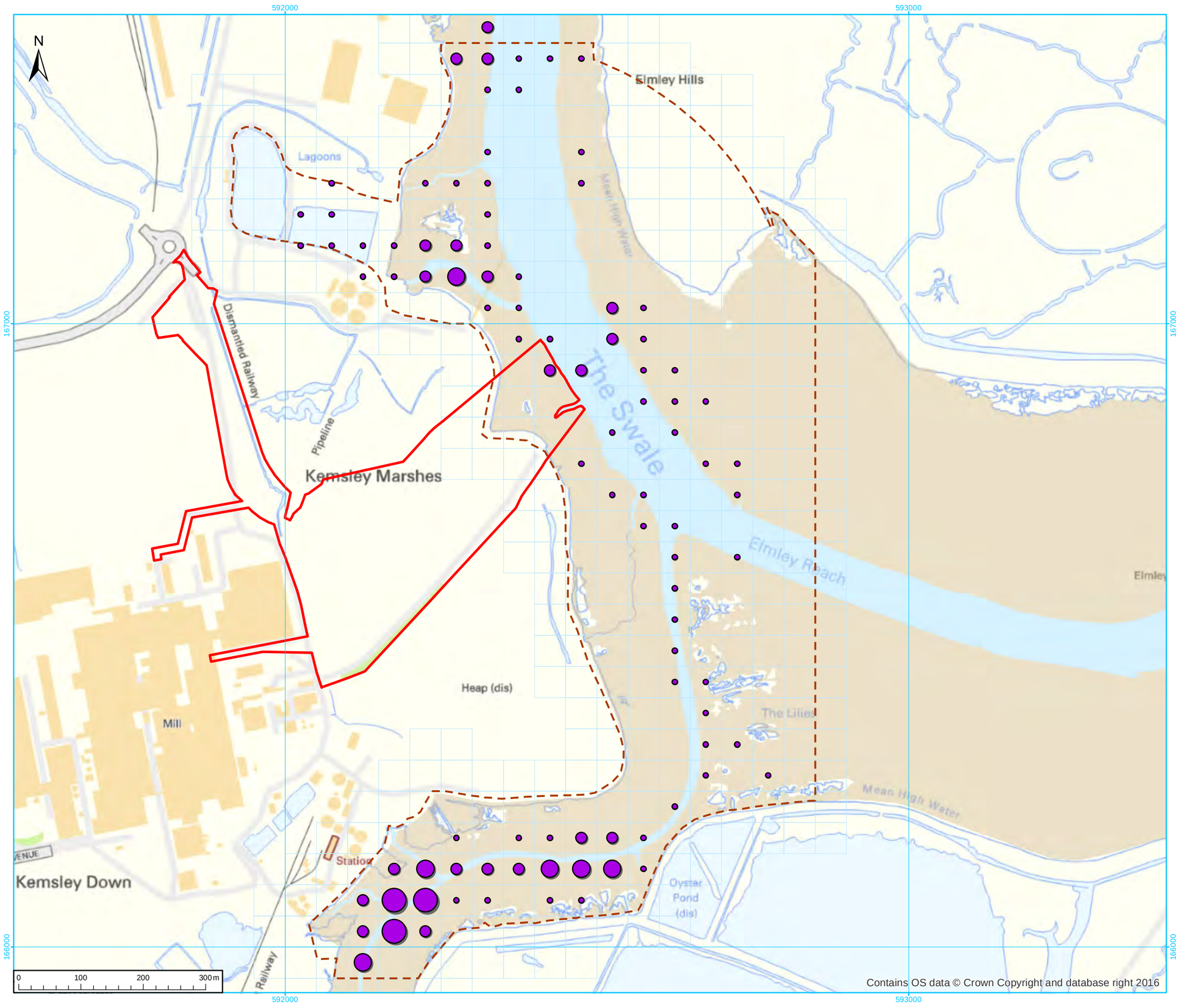

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Legend

- Application boundary
- Survey boundary

Teal

Bird Numbers

- 1 - 10
- 11 - 50
- 51 - 100
- 101 - 190

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Teal at Low Tide, in Winter (Jan, Feb, Nov, Dec) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.129		A

