Southern Damselfly Survey and Habitat Assessment Study

Eastleigh Borough

Dr Ben Rushbrook

April 2018

Acknowledgements

Arcadian Ecology & Consulting Ltd was appointed to deliver this work by Eastleigh Borough Council. The author would like to thank Deborah Salmon (Eastleigh Borough Council), Graham Tuck (Eastleigh Borough Council) and Emma Barnett (Adams Hendry Consulting Ltd) for providing support, background information and guidance throughout this project. The author would also like to thank Clare May (WYG), Simon Beech (Highwood) and Dominic Plumpton (Giles Wheeler-Bennett) for assistance with access arrangements.

Finally, the author would like to thank all the respective landowners and angling clubs for allowing access to undertake this work, Lucy Allen and Ruth Kernohan for assistance with fieldwork, and Hannah Wheldon for assistance in the production of maps included within this report.

Publication Details

This document should be cited as: Rushbrook, B. (2018). *Southern damselfly survey and habitat assessment study: Eastleigh Borough*. Arcadian Ecology & Consulting Ltd, Curdridge.

Arcadian Ecology & Consulting Ltd is a wholly owned subsidiary of Hampshire & Isle of Wight Wildlife Trust.

Front Cover: Male southern damselfly at Highbridge Farm.

Published by:
Arcadian Ecology & Consulting Ltd.
Beechcroft House
Vicarage Lane
Curdridge
Hampshire
SO32 2DP

A company Ltd by guarantee and registered in England No. 10033962.

Document Control

Version	Author name	Date	Signed off by	Date
Draft v1	*Ben Rushbrook*	*06/09/2017*	*Deborah Whitfield*	*07/09/2017*
Draft v2	*Ben Rushbrook*	*08/09/2017*	*Deborah Whitfield*	*08/09/2017*
Draft v3	*Ben Rushbrook*	*22/11/2017*	*Deborah Whitfield*	*23/11/2017*
Final	*Ben Rushbrook*	*04/04/2018*	*Sarah Jackson*	*09/04/2018*

Executive Summary

Arcadian Ecology & Consulting Ltd (hereafter 'Arcadian Ecology') was appointed by Eastleigh Borough Council to conduct a survey and habitat assessment for southern damselfly *Coenagrion mercuriale* at known and potential sites throughout the borough. This study focused on sites associated with the River Itchen Site of Special Scientific Interest (SSSI) / Special Area of Conservation (SAC), as the main channels and (in particular) watercourses associated with the floodplain meadows are known to support a nationally important 'population' of this species.

Specifically, the study focused on the presence / absence of adult southern damselfly along relevant watercourses at each site, with a concurrent assessment of the suitability of key habitat attributes (e.g. water flow, vegetation cover, level of shading, etc.) of all watercourses (transects) assessed.

Records held on Hampshire and Isle of Wight Wildlife Trust's databases, the results of a data search conducted by Hampshire Biological Information Centre, and the author's existing knowledge of specific sites were used to inform the specific watercourses included within field surveys. Furthermore, it was agreed with Eastleigh Borough Council that, in general, main river channels would be excluded from this study, and that only the area of Itchen Valley Country Park associated with the M27 would be included.

A general appraisal of the potential suitability of each transect (watercourses) to support southern damselfly, accompanied by a survey for adult male southern damselfly where appropriate, was undertaken on a number of transects at 13 sites within the study area during June and July 2017.

The data search conducted by HBIC returned 320 records within the search area between 2001 and 2016 inclusive. In addition to the main monitoring areas within Itchen Valley Country Park (200 records), five key areas were identified as supporting important and / or long standing populations of southern damselfly. Of these, the Highbridge Farm and Allington Manor Farm sites supported the majority of the records returned, with West Horton Farm, areas near GW Martin and Dunford's Land respectively, and the lower part of Itchen Valley Country Park considered important also.

Long-term annual count data collected from Itchen Valley Country Park between 1999 and 2017 inclusive shows that, following a period of notable fluctuation (i.e. 1999 to 2004 inclusive), there has been a marked declining trend in the total number of adult southern damselfly recorded.

It is emphasised that survey effort was neither fully consistent between years, nor was it consistent between the individual ditches in 2012 and 2014. This therefore would explain a degree of the observed variation in the number of individuals recorded between years and ditches. However, it is considered highly likely that the decreasing trend in the total numbers of individuals recorded at the site, and within the individual ditches, provides an accurate indication that the size / strength of the southern damselfly population at the site is in decline.

Highbridge Farm and Allington Manor Farm recorded the highest number of transects with suitable habitat (8 and 5 of the relevant 19 transects respectively), supported a substantial proportion of all southern damselflies recorded (579 and 441 of the 1228 males recorded respectively), included the four transects that supported the highest abundances and densities of individuals, and were considered to support a strong population of southern damselfly.

Ashtrim Nursery, Land behind GW Martin, and the area of Itchen Valley Country Park included within this study, were all considered to support a medium strength population of southern damselfly (recording over 50 males across each site), and to support sections of optimal and / or sub-optimal habitat.

Finally, although considered generally unsuitable for southern damselfly due to the habitat / habitat features currently present at these sites, Breach Farm, Dunford's Land, and West Horton Farm all support small areas of suitable habitat for southern damselfly, and were considered to support a weak population of this species. Furthermore, although two and a single male were recorded at Morris' Land and Withy Meadows respectively, these were considered to most likely be transient individuals.

These sites therefore, in addition to both Bishopstoke Park and Land associated with Toby Carvery, were considered to be unsuitable for southern damselfly.

A number of opportunities for habitat enhancement were identified across the 13 survey sites. However, these have not been discussed in detail. Instead, these opportunities will be developed into a strategic conservation plan for southern damselfly, which will set out the key principles for the strategic conservation of this species in Eastleigh, outlining and prioritising the potential options for habitat enhancement and / or creation for this species in and around the borough.

The results of the desktop and field studies indicate that Highbridge Farm, Allington Manor Farm, and Itchen Valley Country Park support the only strong populations of southern damselfly located in and immediately adjacent to Eastleigh Borough, and are the three most important sites within this area. Furthermore, given its location at and immediately beyond the northern boundary of the borough, Highbridge Farm is also considered strategically important in connecting sites across the wider Itchen Valley metapopulation.

Ashtrim Nursery and Land behind GW Martin are considered to be strategically important sites, located more centrally within the study area. However, these are both small sites, supporting a relatively short extent of suitable / potentially suitable watercourses, and as a result support only medium strength southern damselfly populations.

The localised distributions of the majority of males recorded (i.e. 92% of all males recorded within the study were recorded at four of the 13 sites), the unsuitability of the majority of sites / transects visited, and the distance between important sites is considered to be highly concerning. Furthermore, in addition to the evidence of a decline at Itchen Valley Country Park, there is evidence for both a recent loss of suitable habitat and a marked decline in the strength of the population at West Horton Farm. These findings indicate that southern damselfly has become localised and is therefore at increased risk of, or potentially already suffering a decline in the strength of the metapopulation, in and around Eastleigh Borough. It is therefore considered that urgent conservation action is required for this species in and around Eastleigh Borough.

Since the majority of the data assessed within this study is limited to a single year of collection, and since habitat condition was the only potential factor (of a number that may be influencing the distribution of the species in Eastleigh Borough) that was assessed, it is not appropriate to speculate what spectrum of factors are causing this localised distribution. However, what is clear to the author is that it is not only the size, but also the presence of beneficial management practices such as grazing and scrub control, that has resulted in Highbridge Farm, Allington Manor Farm, Ashtrim Nursery and Land behind GW Martin supporting the majority of individuals recorded. It is therefore considered that, in some parts of the borough at least, a programme of habitat enhancement and / or creation would facilitate an increase in the strength of the southern damselfly metapopulation present in and around Eastleigh Borough.

It is therefore intended that a strategic conservation plan for southern damselfly will be developed, which will set out the key principles for the strategic conservation of this species across the study area, outlining and prioritising the potential options for habitat enhancement and / or creation for this species in and around the borough.

Table of Contents

MAPS

PHOTOGRAPHS

APPENDICES

1. INTRODUCTION

1.1 Background

Arcadian Ecology & Consulting Ltd (hereafter 'Arcadian Ecology') was appointed by Eastleigh Borough Council to conduct a survey and habitat assessment for southern damselfly *Coenagrion mercuriale* at known and potential sites throughout the borough. This study focused on sites associated with the River Itchen Site of Special Scientific Interest (SSSI) / Special Area of Conservation (SAC), as the main channels and (in particular) watercourses associated with the floodplain meadows are known to support a nationally important 'population' of this species (Thompson *et al*., 2003a).

1.2 Study Area

The study area agreed with Eastleigh Borough Council was focused on floodplain meadow channels associated with the River Itchen SSSI / SAC that lie within, and immediately north of, the Eastleigh Borough boundary (Appendix 1).

1.3 Remit and Scope of the Report

This report presents the findings of a specific survey and habitat assessment programme for southern damselfly at sites within, and immediately north of, Eastleigh Borough, on a number of watercourses associated with the River Itchen SSSI / SAC.

Specifically, this report will focus on the presence / absence of adult southern damselfly along relevant watercourses at each site, with a concurrent assessment of the suitability of key habitat attributes (e.g. water flow, vegetation cover, level of shading, etc.) of all watercourses (transects) assessed. These findings will be presented to provide an outline of the distribution of this species within the study area, and identify where additional suitable / potentially suitable habitat exists.

It is emphasised that although this report will identify where potential opportunities for habitat enhancement for southern damselfly exist, it will not provide detailed accounts of how this can be achieved. Instead, these findings will be developed into a strategic conservation plan for southern damselfly, which will set out the key principles for the strategic conservation of this species in Eastleigh, outlining and prioritising the potential options for habitat enhancement and / or creation for this species in and around the borough.

2. ECOLOGY AND LEGISLATION

2.1 Ecology

The southern damselfly (Figure 1) is one of five resident members of the *Coenagrion* genus currently found in the UK. Males of this genus are predominately blue and black in colouration, and together with the common blue damselfly *Enallagma cyathigerum* and white-legged damselfly *Platycnemis pennipes* constitute the 'blue damselflies' (Thompson *et al.*, 2003a). The southern damselfly is at the northern edge of its global range in the UK, which is reflected in its southern and western distribution and in the narrow habitat types in which it occurs in the UK (Purse, 2002; Rouquette, 2005).

Figure 1: Adult male southern damselfly.

In the UK, the southern damselfly occurs in two distinct habitat types; base-rich lowland heathland (typically) and calcareous streams and fens (Rouquette, 2005). The former is characterised by the heathland streams and valley mires found in the New Forest and Preseli Hills, and the latter most commonly by the historic meadow systems associated with the rivers Itchen and Test in Hampshire. Although these two habitat types superficially appear different, similarities in the underlying physical and chemical habitat conditions allow both to meet the ecological requirements of this species.

A detailed account of the habitat requirements of southern damselfly on lowland heath and chalk river systems is provided by Rouquette (2005). The specific optimal characteristics of these habitat features vary slightly between adults and larvae (Rouquette, 2005), but key habitat features for sites to support strong numbers of southern damselfly include (illustrated in Figures 2 and 3):

- Shallow, well oxygenated, base-rich water;
- A constant (perennial) slow to moderate flow of water;
- Channel substrate consisting primarily of silt and detritus;
- Presence of a broad fringe of herbaceous emergent dicotyledon plants along margins;
- Presence of some areas of open water; and
- Largely (but not necessarily completely) unshaded by bankside shrubs and trees.

Figure 2: Suitable southern damselfly habitat on a small floodplain ditch at Ashtrim Nursery.

Figure 3: Suitable southern damselfly habitat at the margin of the main River Itchen at Highbridge.

Southern damselfly exhibit a semi-voltine development (two-year life history) in the UK. The eggs hatch between mid-June and mid-August, though the period of larval growth is restricted to between March and October during the two-year larval development (Thompson *et al*., 2003a; Rouquette, 2005). Southern damselfly adults typically emerge from their final larval stage (instar) between mid-May and late July, though the exact timing of emergence varies with locality (altitude and latitude) and between years (Rouquette, 2005; Jenkins, pers. comm.). During emergence, the adult breaks through the cuticle of the final larval instar and extracts itself from the shed larval 'cast' or exuvia, pumping fluids around its body and wings to expand to its adult size.

Following emergence, immature adults (tenerals) will remain at the emergence site whilst the new exoskeleton hardens, before leaving the immediate vicinity of the water and moving to feeding sites, where males develop their mature colouration and females develop clutches of eggs. Adult males spend a significantly greater portion of their lifetime at breeding sites than females, the latter believed to visit only when they have a clutch of eggs to lay (Thompson *et al*., 2003a). Males are not territorial, and will scramble to seize females when they visit a breeding site.

Following copulation, the male will typically remain in contact with the female throughout oviposition (egg-laying), a behaviour know as contact guarding, to ensure the female is not inseminated by another male prior to egg-laying (Thompson *et al*., 2003a). Female southern damselfly oviposit (lay their eggs) directly into the submerged stem tissue of submerged and emergent herbaceous plants including water-cress *Nasturtium officinale*, fool's watercress *Apium nodiflorum*, brooklime *Veronica beccabunga*, and water-speedwell *Veronica anagallis-aquatica agg*..

Southern damselfly are generalist predators, both as larvae and adults. Coenagrionid damselfly larvae that develop over two years tend to be 'sit-and-wait' predators, attacking small moving animals from their 'ambush' sites, whereas adults will actively prey on small flying invertebrates (Thompson *et al*., 2003a; Rouquette, 2005).

Adult southern damselfly are characterised by their slow and erratic flight, with frequent pauses to perch on low vegetation. They are considered to have the weakest flight of the British coenagrionids, which is reflected in the limited dispersal capabilities of this species (Purse, 2002; Rouquette, 2005).

2.2 Status

The distribution of southern damselfly is predominantly restricted to southern and western Europe. Though still widespread in France and parts of Spain, it is considered to be endangered or critically endangered throughout the majority of its European range, and is considered to have become extinct from at least three European countries (Boudot, 2006).

The UK populations of southern damselfly are considered to comprise a significant proportion of the European total, despite its restriction to a small number of localities in the south and west of England and Wales (Rouquette, 2005). Major strongholds occur in the New Forest in Hampshire, the Preseli Hills in Pembrokeshire, and on the Itchen Valley in Hampshire (Thompson *et al*., 2003a; Rouquette, 2005). All these locations have been designated as SACs, with the southern damselfly listed as a primary reason for their designation. Smaller colonies exist in Devon, Dorset and the Gower Peninsula, and single populations are present in both Anglesey and Oxfordshire (Thompson *et al*., 2003a).

Despite this, the southern damselfly has suffered an at least 30% decline in distribution in the UK since 1960, and has an increasingly fragmented and restricted distribution (Thompson *et al*., 2003a; Rouquette, 2005). It has disappeared from Cornwall and St David's Peninsula in Pembrokeshire, and has suffered a decline in Devon and Dorset (Thompson *et al*., 2003a). Furthermore, it is considered that this species has been lost from at least three sites in the New Forest since 1998 (Rushbrook *et al*., 2014), and despite the nationally important numbers of this species supported at Itchen Valley Country Park, it is considered that its long-term future in the River Itchen valley is not guaranteed without conservation action (Rouquette, 2005).

This decline of southern damselfly in the UK and Hampshire is believed to be a consequence of the loss and degradation of suitable habitats as a consequence of under-management, over-management, abstraction, inappropriate water level management and potentially pollution. This has resulted in the increasing isolation and fragmentation of suitable sites, a breakdown of metapopulation

dynamics, and an increased susceptibility of remaining populations to extinction, particularly from localised pollution events, nutrient enrichment, and over abstraction (Rouquette, 2005, Rushbrook *et al*., 2014).

2.3 Legislation

The southern damselfly is one of Europe's and Britain's rarest and most threatened damselflies (Thompson *et al*., 2003a). As a consequence of this global and national decline (Thompson *et al*., 2003a; Boudot, 2006), southern damselfly are protected under European and National legislation. They are listed under Annex II of the European Council Directive 92/43/EEC the Habitats Directive 1992, transposed into UK Legislation through the Conservation of Habitats and Species Regulations 2017 that requires:

- *The identification and designation of important sites for southern damselfly as Special Areas of Conservation (SACs)*

The southern damselfly is listed as an Annex II species that is present and a primary reason for selection of the River Itchen as a SAC.

Southern damselfly are provided additional protection through their inclusion on Schedule 5 (sections 9.1, 9.4 and 9.5) of the Wildlife and Countryside 1981 (as amended). It is therefore an offence to:

- *Intentionally kill, injure or take* [capture] *a southern damselfly;*
- *Intentionally or recklessly damage or destroy, or obstruct access to, any structure or any place a southern damselfly uses for shelter or protection; or*
- *Significantly disturb any such animal while it is occupying a structure or place it uses for that purpose;*
- *Sell, offer or expose for sale, or have in one's possession or transport for the purpose for sale, any live or dead southern damselfly, or any part derived from it*.

3. METHODOLOGY

3.1 Desktop Studies

Eastleigh Borough Council commissioned Hampshire Biodiversity Information Centre (HBIC) to conduct a background data search for records of southern damselfly in April 2017. Specifically, the data search focused on all records of southern damselfly within the past 15 years (both held on extensive databases owned and managed by HBIC and within datasets belonging to partner organisations) located within a 1km search area from the borough boundary.

In addition, a request was made by the author to Kevin Young (Eastleigh Borough Council) for the raw data collected as part of a long-term monitoring programme of a number of ditches at Itchen Valley Country Park. Details of the total numbers of individuals recorded annually between 1999 and 2017 were provided, as well as the raw data from the survey programme between 2006 and 2017 inclusive. Data was collected by a combination of Eastleigh Borough Council volunteers and staff with (where weather / conditions / resources permitted) surveys conducted on a weekly basis, commencing from the second Saturday in May. It was intended that surveys continued for either a fifteen week period, or until a nil count was returned across all ditches, whichever was later. In contrast to adult count surveys conducted in this study (see section 3.3.2), all adult southern damselfly (i.e. not only males) encountered were recorded. Initially the monitoring study surveyed four ditches at the site (Appendix 2) however, from approximately 2000 ditch 2 has been virtually dry and no longer included within the survey programme.

3.2 Site selection

Records held on Hampshire and Isle of Wight Wildlife Trust's databases, the results of the desktop study commissioned by Eastleigh Borough Council, and the author's existing knowledge of specific sites were used to inform the specific watercourses included within field surveys. Based on this, large areas of the study area located north of the borough boundary, land in the east of the study area, a block of land north of Eastleigh / Bishopstoke, and the most southerly part of the study area, were all scoped out (excluded) from the study due to absence / unsuitable nature of the habitat / habitat features present at these sites. In addition, access was refused from one site only where permission was requested, that site located adjacent to Highbridge Farm.

Furthermore, it was agreed with Eastleigh Borough Council that main river channels would be excluded from this study, as proposals to be included within the strategic planning for southern damselfly conservation would be focused on carrier streams and the floodplain channels. The main exception to this 'rule' was the main river channel at Highbridge Farm (see section 4.3), which is known to be an important watercourse for southern damselfly. The lower section of the main river channel at Breach Farm (see section 4.3) was also included, due to limited access to the bankside of the corresponding section at Highbridge Farm.

Finally, it was agreed that only the area of Itchen Valley Country Park associated with the M27 would be included within the study, since the majority of the relevant remaining areas of the site are included within the long-term study delivered by staff and volunteers of the Country Park.

Map 1 shows those sites included in the study (red boundaries), those sites scoped out of the study (purple boundaries and horizontal lines), and those where access permission was not received (black boundary and vertical lines). The specific locations of all 13 sites included within this study are shown on Map 2, with the extent of 200m buffer zones for the four main road transport routes that cross the River Itchen SAC provided. It should be noted that the most northerly buffer zone represents the re-aligned Highbridge Road, as outlined in Eastleigh Borough Council's emerging Local Plan in December 2017.

3.3 Field Survey

All surveys were completed by Dr Ben Rushbrook (MCIEEM; licence holder) under Natural England Licence 2017-29688-SCI-SCI, with habitat assessments and adult count surveys conducted on each transect simultaneously. Appropriate biosecurity measures were implemented prior to, during and after each survey visit to minimise the risk of transferring or transmitting non-native invasive species.

3.3.1 Habitat assessment

A general appraisal of the potential suitability of each transect to support southern damselfly was made based on the habitat attributes identified by Rumble *et al*. (2006) and Rushbrook *et al*. (2014). Attributes considered included water flow, presence and level of shading, the presence and composition of emergent and bankside vegetation, and substrate composition.

3.3.2 Adult count survey

The presence and number of adult Odonata is strongly influenced by the weather conditions at the time of recording, and the timing of the main flight period can vary substantially from year to year. Adult southern damselfly have been recorded in Hampshire from late April to early October (Jenkins, pers. comm.), with the main flight period considered to extend from early June to late July (Taverner *et al*., 2004). Furthermore, across UK sites it is considered that peak counts are likely to be obtained during a four week period between 20th June and 18th July, (Thompson *et al*., 2003b).

It was intended that all adult transect counts were conducted between 10:30am and 4pm British Summer Time (BST), with shade temperatures at least 17°C, at least 50% sunshine, and with wind speed not exceeding force 4 on the Beaufort scale.

Surveys consisted of slowly walking the entire length (where feasible) of all relevant transects. All species of Odonata within an area approximately 2m in front and encompassing the width of the watercourse were recorded (both on the wing or resting on vegetation), and the number of males, copulating pairs and ovipositing females recorded. It is considered that individual male numbers provide a better indication of relative population size than female numbers (Thompson *et al*., 2003b), since males spend almost every day of their mature adult lives at breeding sites, whereas females are only present during the time it takes to mate and lay a clutch of eggs.

Where identification was difficult, individuals were identified using close focusing binoculars or caught using a kite net if necessary. Particular care was taken to distinguish between southern damselfly, azure damselfly *Coenagrion puella* and common blue damselfly, as these are similar in colouration and size. Exact numbers of male southern damselfly were recorded, with the abundance of other species represented by the following codes; A (single individual), B (2-5), C (6-20), D (21-100) and E (>100).

Other variables recorded for each transect were:

- start time;
- finish time;
- shade temperature;
- wind direction, predominate wind speed and maximum wind speed (Beaufort Scale);
- % of sunshine.

3.4 Survey Limitations

The majority of adult count surveys and habitat assessments were conducted within the optimal period for adult surveys of southern damselfly (Thompson *et al*., 2003b), with all surveys conducted within the main flight period of southern damselfly in Hampshire (Taverner *et al*., 2004). It is therefore considered unlikely that the timing of the survey at any specific site would negatively influence the likelihood of encountering southern damselfly on a given transect where present, though may have the potential to influence the numbers of individuals recorded at sites visited towards the end of the study.

All transects were conducted at the recommended time of day and met the recommended weather criteria with the exception of transects 5, 7 and 8 at West Horton Farm, when percentage sunshine did not exceed 50%.

Access to channel margins and / or a continuous view of the watercourse was restricted across a number of transects (Appendix 3), either as a consequence of tall, dense bankside and bank top monocotyledon vegetation, or as a result of enclosed scrub and / or trees (see section 4.3.1). The degree to which access and view was obscured was notably different between transects, and it is

considered possible that these habitat characteristics would have resulted in a reduced encounter rate with southern damselfly. However, since regular access to the watercourse was gained along the length of all transects, it is unlikely to have resulted in the species not being encountered at all where present in reasonable numbers. Furthermore, this did not impact on the surveyor's ability to assess the suitability of the habitat present, nor their ability to provide recommendations that identify opportunities for enhancing the suitability of these carrier streams and ditches for this species. In fact, the presence of these habitat features inherently indicates that the relevant (section of) transect is at best of sub-optimal quality for southern damselfly, and most likely unsuitable for the species.

Finally, access was refused from only one site, located adjacent to Highbridge Farm (Map 1). During the site selection process, it was concluded that this site included only two watercourses that may have the potential to support southern damselfly. However, no records of southern damselfly within this site were returned from the HBIC data search. Furthermore, one of the two ditches in question was a continuation of a ditch predominately located within Highbridge Farm. Both the section of ditch within Highbridge Farm, and the section of ditch located within the adjacent site that was visible from Highbridge Farm, were dry at the time of survey. It is therefore consider highly unlikely that the site is an important location for southern damselfly, and its exclusion will not have a significant negative influence on the ability of the author to assess the distribution of southern damselfly in and around Eastleigh Borough.

3.5 Data Analysis

All data analysis was performed using Microsoft® Excel 2010.

The calculation of both means and median values was included within the desktop study of the Itchen Valley Country Park monitoring study to ensure that, when interpreting the average values collected, there was a consideration of the potential influence of the variability in the number of surveys conducted both between years, and between individual ditches within a limited number of specific years (i.e. 2012 and 2014).

4. RESULTS

The following section summarises the results of the desktop and field studies. Furthermore, based on the results of the survey programme conducted in 2017, it both provides an overview of the distribution and strength of southern damselfly numbers at each of the 13 survey sites (Map 2), and outlines the findings of the habitat assessments at these sites for this species.

A more detailed analysis of the distribution of southern damselfly and the suitability of the habitat features present at each of the 13 sites is provided within the specific site accounts presented in sections 5 – 17.

4.1 Background Data Search and Site Selection

The data search conducted by HBIC returned 320 records within the search area between 2001 and 2016 inclusive (Appendices 4 and 5). Based on the number of records returned, a number of key sites to be included within the study were identified including:

a. Allington / Allington Manor (41 records);
b. Bishopstoke (6 records);
c. Gully Copse (10 records);
d. Highbridge and multiple derivatives (43 records);
e. Lower Itchen Meadows (4 records);
f. West Horton (15 records).

Based on the grid references (typically to six figure accuracy) and location names provided within the data search results, and given the authors existing knowledge of the distribution of this species, the following six sites were included within the current study to correspond to these records (Map 2):

a. Allington Manor Farm;
b. Dunford's Land;
c. Land behind GW Martin;
d. Highbridge Farm;
e. Itchen Valley Country Park;
f. West Horton Farm.

A further seven sites were included within the study (Map 2). These were selected based on a combination of the remaining records returned from the HBIC data search, survey work conducted by the author between 2009 to 2016 inclusive, as they were areas where the author was unaware of any previous assessment, and due to information passed on to the author by knowledgeable others. Specifically these sites are:

a. Bishopstoke Fishing Club Land;
b. Breach Farm;
c. Withy Meadows;
d. Bishopstoke Park;
e. Ashtrim Nursery;
f. Morris' Land;
g. Land associated with Toby Carvery.

Finally, the on-going long-term monitoring study conducted by Eastleigh Borough Council at Itchen Valley Country Park (see section 4.2 below) was responsible for the substantial number of records (200) returned for:

- Itchen Valley Country Park;
- IVCP Lower;
- IVCP Middle / IVCP Mid;
- IVCP Upper.

4.2 Itchen Valley Country Park Monitoring Study

Long-term annual count data collected from Itchen Valley Country Park between 1999 and 2017 inclusive shows that, following a period of notable fluctuation (i.e. 1999 to 2004 inclusive), there has been a marked declining trend in the total number of adult southern damselfly recorded. Specifically, following a sharp decline in numbers between 2005 and 2013, there has been little recovery in the total counts over the four survey season since (Figure 4).

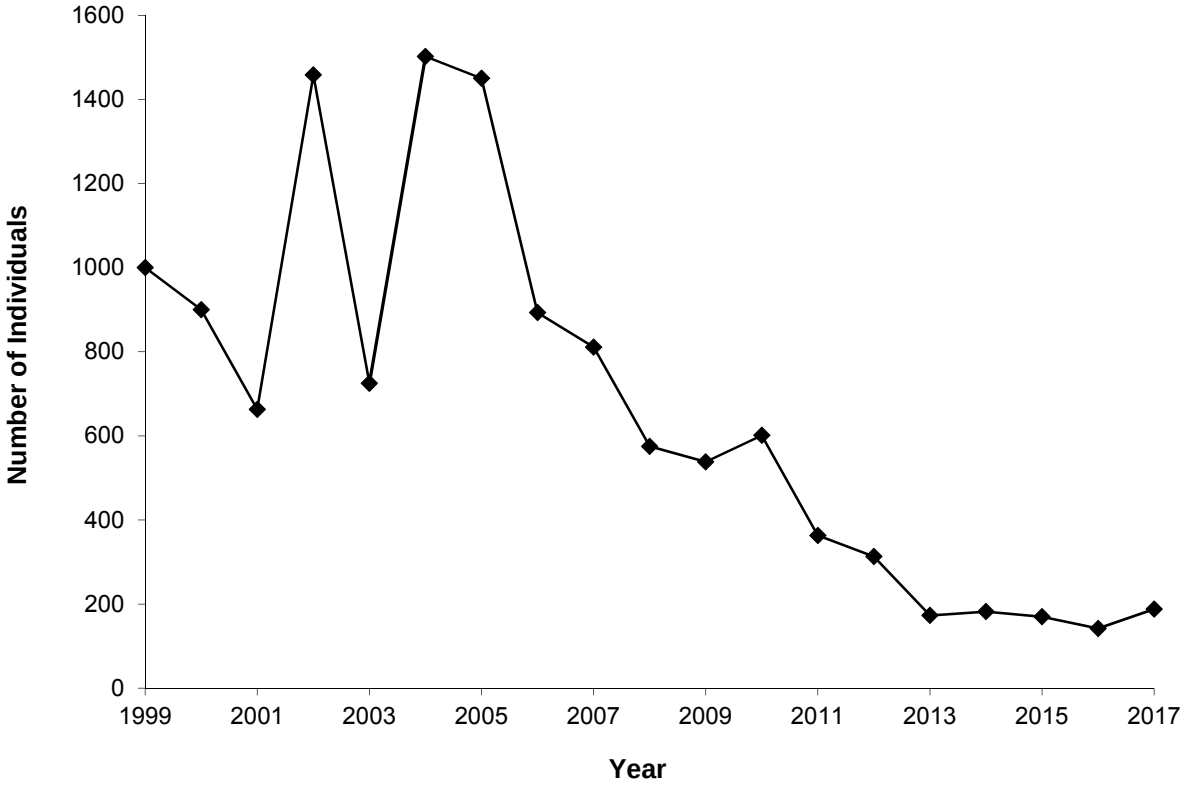


Figure 4: Total number of individuals recorded across all ditches combined between 1999 and 2017.

Table 1 provides a summary of the raw data collected during the 2006 to 2017 (inclusive) survey programmes. Interrogation of the data from this period presents a similar general trend of decreasing numbers of individuals, with this trend evident both across the site and also within the individual ditches surveyed. Figure 5 illustrates that there has been an 86%, 76%, 73% and 80% reduction in the number of individuals recorded in ditches 1, 3, 4, and all ditches combined respectively during the corresponding time period.

It is emphasised that survey effort was neither fully consistent between years, nor was it consistent between the individual ditches within a number of specific years (Table 1), and would therefore explain a degree of the observed variation in the number of individuals recorded between years and ditches. These inconsistencies were a result of a combination of factors including resources (i.e. 2016 and 2017), weather, and associated ground conditions. For example, not only do weather conditions inherently vary between years, resulting in the observed variability in the number of weeks' surveys could be conducted between 2006 – 2015 (Table 1), but ditch 4 was more susceptible to flooding / ground conditions becoming impassable than ditches 1 or 3, resulting in fewer surveys being conducted on this ditch in 2012 and 2014.