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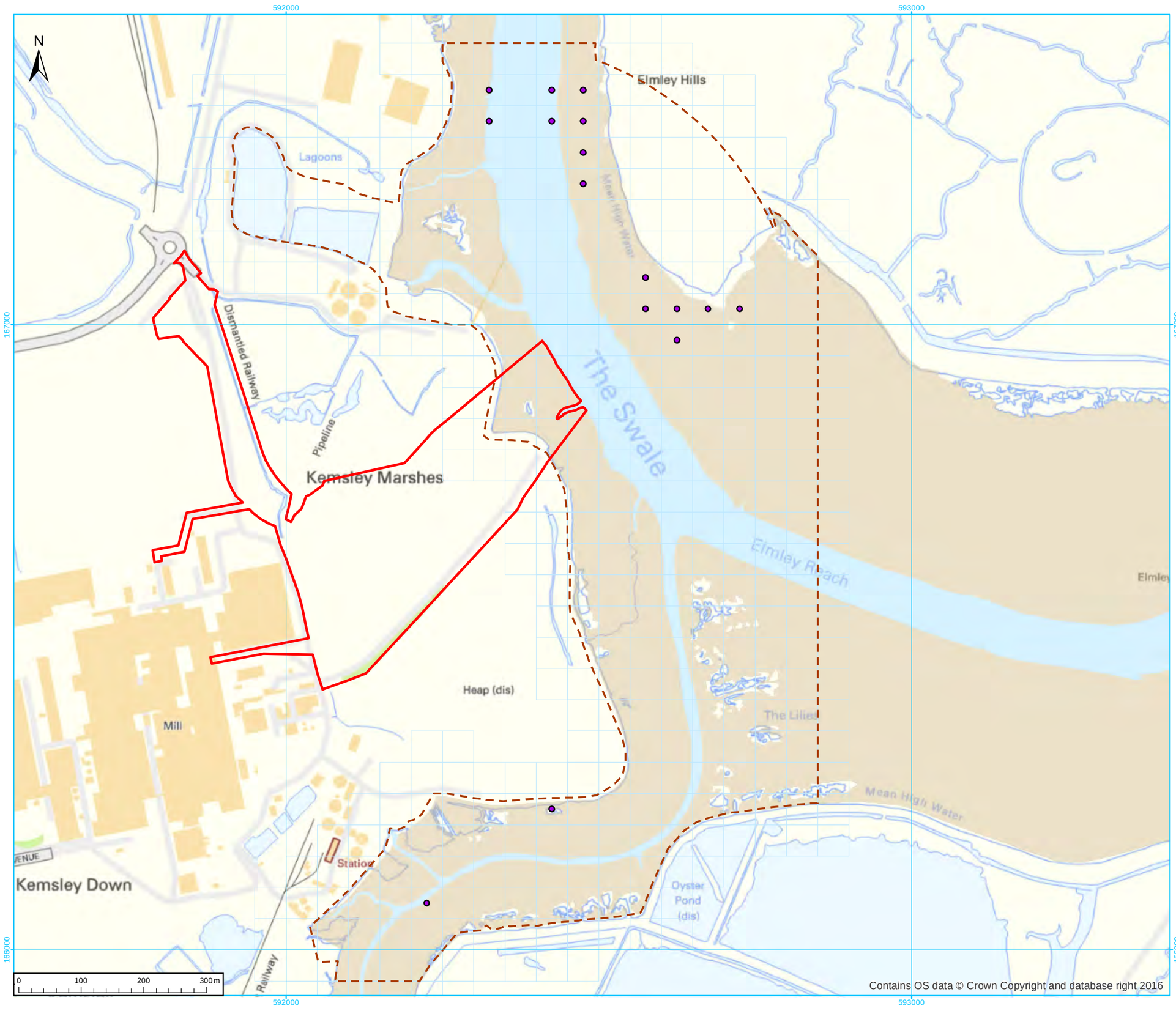

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Legend

- Application boundary
- Survey boundary

Wigeon

Bird Numbers

- 1 - 15
- 16 - 35
- 36 - 75
- 76 - 150

Rev	Description	Date	Initial	Checked

RPS

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Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Wigeon at High Tide, in Spring (Mar, Apr, May) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.130		A