Irrespective of the natural and artificially driven variability in the data detailed above, it is considered highly likely that the decreasing trend in the numbers of individuals recorded at the site, and within individual ditches, provides an accurate indication that the size and / or strength of the population at the site is in decline. Indeed, although it does not fully correct for the variability outlined above (since surveys lost may correspond to different phases of the species' flight period), the corresponding reductions in peak counts, mean, and median number of individuals recorded (Figures 6–8) support the assessment that the population has suffered a considerable decline in the past twelve years.

Table 1: Summary and basic analysis of data collected during Itchen Valley Country Park monitoring study surveys conducted between 2006 and 2017.

Ditch	Parameter	Year & Dates											
		2006	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
		14/05 - 10/09	20/05 - 04/09	11/05 - 26/05	09/05 - 23/08	09/05 - 30/08	15/05 - 03/09	13/05 - 08/09	18/05 - 26/08	06/06 - 08/09	21/05 - 28/08	16/05 - 23/08	21/05 - 22/08
1	**Total**	377	319	155	103	138	119	94	34	47	21	18	52
	Peak Count	86	112	53	43	39	21	33	13	11	8	8	24
	Mean	26.9	24.5	15.5	7.4	9.9	7.0	7.2	2.6	4.3	1.5	2.6	10.4
	Median	24.5	18	8	1.5	4	5	1	0	4	0	2	8
	Survey Visits	15	14	11	15	15	18	14	14	12	15	8	6
	No. Visits Recorded	10	10	7	10	9	15	9	5	7	6	4	5
3	**Total**	386	426	288	290	221	133	162	73	101	87	46	92
	Peak Count	89	101	108	91	64	34	50	25	26	29	22	27
	Mean	27.6	32.8	28.8	20.7	15.8	7.8	12.5	5.6	9.2	6.2	6.6	18.4
	Median	13	29	20	6.5	8.5	4	6	3	3	2	3	22
	Survey Visits	15	14	11	15	15	18	14	14	12	15	8	6
	No. Visits Recorded	12	12	7	12	11	15	10	8	7	10	5	5
4	**Total**	130	86	132	145	242	111	57	54	34	62	13	36
	Peak Count	31	23	55	46	64	17	31	32	14	18	9	15
	Mean	9.3	6.6	13.2	11.2	17.3	6.5	7.1	4.2	3.8	4.4	1.9	7.2
	Median	3	5	10	3	14.5	5	1.5	0	2	1.5	0	6
	Survey Visits	15	14	11	14	15	18	9	14	10	15	8	6
	No. Visits Recorded	10	9	6	8	12	14	6	4	6	8	3	5
Combined	**Total**	893	811	575	538	601	363	313	161	182	170	76	180
	Peak Count	185	178	174	180	138	62	114	69	42	48	32	57
	Mean	63.8	62.4	57.5	38.4	42.9	21.4	24.1	12.4	15.2	12.1	10.9	36.0
	Median	48.5	57	41.5	7	28.5	16	12	3	7	6	5	32
	Survey Visits	15	14	11	15	15	18	14	14	13	15	8	6
	No. Visits Recorded	13	12	7	13	13	15	11	8	8	14	5	5

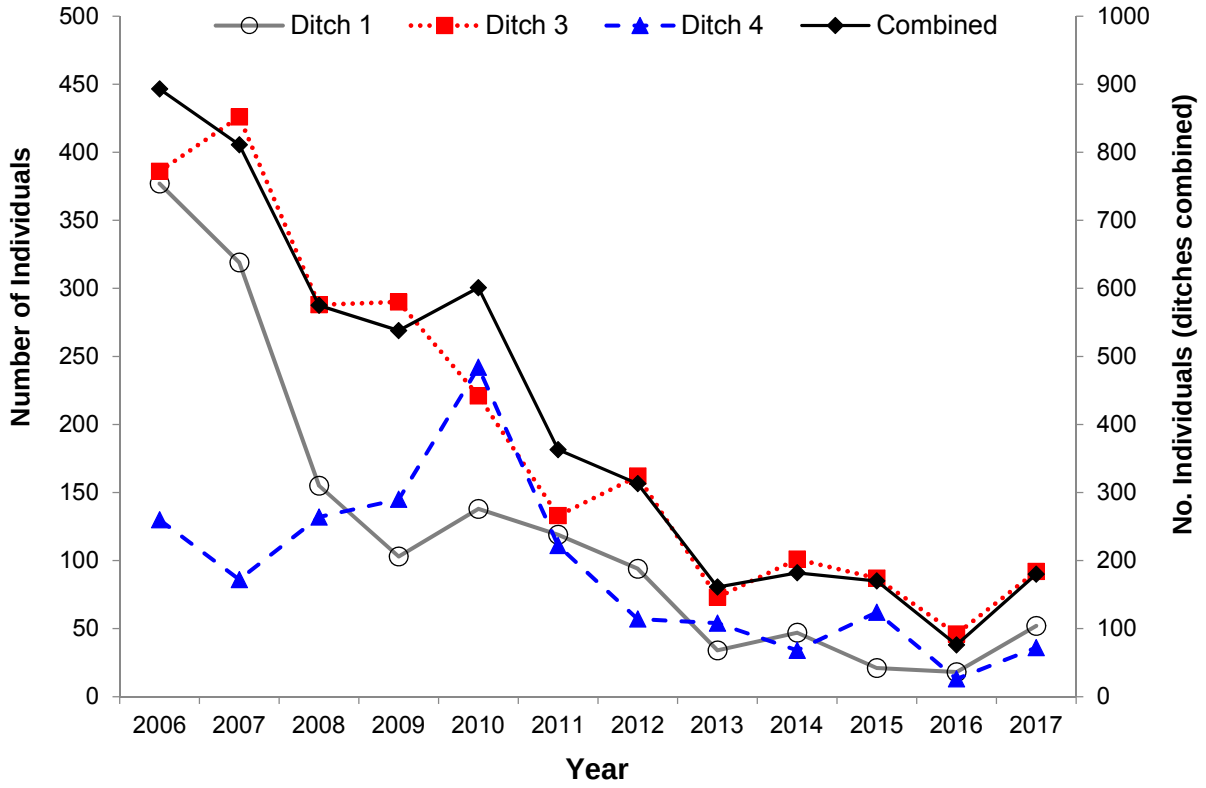


Figure 5: Total number of individuals recorded on ditch 1, ditch 3, ditch 4, and across all ditches combined.

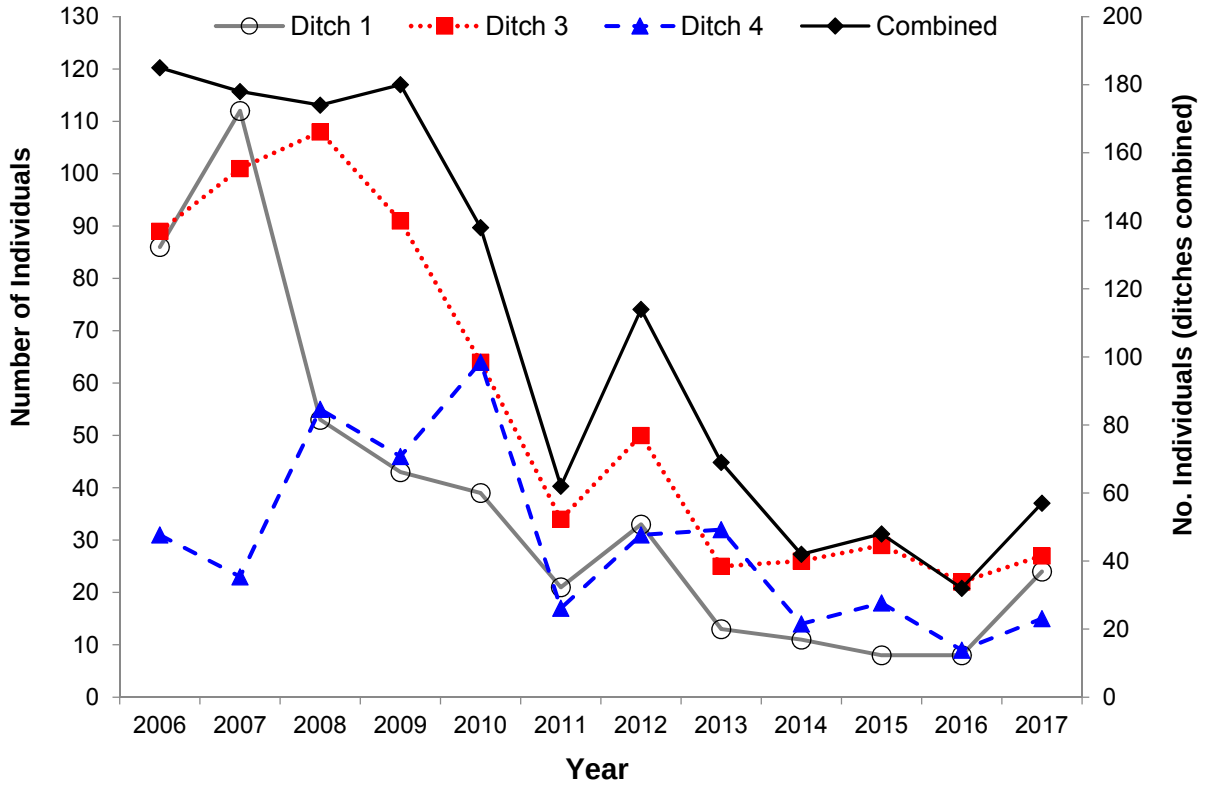


Figure 6: Peak counts of the number of individuals recorded on ditch 1, ditch 3, ditch 4, and across all ditches combined.

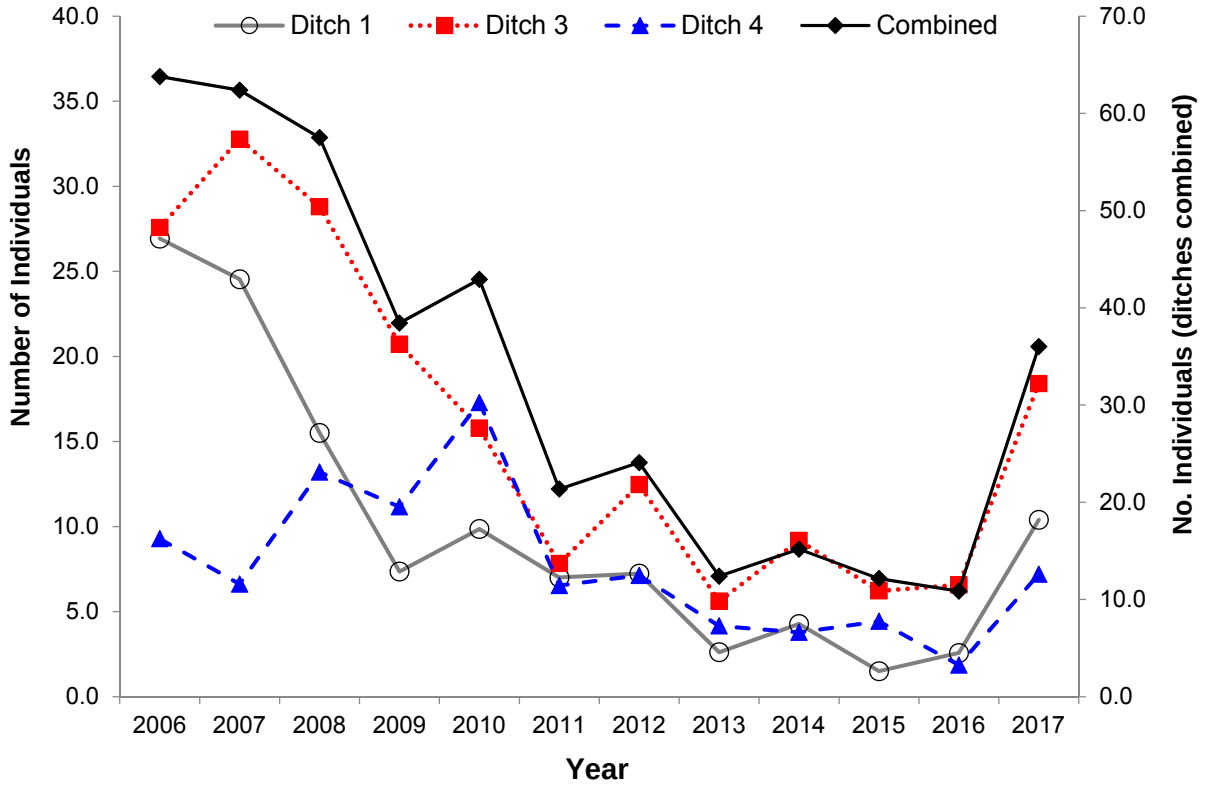


Figure 7: Mean number of individuals recorded per survey visit on ditch 1, ditch 3, ditch 4, and across all ditches combined.

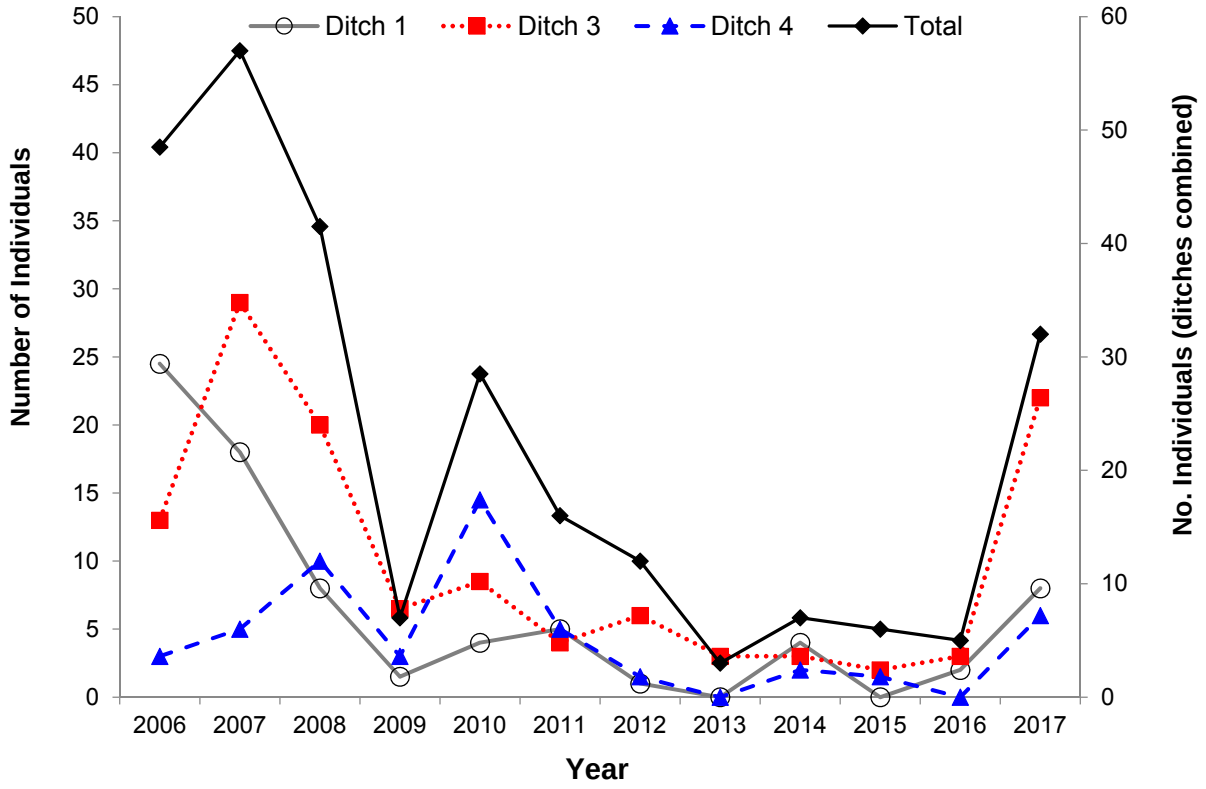


Figure 8: Median numbers of individuals recorded on ditch 1, ditch 3, ditch 4, and across all ditches combined.

4.3 Field Survey

Field surveys were conducted at 13 sites associated with the River Itchen SSSI / SAC distributed from beyond the Eastleigh Borough boundary to the north, to the lower reaches of Itchen Valley Country Park beyond the borough's southern boundary (Map 2).

4.3.1 Habitat assessment

Habitat assessments were conducted on 112 transects across the 13 sites (Appendix 3), with a further eight sections of watercourses excluded from assessment as a consequence of their inclusion within surveys at an adjoining site (i.e. Breach Farm – transects 1a and 1b; Dunford's Land – transects 8 and 12), or since they were determined to be unsuitable whilst other assessments were being conducted within that area of the site (i.e. Highbridge Farm – transects 20, 21 and 26; Allington Manor Farm – transect 30).

Transects included within the study predominantly consisted of ditches and carrier streams associated with historic water meadow systems, but also included both side channels and sections of the main River Itchen (see sections 5 – 17 for details).

Optimal and / or sub-optimal suitable habitat for southern damselfly was recorded at seven of the 13 survey sites (Table 2), representing 19 (17%) of the 112 transects surveyed (Map 3). It is emphasised that the extents shown on Map 3 represent the full length of these transects, and is not a representation of the length of suitable habitat that was present. In fact, since a number of these transects did not support optimal and / or sub-optimal habitat along their entire length (Appendix 3), it was not feasible to determine the length of suitable habitat recorded across the study area. Furthermore, an additional seven transects did support one or more very short section(s) of suitable habitat for southern damselfly, though the evaluation of these transects in their entirety returned a "largely unsuitable" assessment (Appendix 3).

Access to the entire length of the bank top could not be achieved on over 60% of the transects assessed (Appendix 3), as a result of one or a combination of dense bank top growth of:

- Trees;
- Scrub (including willows *Salix* spp., bramble *Rubus fruticosus* agg. and hawthorn *Crataegus monogyna*);
- Tall monocotyledon vegetation characteristic of damp or frequently inundated ground (including sedges *Carex* spp., reed sweet-grass *Glyceria maxima*, reed canary-grass *Phalaris aurundicea* and common reed *Phragmites australis*);
- Tall ruderal vegetation (including common nettle *Urtica dioica*, cleavers *Galium aparine* and common hogweed *Heracleum sphondylium*).

However, since the presence of this dense bank top growth predominately resulted in a high degree of shading and / or a suppression of the emergent / marginal herbaceous plant species important for oviposition and associated establishment of suitable larval habitat (see section 2.1), it was considered appropriate to assess these to be sections of unsuitable habitat for southern damselfly.

Highbridge Farm and Allington Manor Farm (Map 2) were considered to provide the greatest availability of suitable habitat for southern damselfly (Table 2; Map 3). Their large size and associated extensive network of watercourses have allowed for extensive reaches of optimal and / or sub-optimal habitat to develop. Specifically, Highbridge Farm recorded seven transects considered to provide suitable habitat to support southern damselfly (Table 2), which included an extensive section of the main River Itchen channel (transects 4 & 5), and the main carrier stream (transects 1, 2a, 2b & 3) that flows from north to south through the site (see Figure 10 in section 6). Similarly, two main carrier streams (transects 1 & 3 and transects 17 & 18) support the majority of the suitable habitat at Allington Manor Farm, although a small cross ditch was considered to provide highly valuable habitat at the site also (see Figure 20 in section 16). However, as set out in Table 2, the suitability of habitat across both sites was highly variable, with both also supporting extensive lengths of dry and / or otherwise unsuitable 'watercourses'.

Table 2: Summary of field survey results with assessments of current and future potential habitat suitability and southern damselfly population strength at each site.

Site Name	No. Habitat Assessments	Length of Transects Assessed (m)	No. Transects with Suitable Habitat	Overall Suitability of Site	Potential for Enhancement of Transects	No. Adult Count Surveys	No Transects Supporting Southern Damselfly	Population Strength	Potential Population Strength
Bishopstoke FC^	5	1,143	0	Unsuitable	Low to Moderate	1	0	Absent*	N/a
Highbridge Farm^	34	9,789	7	Highly Variable (optimal to unsuitable)	High	9	9	Strong	Very Strong
Breach Farm	4	1,853	1	Unsuitable	Moderate	1	1	Weak	Medium
Withy Meadows	2	557	0	Unsuitable	Moderate	0	0	Absent	Medium
Bishopstoke Park	DNS	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a
GW Martin^	2	770	1	High to Low	Moderate†	2	2	Medium	Medium‡
Ashtrim Nursery	2	274	1	Optimal to Unsuitable	Low	1	1	Medium	Medium
Morris' Land^	6	814	0	Unsuitable	Moderate†	1	1	Negligible	N/a‡
Toby Carvery	1	88	0	Unsuitable	None	0	0	Absent	N/a
Dunford's Land	12	4,323	3	Unsuitable	Moderate†	3	2	Weak	Medium‡
West Horton Farm^	10	2,553	0	Unsuitable	High[v]	6	2	Weak	Strong[v]
Allington Manor	31	7,495	5	Highly Variable (optimal to unsuitable)	Low to Moderate	5	5	Strong	Strong
Itchen Valley CP^	3	555	1	Sub-optimal to Unsuitable	Low to Moderate	3	3	Medium	Medium

^ Very short sections of suitable habitat present on one or more additional transects though the majority of the transect in question was considered to be unsuitable.

* Sections of the main River Itchen are present at the site that may provide suitable habitat for southern damselfly but were not assessed within this study.

† This assessment may be increased to high if the creation of new, specific watercourses for southern damselfly was included within enhancement programme.

‡ This assessment may be increased to strong if the creation of new, specific watercourses for southern damselfly was included within enhancement programme.

[v] Subject to findings of detailed hydrological assessment.

Ashtrim Nursery and Land Behind GW Martin supported sections of both optimal and sub-optimal habitat for southern damselfly, and were considered to be very important sites since they were strategically located centrally within the study area (Maps 2 and 3). Furthermore, the section of main river at Breach Farm, was considered to be a valuable addition to the population 'hub' at Highbridge Farm, with the remaining sites that support habitat worthy of note comprising Dunford's Land, West Horton Farm and the section of Itchen Valley Country Park included within this study (Map 3).

Finally, a consideration of opportunities for future enhancement of the transects assessed (and the wider site in a number of instances) was included within the habitat assessment programme, and is summarised in brief in Table 2, but are not discussed in detail here. Instead, these opportunities will be developed into a strategic conservation plan for southern damselfly, which will set out the key principles for the strategic conservation of this species in Eastleigh, outlining and prioritising the potential options for habitat enhancement and / or creation for this species in and around the borough.

A more detailed account of the findings from all the habitat assessment surveys are provided in the site specific accounts set out in sections 5 – 17.

4.3.2 Adult count surveys

Adult count surveys were conducted on 32 transects across 10 of the 13 survey sites (Table 2), with surveys conducted on all 19 transects found to support suitable habitat for southern damselfly. The remaining 13 additional transects represented those seven transects considered to be largely unsuitable within the habitat assessment (Appendix 3), four transects where the author has recorded southern damselfly during previous studies (i.e. West Horton Farm – transects 5, 6, 7 and 8), and two transects considered unsuitable but supporting at least standing water where transient or roosting males were recorded (Highbridge Farm – transect 2c; Itchen Valley Country Park – transect 3).

Southern damselfly were recorded on nine of the thirteen sites visited (Maps 2 and 4). It is emphasised that the extents shown on Map 4 represent the full length of the transects southern damselfly were recorded on, and in a number of instances does not reflect the length that actually supported this species. This is clearly demonstrated in the densities (number of males recorded per 100m) returned for a number of transects (Table 3).

Of the 10 sites where adult count surveys were conducted, the species was only not recorded on Bishopstoke Fishing Club Land (Table 2), though it is emphasised that an extensive stretch of the main River Itchen was present within the site that may have provided suitable habitat for southern damselfly, but was not included in the study (as set out in section 3.2).

In total, 1,228 male southern damselfly were recorded across 27 of the 32 transects included within the adult count survey programme (Table 3; Map 4). Consistent with the findings of habitat assessment surveys, the greatest abundance of southern damselfly were recorded at Highbridge Farm and Allington Manor Farm, with 579 and 441 males recorded at each site respectively. These sites are therefore considered to support the strongest population of this species within the study area (Table 2). Furthermore, the results of adult count surveys confirm the importance of both Ashtrim Nursery and the Land behind GW Martin, both supporting a medium a strength population (Table 2). In fact, these four sites supported nearly 92% of all males recorded within the study, with Itchen Valley Country Park supporting 48 of the remaining 101 males recorded (Table 3).

The density of southern damselfly (number of males recorded per 100m) recorded across the survey sites was largely consistent with the corresponding abundances recorded. The greatest densities of individuals were recorded on transects at Highbridge Farm and Allington Manor Farm (Table 3), with moderate densities recorded at Ashtrim Nursery, and on transect 1 of both Itchen Valley Country Park and Land behind GW Martin sites. However, density was not only highly variable between sites, but also demonstrated considerable differences within sites, a reflection in the level and extent of suitable habitat present on each individual transect (Table 3; Appendix 3).

Only a limited number of copulating pairs were recorded during the adult count surveys, and no ovipositing females were observed (Table 3). A list of other species of Odonata recorded during adult count surveys has been included within the site specific accounts provided in sections 5 – 17.

Table 3: Results and weather conditions during all adult count surveys conducted (red text indicates weather conditions were not met).

Site Name & Transect No.	Transect Length (m)	Abundance (males)	Density (males per 100m)	Copulating Pairs	Ovipositing Females	Date	Start Time	Temp (°C)	Ave Wind Speed	Max Wind Speed	% Sunshine
Bishopstoke FC - T5	97	0	0.00	0	0	20/07/2017	15:00	21	3	4	100
Highbridge Farm - T1	421	34	8.08	2	0	13/06/2017	10:40	19.3	2	3	90
Highbridge Farm - T2a	103	25	24.27	1	0	13/06/2017	12:06	21.7	2	2	90
Highbridge Farm - T2b	149	72	48.32	2	0	13/06/2017	12:43	22.9	2	3	65
Highbridge Farm - T2c	397	2	0.50	0	0	13/06/2017	14:54	21.6	1	2	75
Highbridge Farm - T3	229	135	59.08	2	0	13/06/2017	13:26	22.2	1	2	60
Highbridge Farm - T4	1382	194	14.04	4	0	14/06/2017	10:36	22.8	2	4	99
Highbridge Farm - T5	1075	76	7.07	0	0	14/06/2017	14:00	23.2	4	4	100
Highbridge Farm - T9	372	37	9.95	0	0	17/06/2017	10:42	23.0	1	2	100
Highbridge Farm - T32	759	4	0.53	0	0	18/06/2017	13:14	28.2	1	2	65
Breach Farm - T1c	661	23	3.48	0	0	15/06/2017	15:03	21.8	3	4	75
GW Martin - T1	431	54	12.53	0	0	19/06/2017	11:30	28.1	1	2	85
GW Martin - T2	339	8	2.36	0	0	19/06/2017	12:47	27.0	1	2	80
Ashtrim Nursery - T1	200	53	26.47	0	0	19/06/207	13:56	29.2	2	3	80
Morris' Land - T6	237	2	0.84	0	0	21/06/2017	14:54	29.2	2	3	100
Dunford's Land - T1	553	3	0.54	0	0	02/07/2017	11:54	20.8	2	3	95
Dunford's Land - T2	599	7	1.17	0	0	02/07/2017	13:35	21.6	2	3	95
Dunford's Land - T3	490	0	0.00	0	0	02/07/2017	15:05	22.1	2	3	100

Site Name & Transect No.	Transect Length (m)	Abundance (males)	Density (males per 100m)	Copulating Pairs	Ovipositing Females	Date	Start Time	Temp (°C)	Ave Wind Speed	Max Wind Speed	% Sunshine
West Horton Farm - T1	233	1	0.43	0	0	07/07/2017	10:47	22.2	2	3	55
West Horton Farm - T4	465	8	1.72	0	0	07/07/2017	12:04	24.6	2	3	90
West Horton Farm - T5	169	0	0.00	0	0	14/07/2017	15:08	20.7	3	5	35
West Horton Farm - T6	188	0	0.00	0	0	07/07/2017	14:32	25.1	2	3	85
West Horton Farm - T7	114	1	0.88	0	0	14/07/2017	13:19	22.4	3	4	35
West Horton Farm - T8	186	0	0.00	0	0	14/07/2017	14:14	22.2	3	4	40
Allington Manor - T1	640	116	18.13	1	0	06/07/2017	11:19	24.6	2	2	75
Allington Manor - T3	561	82	14.62	1	0	05/07/2017	10:52	20.7	2	3	100
Allington Manor - T13	132	71	53.97	0	0	05/07/2017	14:09	25.2	2	3	95
Allington Manor - T17	447	149	33.34	1	0	05/07/2017	12:46	23.6	2	3	100
Allington Manor - T18	144	23	15.97	0	0	05/07/2017	15:09	25.3	3	3	100
Itchen Valley CP - T1	136	27	19.85	0	0	17/07/2017	11:34	22.2	2	3	95
Itchen Valley CP - T2	262	19	7.25	1	0	17/07/2017	12:16	22.7	2	3	95
Itchen Valley CP - T3	157	2	1.27	0	0	17/07/2017	13:20	24.7	2	3	85

5. BISHOPSTOKE FISHING CLUB LAND

5.1 Habitat Assessment

Habitat assessments were conducted on five transects (Figure 9) on land owned by the Bishopstoke Fishing Club located to the north of Highbridge, situated a short distance beyond the boundary of Eastleigh Borough (Map 2).

All transects were field ditches, most likely comprising part of an historic water meadow system (Figure 9). The ditches were almost exclusively considered to be unsuitable for southern damselfly, due to the absence of a secure, perennial flow of water through the system and the prevalence of tall trees / dense scrub or tall monocotyledon vegetation associated with the channels (Table 4). Only a single transect, transect 5, was considered to provide at least some extent of sub-optimal habitat for southern damselfly, though more detailed inspection identified that this ditch was largely unsuitable.

Table 4: Summary of habitat suitability assessments at Bishopstoke Fishing Club land.

Transect No.	Watercourse Type	Habitat Suitability	Habitat Enhancement Potential	Assessment Justification
1*	Ditch	Unsuitable	Low	Dry ditch with dense tree and scrub cover over channel.
2	Ditch	Unsuitable	Low	No discernible flow and dense monocotyledon vegetation both shaded and choked (restricting) the channel.
3*	Ditch	Unsuitable	Low	No discernible flow and dense shade caused by tree / scrub cover and tall monocotyledon vegetation.
4*	Ditch	Unsuitable	Low	Dense tree and scrub cover over the channel for the majority of its length, with no discernible flow for extensive sections of the channel.
5	Ditch	Largely unsuitable	Low to Moderate	No discernible flow in the lower reaches of the channel and tall vegetation dominated the bank tops.

***** Unable to access the entire transect length due to dense and / or tall bankside vegetation / scrub

5.2 Adult count survey

Due to the unsuitable character of the majority of transects for southern damselfly, an adult count survey was conducted on transect 5 only.

5.2.1 Southern damselfly

No southern damselfly were recorded on Land owned by the Bishopstoke Fishing Club during the adult count survey (Table 5), nor were any individuals encountered anywhere across the site during the habitat assessments.