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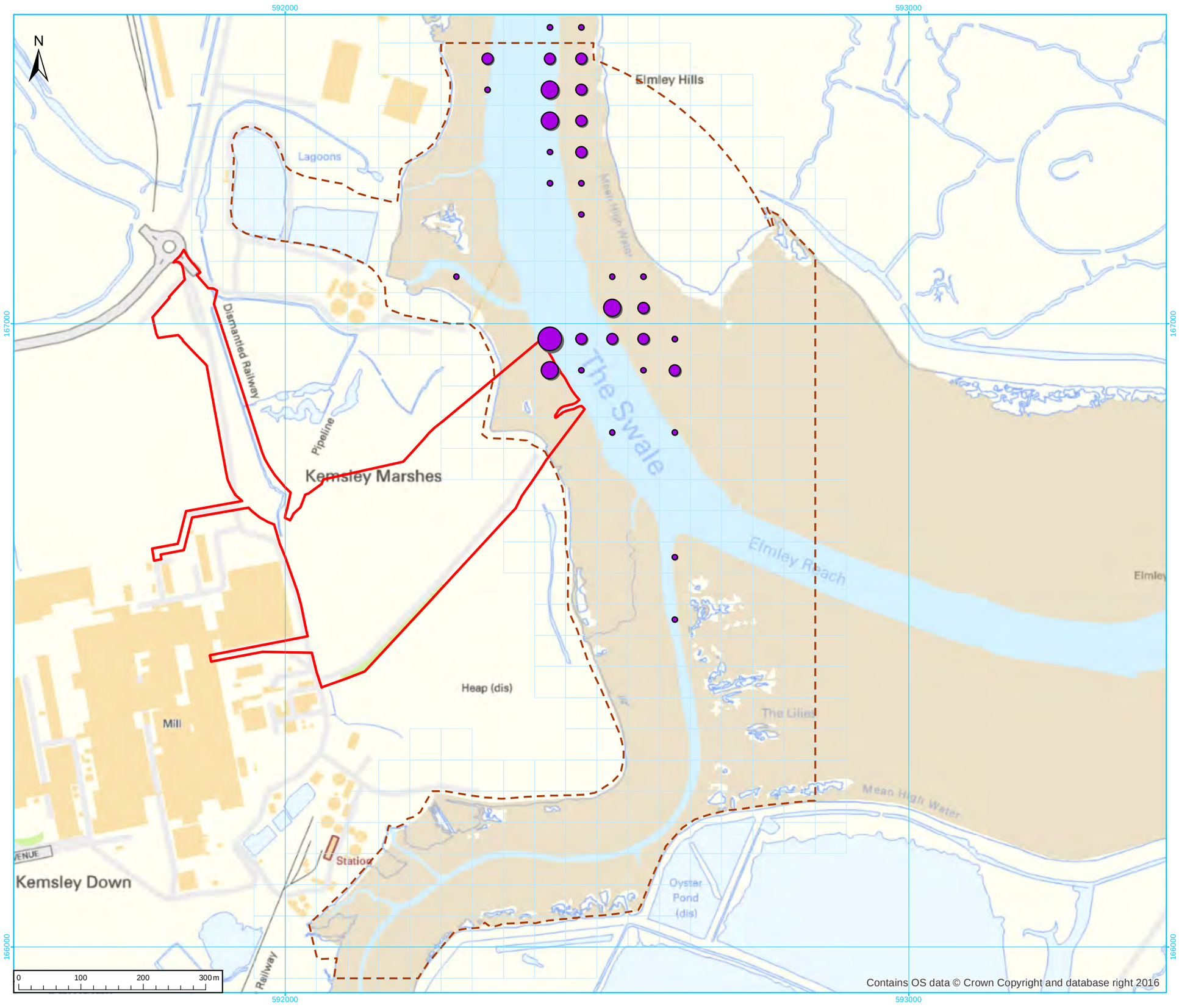

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Legend

- Application boundary
- Survey boundary

Wigeon

Bird Numbers

- 1 - 15
- 16 - 35
- 36 - 75
- 76 - 150

Rev	Description	Date	Initial	Checked

RPS

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Wigeon at Low Tide, in Spring (Mar, Apr, May) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.131		A