Table 5: Southern damselfly abundance and density at Bishopstoke Fishing Club land.

Transect No.	Transect Length (m)	Abundance (males)	Density (males per 100m)	Weather Criteria
5	97	0	0	Met

Figure 9: Bishopstoke Fishing Club Land

Southern Damselfly Study: Eastleigh Borough

Site boundary

Transect supporting SD

Transect not supporting SD

200m road buffer

River Itchen SAC

Eastleigh Borough boundary

Drain

Drain

Drain

Drain

16m

1

2

3

4

5

0

100

metres

5.2.2 Other Odonata

No male Odonata were recorded during the adult count survey, although two female banded demoiselle *Calopteryx splendens* were present.

6. HIGHBRIDGE FARM

6.1 Habitat Assessment

Habitat assessments were conducted on thirty-four transects at Highbridge Farm (Figure 10), with transect numbers based on those used during a previous assessment of the site in 2010. Highbridge Farm consisted of two distinct survey areas (Figure 10), with the majority of the site located adjacent to the northern boundary of Eastleigh Borough (Map 2).

Transects comprised a combination of ditches, carrier streams and two extensive sections of the main River Itchen (Table 6; Figure 10). The main river (transects 4 and 5; Photograph 1) and a north to south flowing carrier stream (transects 1, 2a, 2b and 3) provided the majority of suitable habitat at the site, though a significant portion of the latter was considered to be of sub-optimal habitat quality. Furthermore, a small north to south flowing ditch (transect 9) supported a short section of sub-optimal habitat also (Photograph 2). However the majority of watercourses included within the habitat assessment were considered unsuitable for southern damselfly, since they were either completely dry or did not support flowing water at the time of survey, and / or had bank tops dominated by one or a combination of tall trees, dense scrub and tall monocotyledon vegetation.

Table 6: Summary of habitat suitability assessments at Highbridge Farm.

Transect No.	Watercourse Type	Habitat Suitability	Habitat Enhancement Potential	Assessment Justification
1	Carrier Stream	Sub-optimal	High	Slow to moderate flow present, dominated by a silt substrate and supporting extensive emergent / marginal herbaceous vegetation for oviposition (i.e. egg-laying); however, extensive areas shaded by trees, scrub and / or tall monocotyledons.
2a*	Carrier Stream	Sub-optimal	High	Slow to moderate flow present, though increasing to fast in sections, with areas of extensive silt and strong marginal / emergent herbaceous vegetation for oviposition; however, lower reaches enclosed within scrub from both banks.
2b*	Carrier Stream	Sub-optimal	High	Slow to moderate flow present, with areas of extensive silt and associated strong marginal / emergent herbaceous vegetation for oviposition; however, tall hedge line is present on the true right bank (north), and true left bank has become perched with sections of dense bramble vegetation, the combination of which created extensive shading over some sections of the channel.
2c	Carrier Stream	Unsuitable	Moderate	Dry ditch (exception was a short section adjacent to transect 2b) with a tall hedge line including trees dominating the north bank top; it is unclear whether perennial water supply can be secured without impacting existing important watercourses.
3	Carrier Stream	Optimal to sub-optimal	High	Shallow, bowl shaped ditch supporting slow to moderate flow, dominated by a silt substrate and supporting an extensive marginal / emergent growth of herbaceous vegetation for oviposition; however the lower half of the ditch became increasing deep / incised and encroached by tall bank top sedges and other monocotyledons.

Transect No.	Watercourse Type	Habitat Suitability	Habitat Enhancement Potential	Assessment Justification
4	Main River†	Optimal‡	Low to Moderate	Wide section of main river channel (flowing north to south) characterised by sections of moderate to fast flow, with areas of marginal habitat characterised by slower flowing water with associated silt deposition and growth of emergent herbaceous vegetation for oviposition; valuable bank top habitat also present, largely providing shelter for roosting adults without generating too much shade; some marginal areas dominated by dense, tall monocotyledon vegetation.
5	Main River†	Optimal‡ to sub-optimal	Low to Moderate	Wide section of main river channel (flowing north to south) characterised by moderate to fast flow, but with sections of marginal habitat characterised by slower flowing water with associated silt deposition and growth of emergent herbaceous vegetation for oviposition; however suitable marginal features are less extensive and numerous than in transect 4, with much of the bank top either managed as a narrow strip of vegetation or dominated by tall trees (particularly in the lower reaches of the channel).
6*	Carrier Stream	Unsuitable	Unsuitable	Channel enclosed within extensive, tall mature trees and scrub, and potentially actual lies outside the site.
7	Ditch	Unsuitable	Moderate	Dry channel dominated by tall, dense monocotyledons, with long swathes of reed sweet-grass, reed canary-grass and / or sedge, interspersed with tall ruderals and occasional herbs; potential for valuable habitat enhancement (creation) exists, but requires the (re)connection of this ditch to the main river (transect 4).
8*	Ditch	Unsuitable	Unsuitable	Dry field boundary ditch, dominated by a combination of sections enclosed within willow and / or bramble scrub, shaded by mature trees including ash, or choked by terrestrial vegetation and / or reed-canary grass; potentially providing valuable habitat for other important ecological features / species that may be present at the site.
9*	Ditch	Sub-optimal to unsuitable	High	Typically shallow, bowl shaped ditch that appeared to be spring-fed and was dominated by a silt substrate; however over two-thirds of the transect was enclosed within dense willow dominated scrub and, even where more open and suitable in the lower (southern) reach of the channel, emergent herbaceous vegetation covers almost the entirety of its width restricting the area of open water available.

Transect No.	Watercourse Type	Habitat Suitability	Habitat Enhancement Potential	Assessment Justification
10*	Ditch	Unsuitable	Unsuitable	Dry boundary ditch dominated by trees and scrub, potentially providing valuable habitat for other important ecological features / species that may be present at the site.
11*	Ditch	Unsuitable	Unsuitable	Dry field boundary ditch, dominated by a combination of sections enclosed within willow and / or bramble scrub, shaded by mature trees including ash, or choked by terrestrial vegetation and / or tall monocotyledons.
12*	Ditch	Unsuitable	Unsuitable	Although ditch supported water along the majority of its length, no discernible flow was evident; predominately enclosed within a mixture of dense willow dominated scrub and mature trees.
13*	Ditch	Unsuitable	Unsuitable	Dry, short, scrub enclosed blind-ended ditch.
14*	Ditch	Unsuitable	Unsuitable	Dry ditch dominated by trees and scrub, potentially providing valuable habitat for other important ecological features / species that may be present at the site.
15*	Ditch	Unsuitable	Unsuitable	Dry ditch, variable in dominant habitat features with sections dominated by reed sweet-grass, mature trees and scrub, the latter two potentially providing valuable habitat for other important ecological features / species that may be present at the site.
16*	Ditch	Unsuitable	Unsuitable	Dry ditch dominated by trees and scrub, potentially providing valuable habitat for other important ecological features / species that may be present at the site.
17	Ditch	Unsuitable	Unsuitable	Dry ditch choked by vegetation; no evidence that a perennial water supply could be secured in the future.
18	Ditch	Unsuitable	Unsuitable	Dry ditch; no evidence that a perennial water supply could be secured in the future.
19	Ditch	Unsuitable	Moderate	Dry ditch, choked by monocotyledons along the majority of its length; dense willow and bramble present associated with the majority of the fence line present on the western bank top; may be potential for water to be secured from transect 2a.
20 & 21	Ditch	DNS	DNS	DNS
22 – 25	Ditches	Unsuitable	Moderate	A series of dry field ditches dominated by a mixture of terrestrial vegetation and, where evidence of more frequent or extended inundation, monocotyledon vegetation such as sedges, reed sweet-grass and reed canary-grass; unclear whether perennial supply of flowing water could be secured to enhance one or more of these channels.
26	Ditch	DNS	DNS	DNS

Transect No.	Watercourse Type	Habitat Suitability	Habitat Enhancement Potential	Assessment Justification
27 – 30*	Ditches	Unsuitable	Unsuitable	A complex of short, predominately dry ditches with 27 – 29 appearing to be spring fed; no evidence that a perennial water supply could be secured in the future.
31	Ditch	Unsuitable	Low	Damp ditch, though no areas of standing water evident, and dominated by swathes of tall, dense sedge, reed canary-grass, reed sweet-grass and yellow flag-iris; unclear whether perennial supply of flowing water could be secured.
32*	Carrier Stream	Largely unsuitable	Low	Large carrier stream, supplemented from an off-take structure on the Itchen Navigation at its upstream (northern) extent, with a short section of visibly flowing water choked by tall reed sweet-grass and bur-reed; the majority of the channel is wide, deep, had little to no discernible flow, a mixture of open sections and others choked by vegetation, and extensive mature trees and scrub on the true right bank, some of which completely over-hung the channel; it is unclear whether sufficient water supply / narrowing could be achieved to provide suitable flow through the length of the channel, and extensive works would be required to address the level of shading.
33*	Ditch	Unsuitable	Moderate	Short ditch with moderate flow where visible, and areas of marginal / emergent herbaceous vegetation for oviposition also present; however tall scrub is present on both bank tops, creating extended sections of heavy shading.
34*	Ditch	Unsuitable	Unsuitable	Small ditch, with a moderate to slow flow over predominantly gravels; largely enclosed within scrub and / or trees within the Highbridge site, before flowing adjacent to a public footpath to the south.
35*	Ditch	Unsuitable	Unsuitable	Ditch transitions from dry, to damp, to supporting areas of standing water as it runs from the field boundary in the north-east to its lower limit in the south; where water is present, channel is incised and choked by vegetation before entering a long section of tall tree cover; no evidence that a perennial water supply could be secured in the future.

***** Unable to access the entire transect length due to dense and / or tall bankside vegetation / scrub

† Assessment was focused on habitats present along the true right bank

‡ In the context of a large river channel

DNS – Did not survey

Figure 10: Highbridge Farm

Southern Damselfly Study: Eastleigh Borough

Arcadian

The Wildlife Trusts Hampshire & Isle of Wight Wildlife Trust

Site boundary

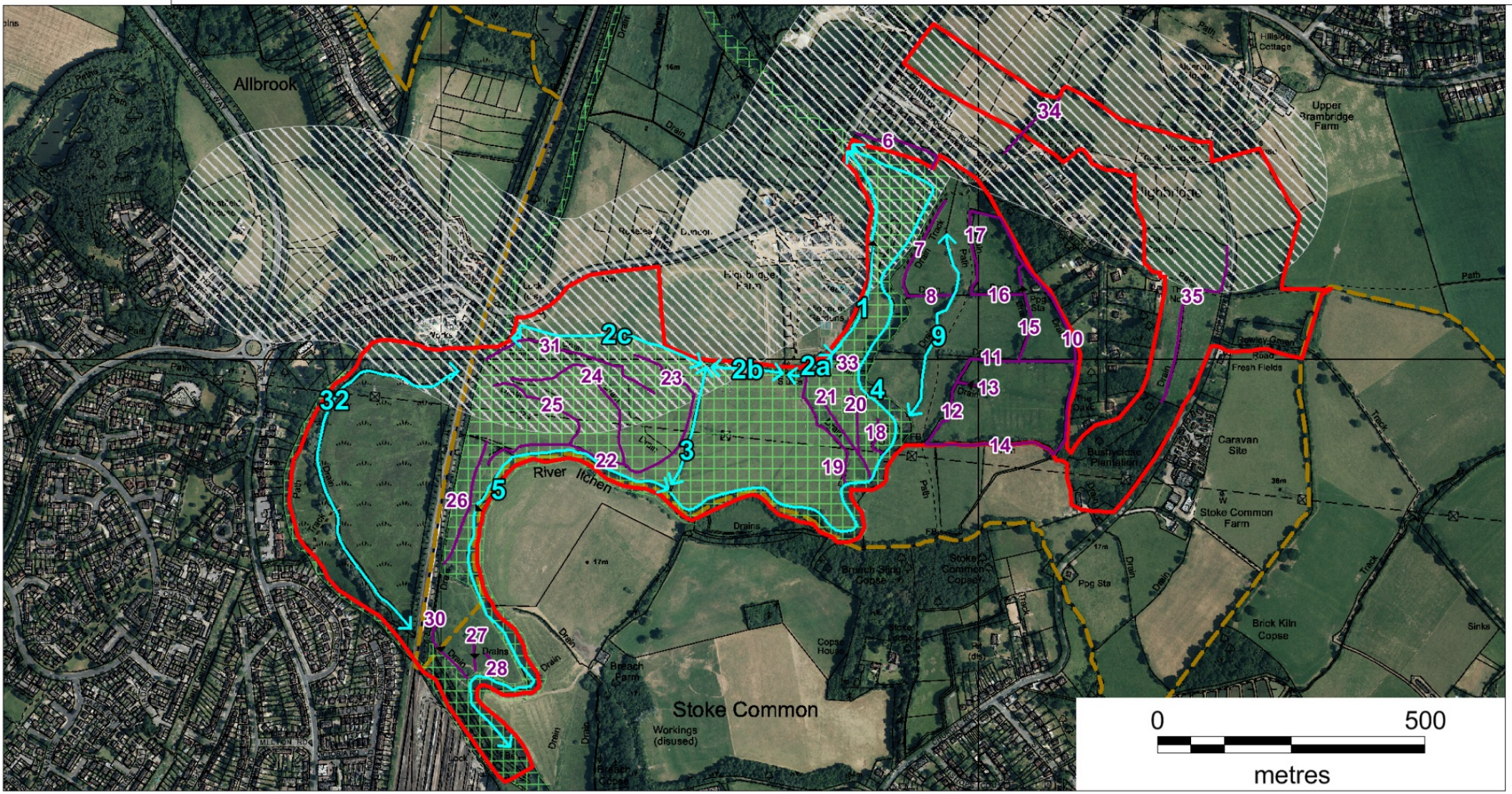
Transect supporting SD

Transect not supporting SD

200m road buffer

River Itchen SAC

Eastleigh Borough boundary



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6.2 Adult count survey

Based on the suitability of the habitat features present, adult count surveys were conducted on nine of the 34 transects assessed at Highbridge Farm.

6.2.1 Southern damselfly

Southern damselfly was the most abundant species of Odonata encountered at Highbridge Farm, with 579 males recorded across all nine transects surveyed (Table 7).

Table 7: Southern damselfly abundance and density at Highbridge Farm.

Transect No.	Transect Length (m)	Abundance (males)	Density (males per 100m)	Weather Criteria
1	421	34	8.08	Met
2a	103	25	24.27	Met
2b	149	72	48.32	Met
2c	397	2	0.50	Met
3	229	135	59.08	Met
4	1382	194	14.04	Met
5	1075	76	7.07	Met
9	372	37	9.95	Met
32	759	4	0.53	Met

Southern damselfly were most abundant species on two discrete habitat types; the main carrier stream that flows from the north of the site through the central region of the site to its southern boundary (transects 1, 2a, 2b and 3), and the main river channel (transects 4 and 5). Though the former predominately supported a greater density (Table 7), the large numbers recorded on the main river channel (particularly transect 4) make this very valuable also. Furthermore, copulating pairs were recorded on transects 1, 2a, 2b, 3 and 4, but no ovipositing females were recorded during adult count surveys (Table 3).

All individuals recorded on transect 32 were recorded in the first (most north-eastern) 20 metres of the channel, whereas the two individuals recorded on transect 2c were located immediately west of transect 2b. The majority of individuals recorded on transect 9 were in the lower (southern) reaches where the habitat was of notably higher quality than above, though still considered to be of only sub-optimal quality. Finally, the majority of individuals record on transect 1 were south of a bridge located parallel to transect 8 (Figure 10).

6.2.2 Other Odonata

In total, seven species of Odonata were recorded during the adult count surveys (Table 8). Banded demoiselle were the second most abundant species recorded at the site, with 569 males recorded. This species was primarily recorded on the larger channels, with 285, 133 and 75 males recorded on transects 5, 4 and 32 respectively.

Large red and azure damselfly were recorded on all and eight of the nine transects respectively, though the later was typically recorded at a higher abundance, with a large number of males recorded on transect 32 (Table 8).

Table 8: Abundance of male Odonata recorded during adult count surveys at Highbridge Farm.

Common Name	Scientific Name	Transect Number								
		1	**2a**	**2b**	**2c**	**3**	**4**	**5**	**9**	**32**
Southern damselfly	*Coenagrion mercuriale*	D	D	D	B	E	E	D	D	B
Banded demoiselle	*Calopteryx splendens*	C	C	C	-	D	E	E	C	D
Large red damselfly	*Pyrrhosoma nymphula*	B	A	B	A	C	A	A	A	B
Azure damselfly	*Coenagrion puella*	D	B	A	-	D	C	C	C	E
Common blue damselfly	*Enallagma cyathigerum*	C	-	-	-	B	C	B	-	-
Blue-tailed damselfly	*Ischnura elegans*	-	-	-	-	C	A	B	-	C
Emperor dragonfly	*Anax imperator*	-	-	-	-	-	-	A	-	-

7. BREACH FARM

7.1 Habitat Assessment

Habitat assessments were conducted on four transects at Breach Farm (Figure 11; Table 9), located to the south and east of Highbridge Farm (Map 2). Formal habitat assessments were not conducted on transects 1a and 1b (Figure 11), as these sections of the main river directly correspond to transect 4 and 5 of Highbridge Farm, and it was considered that the value of these largely sub-optimal / unsuitable sections would be inflated by southern damselfly moving across from Highbridge Farm. However, due to the presence of tall trees, scrub and tall monocotyledon vegetation in the lower reaches of transect 5 at Highbridge Farm, and given the habitat features present at Breach Farm, transect 1c was included as it was considered that the numbers of southern damselfly recorded would more accurately reflect the value of the habitat present (Figure 11).

The remaining transects were field ditches, most likely comprising part of a historic water meadow system (Figure 11). The majority of transects included within the habitat assessment were considered to be unsuitable for southern damselfly since they were either completely dry or did not support flowing water at the time of survey, and / or had bank tops dominated by one or a combination of tall trees, dense scrub and tall monocotyledon vegetation (Table 9). Only a single transect, transect 1c, was considered to provide at least some suitable habitat for southern damselfly (Photograph 3).

Table 9: Summary of habitat suitability assessments at Breach Farm.

Transect No.	Watercourse Type	Habitat Suitability	Habitat Enhancement Potential	Assessment Justification
1a	Main River	DNS	DNS	DNS
1b	Main River	DNS	DNS	DNS
1c	Main River†	Sub-optimal‡ to unsuitable	Moderate	Wide section of main river channel (flowing north to south) with localised areas of marginal habitat supporting slower flows, associated deposition of silt, and growth of marginal herbaceous vegetation for oviposition; however, tall monocotyledons dominated the bank top downstream of its junction with transect 4, with sub-optimal marginal habitat above interrupted by bank top trees / scrub for extended sections.
2*	Carrier Stream	Unsuitable	Moderate	Dry, bowl shaped ditch, enclosed within dense scrub and tall trees in the east, but the majority of the channel running through an open field; habitat creation opportunity exists, but would require a new off-take from the main river.
3	Ditch	Unsuitable	Unsuitable	Majority of the channel was only damp; sections of dense scrub encroachment from the north along much of its length; no evidence that a perennial water supply could be secured in the future.
4	Ditch	Unsuitable	Unsuitable	No discernible flow, with dense monocotyledon growth shading and encroaching across the channel; no evidence that a perennial water supply could be secured in the future.

***** Unable to access the entire transect length due to dense and / or tall bankside vegetation / scrub

† Assessment was focused on habitats present along the true left bank

‡ In the context of a large river channel

DNS – Did not survey

Figure 11: Breach Farm

Southern Damselfly Study: Eastleigh Borough

Site boundary

Transect supporting SD

Transect not supporting SD

200m road buffer

River Itchen SAC

Eastleigh Borough boundary

River Itchen

1a

1b

1c

2

3

4

Drain

Drains

17m

Breach Farm

Stoke Common

Workings (disused)

Breach Copse

Path

FB

Lock

BREACH LANE

0 100 metres

N

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7.2 Adult count survey

Due to the unsuitable character of the majority of transects for southern damselfly, an adult count survey was only conducted on transect 1c.

7.2.1 Southern damselfly

Twenty-three male southern damselfly were recorded on transect 1c (Table 10). However, no copulating pairs or ovipositing females were recorded during the adult count survey (Table 3).

Table 10: Southern damselfly abundance and density at Breach Farm.

Transect No.	Transect Length (m)	Abundance (males)	Density (males per 100m)	Weather Criteria
1c	661	23	4.17	Met

7.2.2 Other Odonata

In total, four species of Odonata were recorded during the adult count survey (Table 11). Banded demoiselle was the most abundant species recorded, with 88 individuals encountered.

Table 11: Abundance of male Odonata recorded during adult count surveys at Breach Farm.

Common Name	Scientific Name	Transect Number
		1c
Southern damselfly	*Coenagrion mercuriale*	D
Banded demoiselle	*Calopteryx splendens*	D
Azure damselfly	*Coenagrion puella*	C
Blue-tailed damselfly	*Ischnura elegans*	B

8. WITHY MEADOWS

8.1 Habitat Assessment

Habitat assessments were conducted on two transects at Withy Meadows (Figure 12; Table 12), located to the south of Highbridge Farm (Map 2).

Transects 1 and 2 were field ditches, most likely comprising part of a wider historic water meadow system (Figure 12). Both transects were considered to be unsuitable for southern damselfly, since the former was completely dry at the time of survey (Photograph 4), and the latter supported only standing water beneath dense tree and scrub cover.

Table 12: Summary of habitat suitability assessments at Withy Meadows.

Transect No.	Watercourse Type	Habitat Suitability	Habitat Enhancement Potential	Assessment Justification
1	Ditch	Unsuitable	Moderate	Dry ditch, the upper (northern) half located within the field and currently choked by swathes of sedge, reed sweet-grass and coarse grasses, whereas the lower half runs along the eastern boundary and is enclosed beneath dense scrub and tall trees; the upper half of the transect could be enhanced, but would require the creation of a new off-take from a side channel associated with the Itchen Navigation.
2*	Ditch	Unsuitable	Unsuitable	Absence of perennial flowing water and presence of dense tree / scrub cover.

***** Unable to access the entire transect length due to dense and / or tall bankside vegetation / scrub

8.2 Adult count survey

No formal adult count surveys were conducted since both transects were considered unsuitable for southern damselfly.

8.2.1 Southern damselfly

No formal adult count surveys were conducted since both transects were considered unsuitable for southern damselfly. However, a single male southern damselfly was observed adjacent to transect 1, most likely a transient individual from the Itchen Navigation.

8.2.2 Other Odonata

No formal adult count surveys were conducted since both transects were considered unsuitable for southern damselfly.

Figure 12: Withy Meadows

Southern Damselfly Study: Eastleigh Borough

Site boundary

Transect supporting SD

Transect not supporting SD

200m road buffer

River Itchen SAC

Eastleigh Borough boundary

Lock

Breach Copse

Path

Drain

1

FB

Drain

FB

Is

Conveyor

2

Drain

Gully

0 50

metres

9. BISHOPSTOKE PARK

9.1 Habitat Assessment

No habitat assessments were conducted at Bishopstoke Park (Figure 13), located to the south of Breach Farm (Map 2), since the site was entirely comprised of woodland with wet flushes, runnels and pools, but supporting no suitable, or potentially suitable habitat for southern damselfly.

9.2 Adult count survey

No formal adult count surveys were conducted since no habitat suitable for southern damselfly was present at the site.

9.2.1 Southern damselfly

No formal adult count surveys were conducted since no habitat suitable for southern damselfly was present at the site.

9.2.2 Other Odonata

No formal adult count surveys were conducted since no habitat suitable for southern damselfly was present at the site. However, a single golden-ringed dragonfly *Cordulegaster boltonii* was observed whilst visiting the site.

Figure 13: Bishopstoke Park

Southern Damselfly Study: Eastleigh Borough

Site boundary

Transect supporting SD

Transect not supporting SD

200m road buffer

River Itchen SAC

Eastleigh Borough boundary

Path

Path

FB

Drain

BREACH

FB

Iss

Hospital

Path

Gully

Copse

Path

Collects

Spreads

ST MARGARET S

0

100

metres

N

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10. LAND BEHIND GW MARTIN

10.1 Habitat Assessment

Habitat assessments were conducted on two transects on land located to the north of GW Martin (Figure 14; Table 13), located near Eastleigh town centre (Map 2).

These transects comprise two braids of the Barton Carrier, a side stream of the River Itchen. These transects are located immediately downstream of a section of the Barton Carrier enclosed beneath dense scrub and tree cover. Transect 1 provides short sections of optimal habitat for southern damselfly (Table 13), particularly within the upper (northern) half of the watercourse, with areas dominated by silt and patches of emergent water-cress and water speedwell (Photograph 5). However, transect 1 is considered to be predominantly sub-optimal for southern damselfly, due to the dominance of medium height monocotyledon vegetation and dense nettles on the true left bank, and sections shaded by a dense scrub hedge line and / or tall trees on the true right bank. Transect 2 was considered to be largely unsuitable for southern damselfly, with the vast majority of the transect enclosed within tall, dense willow trees and scrub, and only very short sections open to direct sunlight and therefore able to support emergent vegetation (Table 13).

Table 13: Summary of habitat suitability assessments at land behind GW Martin.

Transect No.	Watercourse Type	Habitat Suitability	Habitat Enhancement Potential	Assessment Justification
1	Stream	Optimal to sub-optimal	Moderate	Side stream of the River Itchen, of variable width but generally moderate flow, supporting patches of marginal emergent herbaceous vegetation for oviposition; however, fringe of dense monocotyledons becomes extensive in the middle of the transect, minimising the opportunities for ovipositing plants to grow, and the true right bank is dominated by scrub and (in the lower half) tall trees, limiting light into the channel.
2*	Stream	Largely unsuitable	Low	Side stream of the main River Itchen dominated by silt, but almost entirely enclosed within willow dominated dense scrub and tall trees from the east, with only a limited number of short sections where sunlight reaches the channel and encourages the growth of emergent herbaceous plants.

***** Unable to access the entire transect length due to dense and / or tall bankside vegetation / scrub

10.2 Adult count survey

Adult count surveys were conducted on both transects at land behind GW Martin.

10.2.1 Southern damselfly

Sixty-two male southern damselfly were recorded with individuals present on both transects (Table 14), though no copulating pairs or ovipositing females were recorded during the adult count surveys (Table 3).

Transect 1 supported a substantially higher number and density of southern damselfly (Table 14). Individuals on transect 1 were focused on the northern half of the transect, upstream of where the channel ran parallel to houses and subsequently a line of tall trees on the true right bank top. Furthermore, individuals were only recorded on transect 2 along the highly limited number of short, open sections.

Location within county:

Figure 14: Land behind GW Martin

Southern Damselfly Study: Eastleigh Borough

Arcadian

The Wildlife Trusts Hampshire & Isle of Wight Wildlife Trust

Site boundary

Transect supporting SD

Transect not supporting SD

200m road buffer

River Itchen SAC

Eastleigh Borough boundary

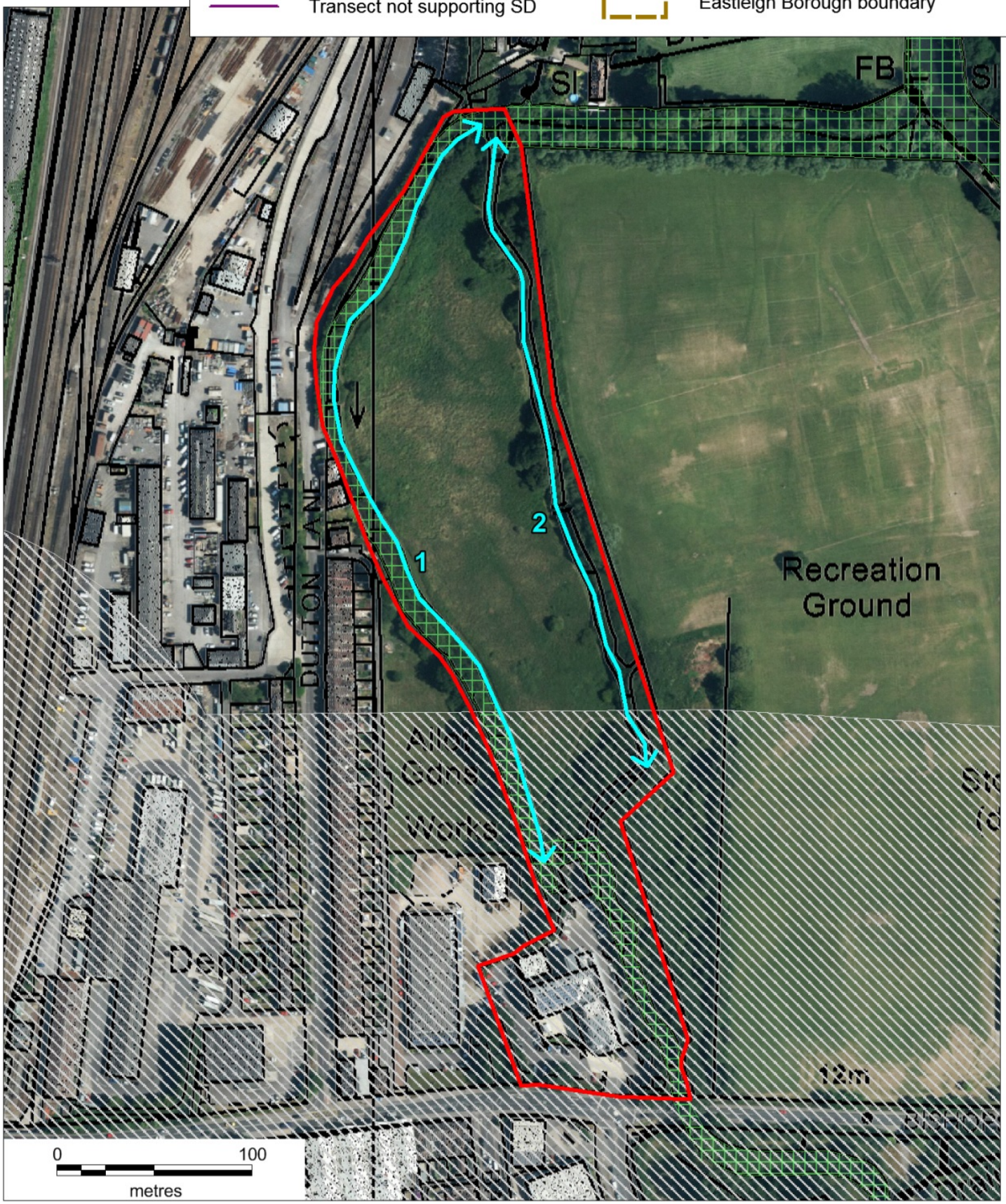

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Table 14: Southern damselfly abundance and density at Land behind GW Martin.

Transect No.	Transect Length (m)	Abundance (males)	Density (males per 100m)	Weather Criteria
1	431	54	12.53	Met
2	339	8	2.36	Met

10.2.2 Other Odonata

In total, five species of Odonata were recorded during the adult count surveys (Table 15). Banded demoiselle was the most abundant species recorded on each individual transect, with 152 and 27 males recorded on transects 1 and 2 respectively.

Table 15: Abundance of male Odonata recorded during adult count surveys at Land behind GW Martin.