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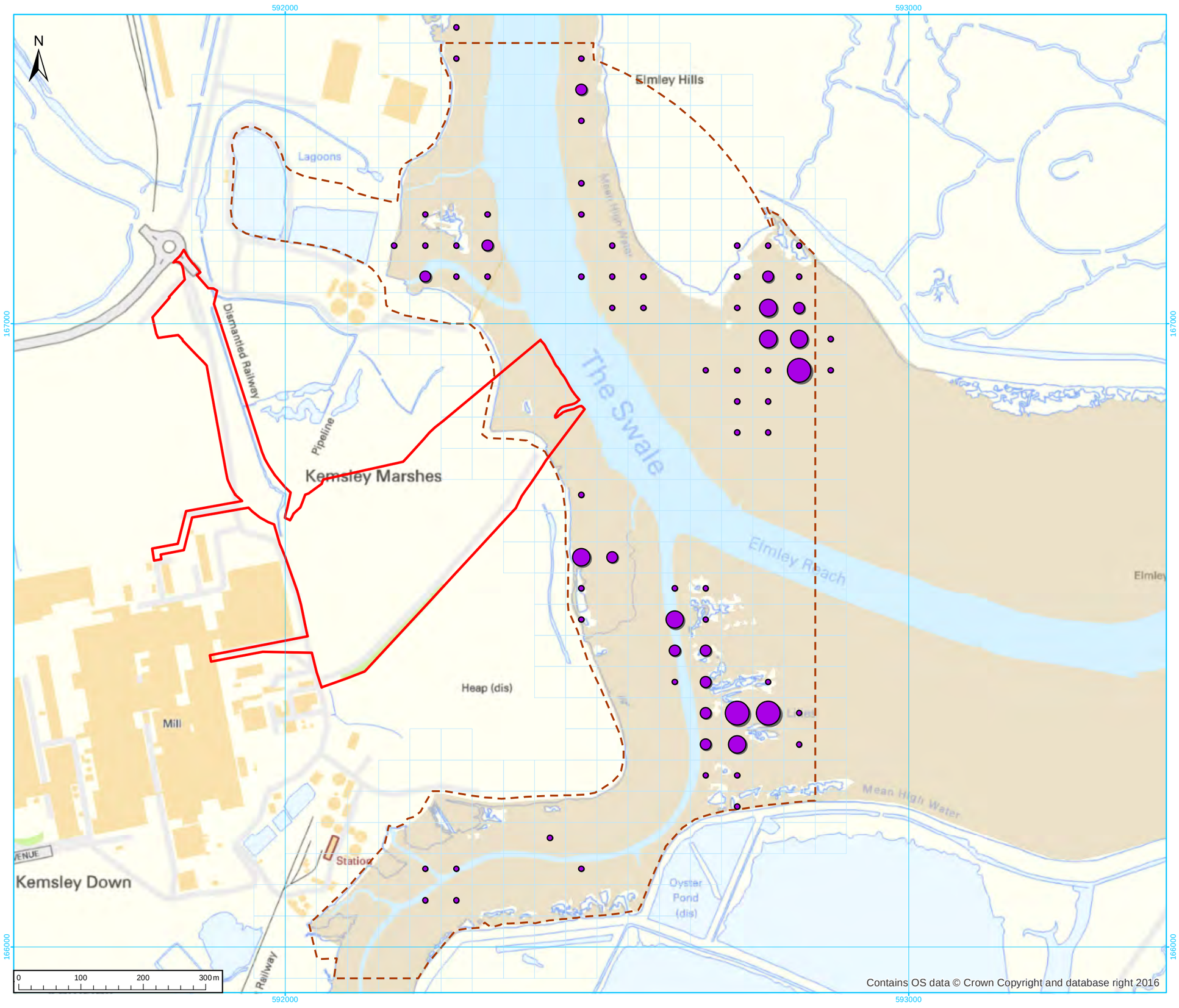

Notes

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Legend

- Application boundary
- Survey boundary

Wigeon

Bird Numbers

- 1 - 15
- 16 - 35
- 36 - 75
- 76 - 150

Rev	Description	Date	Initial	Checked

Willow Mere House, Compass Point Business Park
Stocks bridge Way, St. Ives, Cambs, PE27 5JL
T: 01480 466 335 **E**: rpscm@rpsgroup.com **F**: 01480 466 911

Client: Wheelabrator Technologies Inc.