Common Name	Scientific Name	Transect Number	
		1	2
Southern damselfly	*Coenagrion mercuriale*	D	C
Beautiful demoiselle	*Calopteryx virgo*	A	-
Banded demoiselle	*Calopteryx splendens*	E	D
Large red damselfly	*Pyrrhosoma nymphula*	A	A
Golden-ringed dragonfly	*Cordulegaster boltonii*	B	B

11. ASHTRIM NURSERY

11.1 Habitat Assessment

Habitat assessments were conducted on two transects at Ashtrim Nursery (Figure 15; Table 16), located to the east of Eastleigh (Map 2).

Ashtrim Nursery is owned by Eastleigh Borough Council, and the two transects represent two ditches specifically created as part of habitat creation work for southern damselfly delivered by Eastleigh Borough Council and the Environment Agency. Transect 1 is the main carrier ditch, transferring water from the Itchen Navigation in the east to the Barton Carrier in the west. The upper (north) half of the channel provides optimal habitat for southern damselfly (see Figure 2), supporting abundant emergent / marginal herbaceous vegetation for oviposition (Photograph 6), vegetated silt for the larvae, and the surrounding rough pasture provides roosting opportunities for adults. The lower half is slightly incised, however the existing grazing regime has, and continues to, re-profile the bank and it is becoming increasingly suitable for southern damselfly (Rushbrook, personal observations). A vegetated silt bund at the junction of transect 1 and 2 ensures water is preferentially directed down transect 1, maintaining suitable habitat for southern damselfly. Indeed, transect 2 was unsuitable for this species as the channel bed was predominately only damp, with standing water restricted to the lower third, and had become choked with dense vegetation and encroaching willow scrub.

Table 16: Summary of habitat suitability assessments at Ashtrim Nursery.

Transect No.	Watercourse Type	Habitat Suitability	Habitat Enhancement Potential	Assessment Justification
1	Ditch	Optimal to sub-optimal	Moderate	Purpose built ditch providing optimal conditions through much of its length, with extensive sections of emergent herbaceous vegetation for oviposition, vegetated silt for larvae, and adjacent roosting opportunities for adults; young willow scrub is beginning to develop on the island between transect 1 and 2, and is encroaching over the channel in short sections.
2	Ditch	Unsuitable	Low	Ditch characterised by a predominantly damp channel bed with standing water restricted to the downstream reach, and becoming increasingly choked by vegetation and encroaching scrub.

11.2 Adult count survey

Due to the unsuitable nature of transect 2 at Ashtrim Nursery, an adult count survey was conducted on transect 1 only.

11.2.1 Southern damselfly

Fifty-three male southern damselfly were recorded on transect 1 (Table 17), representing one of the highest densities of all transects included in this study. However, no copulating pairs or ovipositing females were recorded during the adult count survey (Table 3).

Table 17: Southern damselfly abundance and density at Ashtrim Nursery.

Transect No.	Transect Length (m)	Abundance (males)	Density (males per 100m)	Weather Criteria
1	200	53	26.47	Met

Figure 15: Ashtrim Nursery

Southern Damselfly Study: Eastleigh Borough

Site boundary

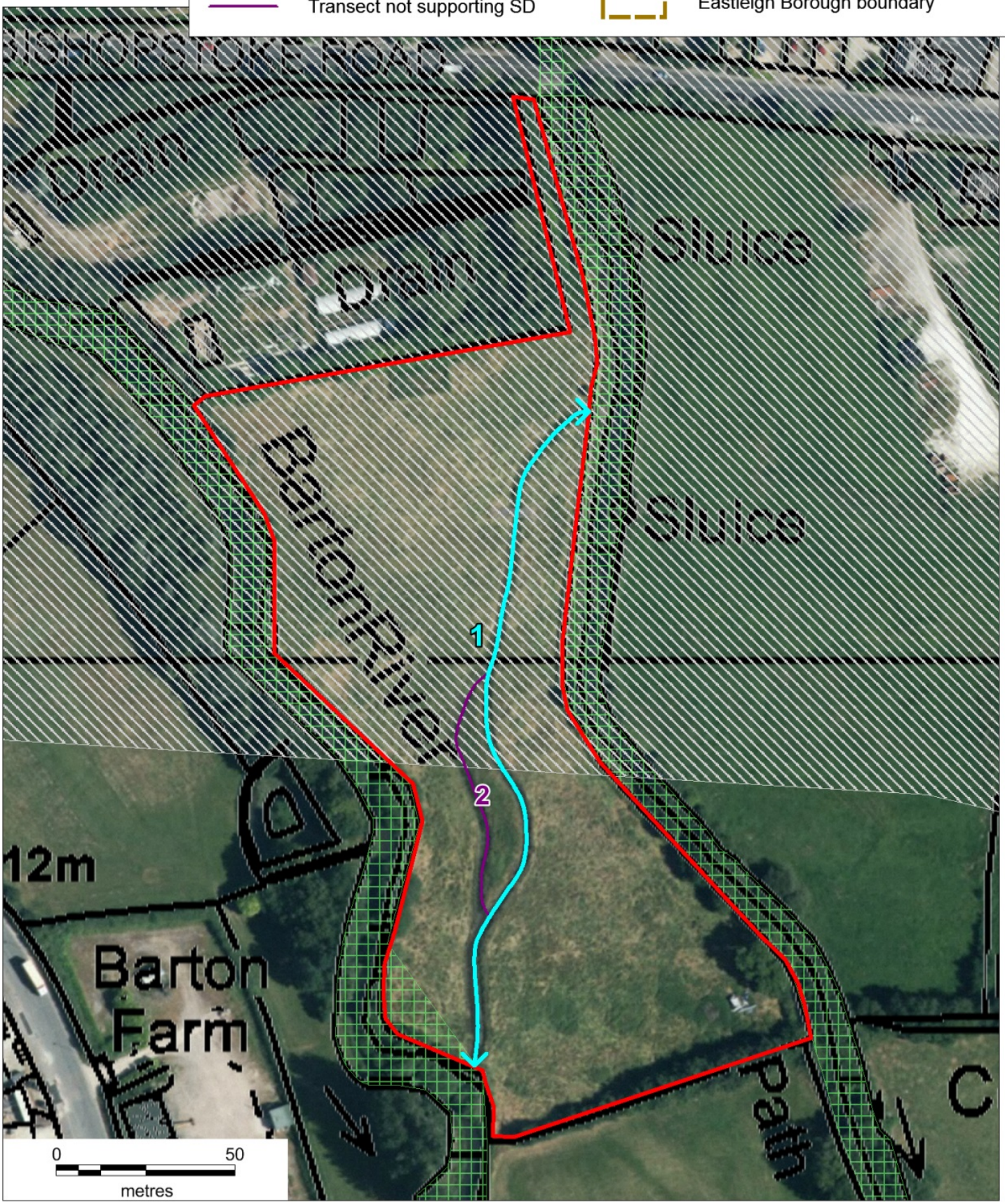
Transect supporting SD

Transect not supporting SD

200m road buffer

River Itchen SAC

Eastleigh Borough boundary



Male southern damselfly on transect 1 were focused on the section upstream (north) of its junction with transect 2 (Figure 15), with few individuals recorded downstream (south) of where these two transects re-connect.

11.2.2 Other Odonata

In total, four species of Odonata were recorded during the adult count surveys (Table 18). Banded demoiselle was the most abundant species recorded at the site, with a moderate number of azure damselfly also present.

Table 18: Abundance of male Odonata recorded during adult count surveys at Ashtrim Nursery.

Common Name	Scientific Name	Transect Number
		1
Southern damselfly	*Coenagrion mercuriale*	D
Banded demoiselle	*Calopteryx splendens*	D
Large red damselfly	*Pyrrhosoma nymphula*	B
Azure damselfly	*Coenagrion puella*	C

12. MORRIS' LAND

12.1 Habitat Assessment

Habitat assessments were conducted on six transects at Morris' Land (Figure 16; Table 19), located near Eastleigh to the east and south of Ashtrim Nursery (Map 2).

All transects were field ditches, most likely comprising part of an historic water meadow system (Figure 16). The ditches included within the habitat assessment were almost exclusively considered to be unsuitable for southern damselfly, since they were either completely dry or did not support flowing water at the time of survey, and / or were heavily shaded by trees and dense scrub or tall monocotyledon vegetation (Table 19). Only a single transect, transect 6, was considered to provide at least some area of suitable habitat for southern damselfly, though more detailed inspection identified that even this was largely unsuitable.

Table 19: Summary of habitat suitability assessments at Morris' Land.

Transect No.	Watercourse Type	Habitat Suitability	Habitat Enhancement Potential	Assessment Justification
1*	Ditch	Unsuitable	Low	Predominantly dry and becoming increasingly enclosed within dense blackthorn scrub to the south.
2*	Ditch	Unsuitable	Low	Absence of discernible flow, lined by tall trees and associated scrub along its length, with monocotyledon vegetation beneath choking where light did penetrate.
3	Ditch	Unsuitable	Moderate	Absence of discernible flow with dense swathes of sedge, reed sweet-grass and yellow flag-iris choking sections of the channel; to make ditch suitable for southern damselfly would require the creation of a new off-take that would feed this transect via transect 4.
4	Ditch	Unsuitable	Moderate	Dry, indistinct ditch line identified by a shift in the vegetation to a primarily reed sweet-grass and yellow flag-iris dominated community; to make suitable for southern damselfly would require the creation of a new off-take from the Itchen Navigation.
5*	Ditch	Unsuitable	Low	Dry, blind-ended and deeply incised ditch, with dense monocotyledon and ruderal vegetation within the channel, and localised patches of dense bank top scrub.
6	Ditch	Largely unsuitable	Low	Dry at top (north) and no discernible flow throughout the majority of the ditch; dominated by monocotyledon and ruderal vegetation, with only very short sections of open water along its length; a tall scrub dominated treeline was present on the east bank top along the lower half of the transect.

***** Unable to access the entire transect length due to dense and / or tall bankside vegetation / scrub

12.2 Adult count survey

Due to the unsuitable character of the majority of transects at Morris' Land for southern damselfly, an adult count survey was conducted on transect 6 only.

Figure 16: Morris' Land

Southern Damselfly Study: Eastleigh Borough

Site boundary

Transect supporting SD

Transect not supporting SD

200m road buffer

River Itchen SAC

Eastleigh Borough boundary

12.2.1 Southern damselfly

Two male southern damselfly were recorded at a single location on the upper third of transect 6 (Table 20), and no copulating pairs or ovipositing females were recorded during the adult count survey (Table 3). Furthermore, given the highly limited extent of suitable habitat present on transect 6, it is considered likely that the two males recorded on transect 6 were transient individuals.

Table 20: Southern damselfly abundance and density at Morris' Land.

Transect No.	Transect Length (m)	Abundance (males)	Density (males per 100m)	Weather Criteria
6	237	2	0.84	Met

12.2.2 Other Odonata

A total of seven banded demoiselle were the only other male Odonata recorded during the adult count survey.

13. LAND ASSOCIATED WITH TOBY CARVERY

13.1 Habitat Assessment

A habitat assessment was conducted on a single transect at Land associated with Toby Carvery (Figure 17), located between Eastleigh and Bishopstoke and immediately east of Morris' land (Map 2).

The transect was considered unsuitable for southern damselfly since, although the substrate was soft and damp, it did not support any visible water and was dominated by reed sweet-grass, sedge and yellow flag-iris for the majority of its length, becoming enclosed within willow and bramble scrub at its south-eastern extent (Table 21).

Table 21: Summary of habitat suitability assessment at Land associated with Toby Carvery.

Transect No.	Watercourse Type	Habitat Suitability	Habitat Enhancement Potential	Assessment Justification
1*	Ditch	Unsuitable	Unsuitable	Absence of water within ditch and no evidence that a perennial water supply could be secured in the future.

***** Unable to access the entire transect length due to dense and / or tall bankside vegetation / scrub

13.2 Adult count survey

No formal adult count surveys were conducted since no habitat suitable for southern damselfly was present at the site.

13.2.1 Southern damselfly

No formal adult count surveys were conducted since no habitat suitable for southern damselfly was present at the site.

13.2.2 Other Odonata

No formal adult count surveys were conducted since no habitat suitable for southern damselfly was present at the site.

Location within county:

Figure 17: Land associated with Toby Carvery

Southern Damselfly Study: Eastleigh Borough

Arcadian

The wildlife TRUSTS Hampshire & Isle of Wight Wildlife Trust

Site boundary

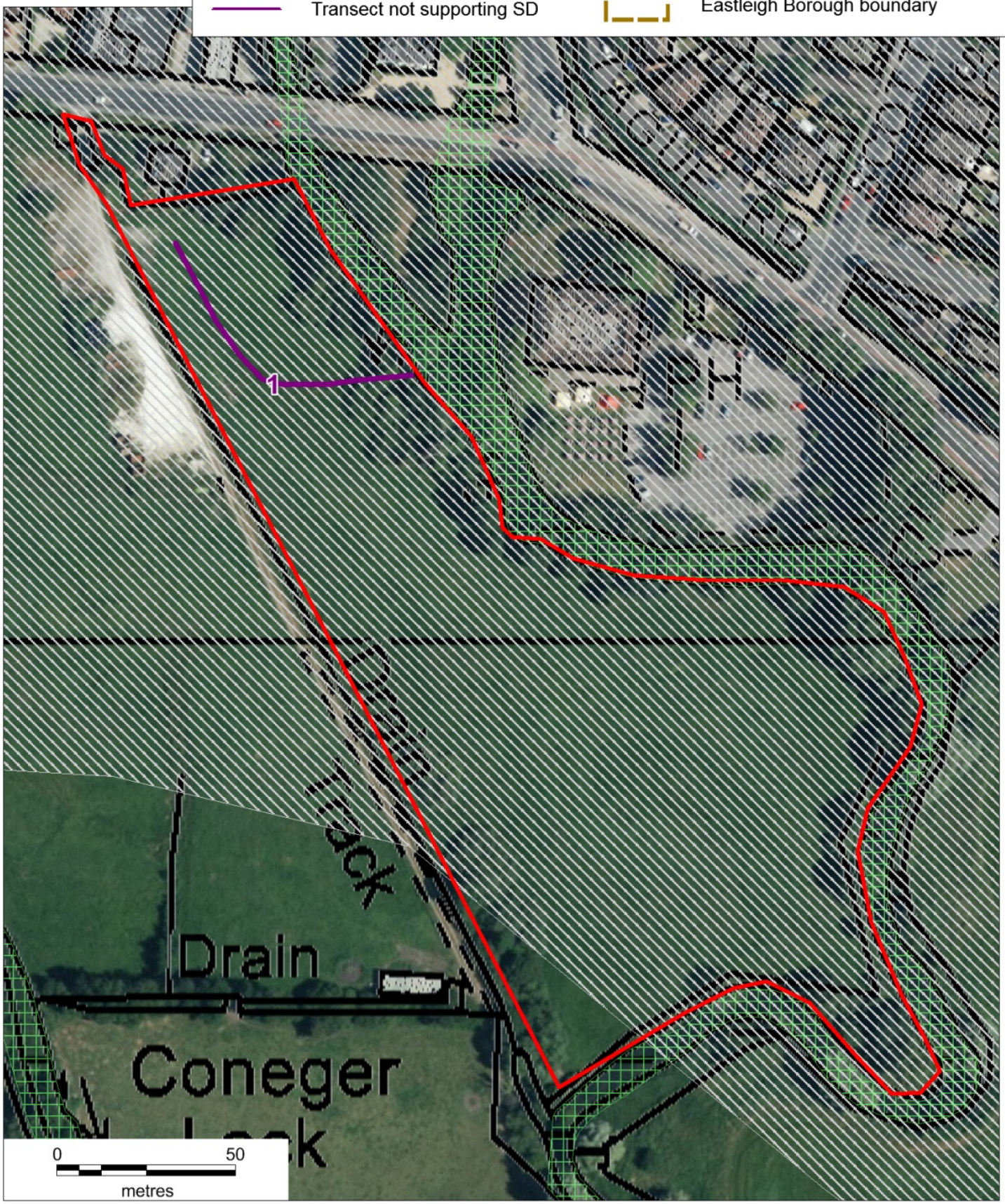
Transect supporting SD

Transect not supporting SD

200m road buffer

River Itchen SAC

Eastleigh Borough boundary



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BAP Priority habitat, notable species and SINC data supplied by the Hampshire Biodiversity Information Centre on behalf of the HBIC Partnership.
Aerial photography courtesy of GetMapping plc. Produced on 6 September 2017 by Ben Rushbrook
For enquiries relating to GIS data contact Catherine McGuire, email Catherine.McGuire@hiwwt.org.uk, tel: 01489 774455.