Project: Kemsley

Title: Distribution of Wigeon at High Tide, in Autumn (Jul, Aug, Sep, Oct) 2016

Status	Drawn By	PM/Checked By
Final	BF	AB
Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.132		A

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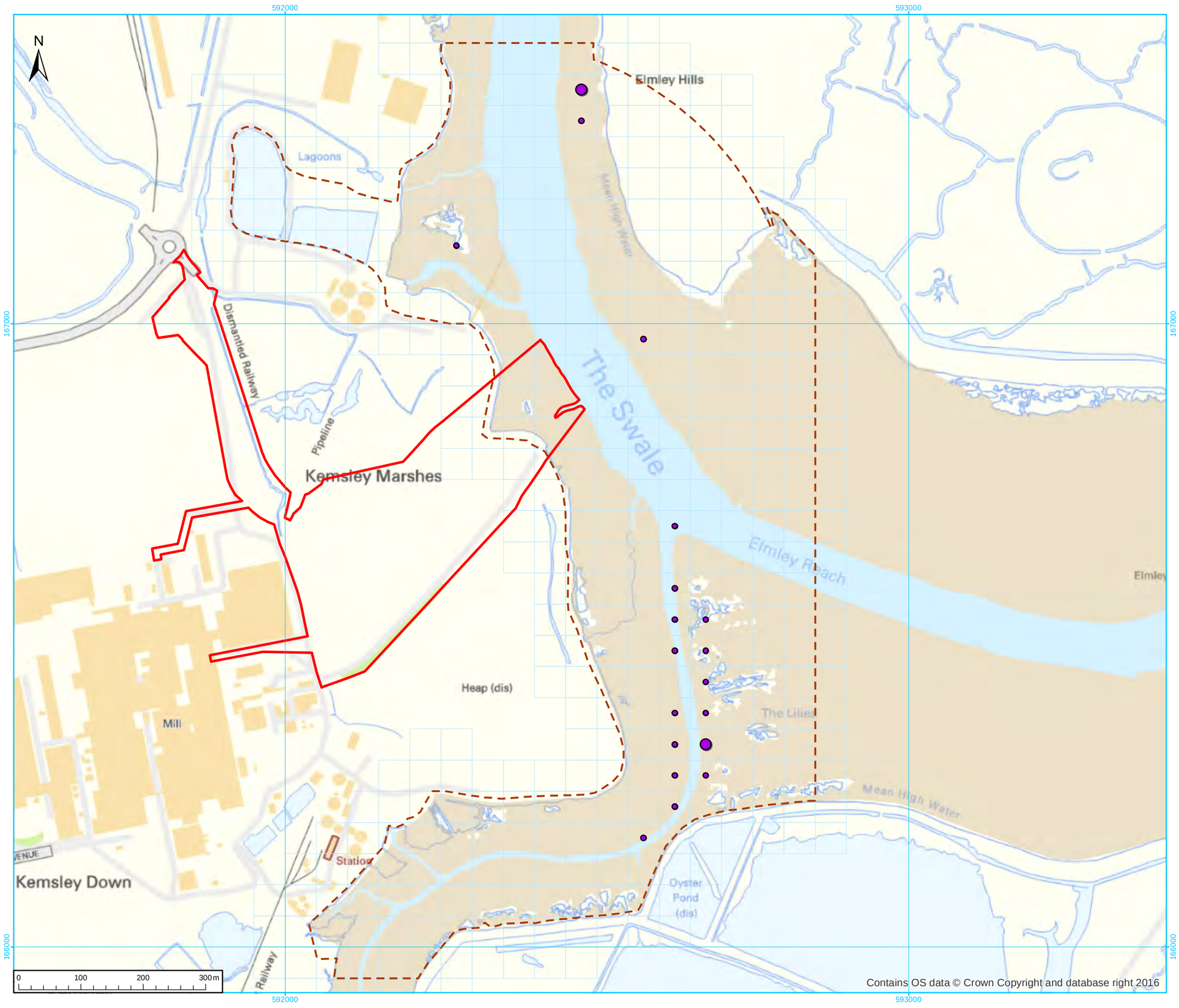
Document: O:\B OXF9163 Kemsley EFW DCO (Leeds project)\Tech\GIS\9163_KemsleyIntertidal_2016.mxd



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Drawing Number		**Rev**
Figure 3.133		A

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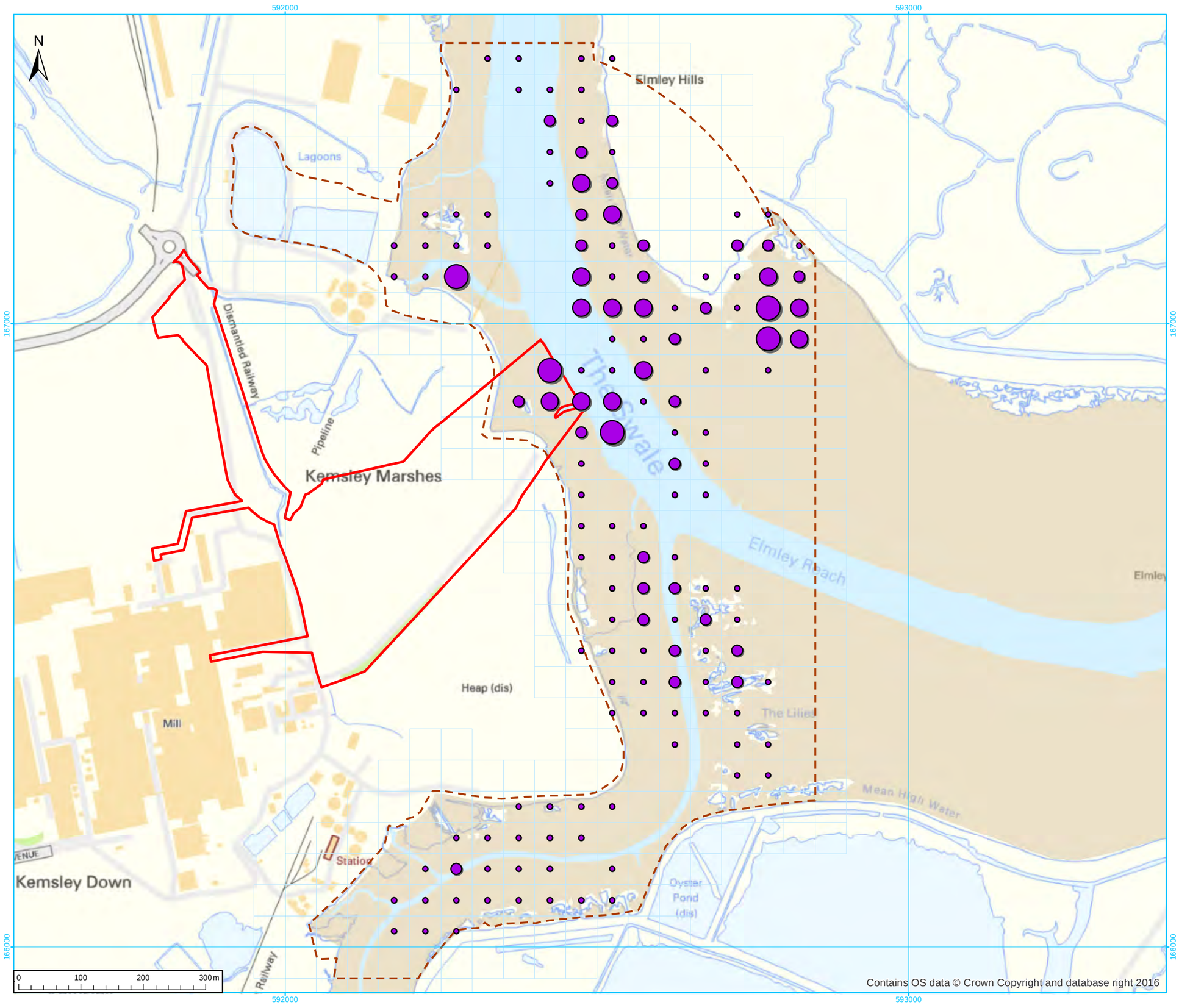

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Project: Kemsley

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Status	Drawn By	PM/Checked By
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Job Ref	**Scale @ A3**	**Date**
OXF9163	1:6,000	FEB 17
Drawing Number		**Rev**
Figure 3.134		A

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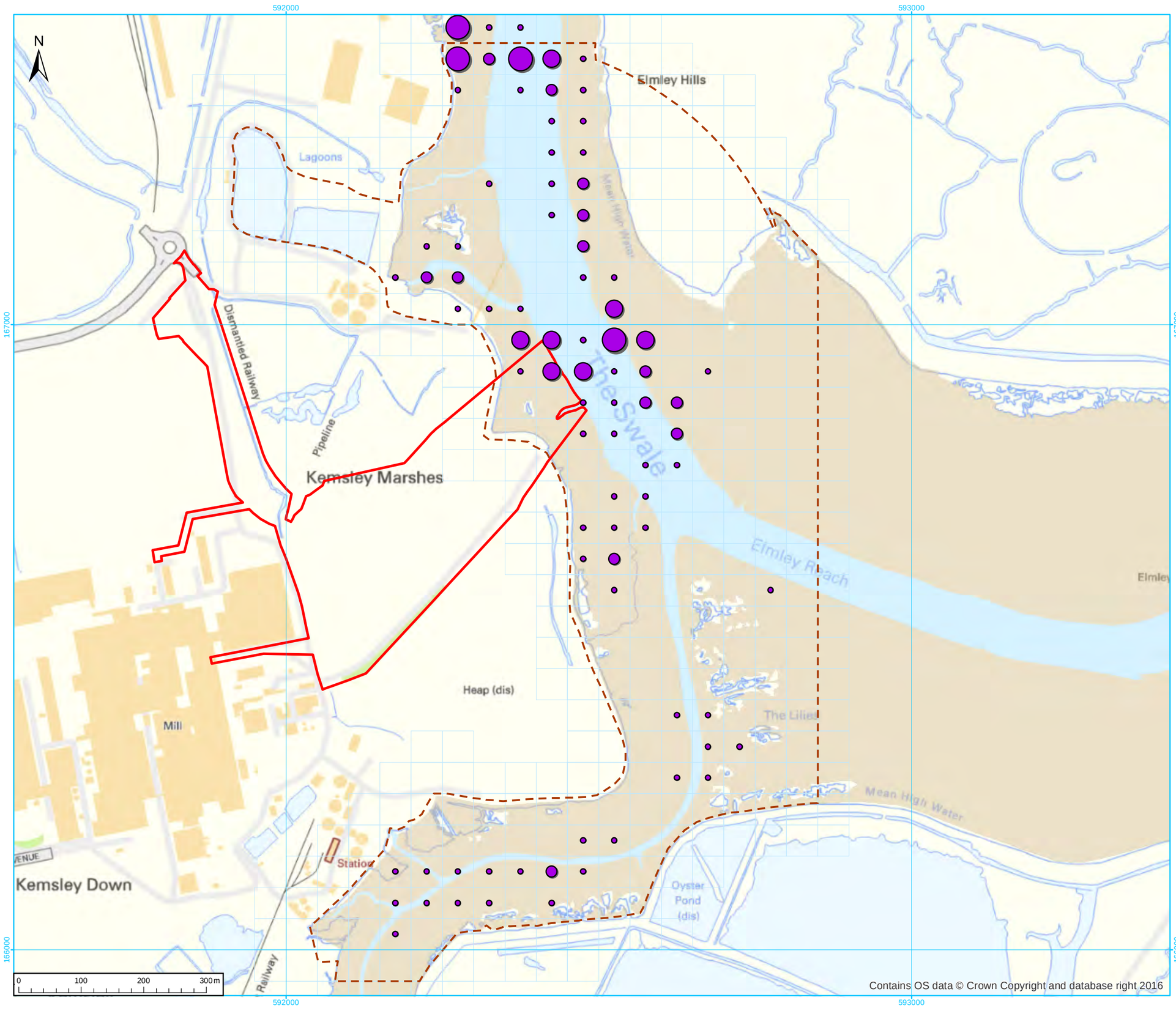

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