14. DUNFORD'S LAND

14.1 Habitat Assessment

Habitat assessments were conducted on twelve transects at Dunford's Land (Figure 18; Table 22), located south of Bishopstoke and to the south-east of Morris' Land (Map 2).

A further two transects initially identified (i.e. transects 8 and 12) were not subject to a formal habitat assessment as these watercourses were included within the habitat assessments conducted at the adjoining West Horton Farm (i.e. transects 2-3 and 1 respectively).

The transects were considered to comprise a combination of carrier streams and field ditches from an historic water meadow system (Figure 18). The majority of transects included within the habitat assessment were considered unsuitable for southern damselfly since they were either completely dry or did not support flowing water at the time of survey, and / or had one or both bank tops dominated by a combination of tall trees, dense scrub and tall monocotyledon vegetation (Table 22).

Only three transects were considered to provide short sections of sub-optimal habitat for southern damselfly. Specifically, a number of short sections of transect 1, the downstream (south-west) quarter of transect 2 (Photograph 7), and a number of short sections of transect 3 as it flowed south-east.

Table 22: Summary of habitat suitability assessments at Dunford's Land.

Transect No.	Watercourse Type	Habitat Suitability	Habitat Enhancement Potential	Assessment Justification
1*	Carrier Stream	Sub-optimal to unsuitable	Low	Silt dominated ditch supporting an existing slow to moderate flow and short sections supporting suitable emergent marginal herbaceous vegetation for oviposition; majority of the channel enclosed within tall trees / scrub or flanked by tall monocotyledon vegetation and bramble scrub on one or both banks; furthermore, the channel was associated with an access track along its upper (north-east) half, and residential properties (disappearing into the gardens of these at its centre) for the majority of its lower half.
2*	Carrier Stream	Sub-optimal to unsuitable	Low	Channel was enclosed within tall trees and scrub for the majority of its length; however, where access could be achieved beneath the trees, the shallow bowl profile, moderate flow, and silt dominated substrate would potentially be suitable for southern damselfly; trees were not present in the lower third of the channel (part of the east to west flowing section of ditch), and where breaks in the dense monocotyledon vegetation occurred, emergent / marginal herbaceous vegetation suitable for oviposition was present in short sections.

Transect No.	Watercourse Type	Habitat Suitability	Habitat Enhancement Potential	Assessment Justification
3*	Carrier Stream	Sub-optimal to unsuitable	Low	North to south flowing section was predominantly tree / scrub lined with short sections dominated by tall reed, the channel shallow, gravel dominated with fast to moderate flow, and supported only localised patches of silt and marginal herbaceous vegetation; channel became more open as it flowed south-east, but the ditch profile was initially box shaped with steep (often >45°) bank sides and perched bank tops dominated by swathes of dense ruderal vegetation, monocotyledons such as common reed, and localised patches of scrub; flow remained predominately fast to moderate over a gravel substrate, although localised patches of silt and emergent marginal herbaceous plants for oviposition were present.
4*	Ditch	Unsuitable	Unsuitable	Dry ditch with long sections enclosed within tall willow dominated scrub interspersed with sections choked by tall willowherb, sedge and ruderal vegetation; ditch not directly connected to transect 1, and there was no evidence that a perennial water supply could be secured in the future.
5*	Ditch	Unsuitable	Unsuitable	Dry ditch lined by tall mature trees, some of which may potentially provide valuable habitat for other important ecological features / species that may be present at the site.
6*	Ditch	Unsuitable	Unsuitable	Dry ditch supporting a mix of scrub, ruderal vegetation and monocotyledon vegetation; considered to be a continuation of transect 5 and, without the restoration of the former, there was no evidence that a perennial water supply could be secured for much of its length in the future.
7*	Ditch	Unsuitable	Unsuitable	Dry ditch lined by tall mature trees, some of which may potentially provide valuable habitat for other important ecological features / species that may be present at the site.
8	Ditch	DNS	DNS	DNS
9*	Ditch	Unsuitable	Unsuitable	Dry, tree / scrub lined ditch; without the restoration of transect 7; there was no evidence that a perennial water supply could be secured.
10*	Carrier Stream	Unsuitable	Unsuitable	Medium sized carrier enclosed within dense mature trees and scrub, with no discernible flow and indication of thick red / ochre layer present on the surface of water.

Transect No.	Watercourse Type	Habitat Suitability	Habitat Enhancement Potential	Assessment Justification
11*	Carrier Stream	Unsuitable	Unsuitable	Medium sized carrier, predominately enclosed within dense mature trees, and then dense willow and bramble scrub beyond its junction with transect 9.
12	Carrier Stream	DNS	DNS	DNS
13*	Ditch	Unsuitable	Unsuitable	Dry ditch dominated by willow scrub along the northern half, and terrestrial grasses, ruderal vegetation and sedge in southern half; no evidence that a perennial water supply could be secured.
14*	Ditch	Unsuitable	Unsuitable	Dry ditch dominated by willow scrub to the west of its junction with transect 13, and predominately ruderal vegetation and sedge to the east; no evidence that a perennial water supply could be secured.

***** Unable to access the entire transect length due to dense and / or tall bankside vegetation / scrub

14.2 Adult count survey

Based on the suitability of the habitat features present, adult count surveys were conducted on three of the twelve transects subject to a formal habitat assessment at Dunford's Land.

14.2.1 Southern damselfly

A small number of male southern damselfly were recorded on transects 1 and 2 (Table 23), though no copulating pairs or ovipositing females were recorded on either transect (Table 3), and no southern damselfly were recorded during the adult count survey of transect 3.

Table 23: Southern damselfly abundance and density at Dunford's Land.

Transect No.	Transect Length (m)	Abundance (males)	Density (males per 100m)	Weather Criteria
1	553	3	0.54	Met
2	599	7	1.17	Met
3	490	0	0.00	Met

Male southern damselfly were recorded at two locations on transect 1; where the channel runs parallel to an open meadow to the north (i.e. adjacent to Southern Water Pumping House), and where the transect re-enters the site after flowing through a small number of properties (Figure 18). Furthermore, all individuals recorded on transect 2 were focused on the lower reaches, where the channel flows in an east to west direction.

14.2.2 Other Odonata

In total, five species of Odonata were recorded during the adult count surveys (Table 24). Banded demoiselle was the most abundant species recorded at the site, with 59 individuals recorded. All other species were only present in low numbers, with six golden-ringed dragonfly recorded, and only single individuals of azure damselfly and blue-tailed *Ischnura elegans* damselfly present.

Figure 18: Dunford's Land

Southern Damselfly Study: Eastleigh Borough

Site boundary

Transect supporting SD

Transect not supporting SD

200m road buffer

River Itchen SAC

Eastleigh Borough boundary

Bishopstoke

Drain

Coneger Lock

FB

Path

The Itchen Navigation (disused)

Outfall

Outfall

Fish House Bay

FB

Mast

ROMAN BUILDING

Sewage Works

Track

Track

Track

Path

Drain

Viaduct

Viaduct

Drain

Drain

Track

Drain

Drain

Drain

BODMIN ROAD

CAMBORNE CL

HORTON WAY

FB

8m

21m

1

2

3

4

5

6

7

8

9

10

11

12

13

14

0

250

metres

N

Table 24. Abundance of male Odonata recorded during adult count surveys at Dunford's Land.

Common Name	Scientific Name	Transect Number		
		1	**2**	**3**
Southern damselfly	*Coenagrion mercuriale*	B	C	-
Banded demoiselle	*Calopteryx splendens*	D	B	D
Azure damselfly	*Coenagrion puella*	-	A	-
Blue-tailed damselfly	*Ischnura elegans*	A	-	-
Golden-ringed dragonfly	*Cordulegaster boltonii*	B	-	B

15. WEST HORTON FARM

15.1 Habitat Assessment

Habitat assessments were conducted on ten transects at West Horton Farm (Table 25; Figure 19), with transect numbers based on those used during a previous assessment of the site in 2014. West Horton Farm is located to the south of Dunford's Land, and to the south and west of Bishopstoke and Horton Heath respectively (Map 2).

Transects comprised a combination of ditches and carrier streams associated with a historic water meadow system. The majority of watercourses were located behind stock proof fencing (transects 6 and 7 the exception), and as a consequence the bank tops had become dominated by one or a combination of dense scrub, mature trees, and tall monocotyledon vegetation (Photograph 8). Furthermore, not only did a number of ditches no longer support a perennial flow (transects 6 and 7), but two transects comprised a predominately damp and or dry bed with very limited sections of standing water (transects 2 and 3).

Therefore, the majority of watercourses included within the habitat assessment were considered unsuitable for southern damselfly (Table 25). However, short sections of suitable habitat was present on transect 4, where some limited bank top management has allowed the development of emergent marginal vegetation (Photograph 9) including water-cress and water-speedwell, which provided both oviposition opportunities for adult females as well as larval habitat also.

Table 25: Summary of habitat suitability assessments at West Horton Farm.

Transect No.	Watercourse Type	Habitat Suitability	Habitat Enhancement Potential	Assessment Justification
1*	Carrier Stream	Largely unsuitable	High	Moderately wide and deep carrier stream characterised by a moderate flow, with sections where the bank has been lowered to create marginal berms and a silt dominated substrate; however, the true right (west) bank is dominated by tall, predominantly bramble scrub, and the true left bank by a combination of tall common reed / other monocotyledons, herbs and ruderal vegetation, limiting the amount of light penetrating to the margins of the channel, and therefore limiting the emergent herbaceous vegetation to short localised patches.
2*	Ditch	Unsuitable	High	Majority of channel damp to dry, with standing water localised at the junction with transect 1; dominated by a mixture of herbs and monocotyledon vegetation for extended sections, with the true right bank (north) in the upper half of the transect dominated by a combination of dense scrub and occasional mature trees, overhanging the channel in some areas; the true left bank and lower (i.e. east bank) half of the true right bank is dominated by a mixture of tall ruderal vegetation, monocotyledons and herbs.

Transect No.	Watercourse Type	Habitat Suitability	Habitat Enhancement Potential	Assessment Justification
3*	Carrier Stream	Unsuitable	High	Combination of sections supporting standing water and damp substrate, the former focused in the upper and lower reaches of the transect; the channel is confined within notably perched bank tops along much of its length; true right (north) bank was dominated by scrub, but the absence of trees on the true left bank has resulted in bank tops dominated by tall monocotyledon and ruderal vegetation, and extensive sections of the channel being choked by tall sedge and common reed.
4*	Carrier Stream	Largely unsuitable	High	Carrier stream, characterised by a moderate depth and flow, dominated by a silt substrate, and supporting short localised patches of emergent herbaceous vegetation providing opportunities for oviposition (and larval habitat at the base); however, the true left (east / south) bank top was largely dominated by tall, dense scrub, with the true right bank a mixture of scrub and tall vegetation which, combined, limited the growth of vegetation at the margins.
5*	Carrier	Unsuitable	Unsuitable	Carrier stream with moderate flow and some localised patches of emergent herbaceous vegetation, but largely enclosed within scrub from both banks, with bank tops notably perched along the middle section of the transect.
6	Ditch	Unsuitable	High	Predominately open field ditch with bowl-shape profile, localised patches of emergent herbaceous plants and silt dominated substrate; however, there was no discernible flow along the majority of its length, and the channel was predominantly choked with various species of monocotyledon vegetation.
7	Ditch	Unsuitable	High	Predominately open field ditch with bowl-shape profile, localised patches of emergent herbaceous plants and silt dominated substrate; however, there was no discernible flow along the majority of its length, and the channel was predominantly choked with various species of monocotyledon vegetation
8*	Carrier Stream	Unsuitable	Moderate	Deep, moderately wide channel with a generally fast flow and sections of strong water-crowfoot *Ranunculus* sp. growth; true right (west) bank is dominated by either sections of tall and dense bramble growth or tall common reed, with the true left bank characterised by a mixture of tall ruderal vegetation and localised bramble or willow scrub; as a result of the channel characteristics and bank side / top vegetation, only short localised patches of emergent marginal herbaceous vegetation was present.

Transect No.	Watercourse Type	Habitat Suitability	Habitat Enhancement Potential	Assessment Justification
9*	Carrier Stream	Unsuitable	Unsuitable	Deeply incised carrier stream with a moderate flow and predominantly silt substrate, but heavily shaded by tall trees and scrub across almost the entirety of its length.
10	Ditch	Unsuitable	Low	Dry ditch comprising largely terrestrial grasses / herbs; no immediately clear opportunities for re-connecting to existing network.

***** Unable to access the entire transect length due to dense and / or tall bankside vegetation / scrub

DNS – Did not survey

15.2 Adult count survey

Based on the suitability of the habitat features present and the author's observations during previous assessments (i.e. in 2014), adult count surveys were conducted on six of the ten transects subject to a formal habitat assessment at West Horton Farm.

15.2.1 Southern damselfly

Male southern damselfly were recorded in very low numbers / densities on three of the six transects subject to adult count surveys, with only a single male recorded on two of the three (Table 26). Furthermore, neither copulating pairs nor ovipositing females were recorded on any of the transects (Table 3).

Table 26: Southern damselfly abundance and density at West Horton Farm.

Transect No.	Transect Length (m)	Abundance (males)	Density (males per 100m)	Weather Criteria
1	233	1	0.43	Met
4	465	8	1.72	Met
5	169	0	0.00	FAILED
6	188	0	0.00	Met
7	114	1	0.88	FAILED
8	186	0	0.00	FAILED

The male southern damselfly recorded on transect 1 was located near its junction with transects 2 and 4, whereas the individuals recorded on transect 4 were confined to a small number of short sections where emergent herbaceous vegetation had been able to establish.

Finally, although weather criteria was not met during three of the six adult count surveys, the findings of the habitat assessments would indicate that it was unlikely this substantially affected the findings.

15.2.2 Other Odonata

In total, seven species of Odonata were recorded during the adult count surveys at West Horton Farm (Table 27). Banded demoiselle was the most abundant species, with over 380 males recorded and individuals present on all seven transects. Azure damselfly were abundant on transect 6, with over 50 males recorded, reflecting the extended length of standing water this transect supported.

Figure 19: West Horton Farm

Southern Damselfly Study: Eastleigh Borough

Site boundary

Transect supporting SD

Transect not supporting SD

200m road buffer

River Itchen SAC

Eastleigh Borough boundary

8m

9m

1

2

3

4

5

6

7

8

9

10

Drain

Viaduct

Track

FB

0

200

metres

Table 27: Abundance of male Odonata recorded during adult count surveys at West Horton Farm.

Common Name	Scientific Name	Transect Number					
		1	**4**	**5**	**6**	**7**	**8**
Southern damselfly	*Coenagrion mercuriale*	A	C	-	-	A	-
Banded demoiselle	*Calopteryx splendens*	E	E	D	D	B	D
Azure damselfly	*Coenagrion puella*	-	-	A	D	C	A
Common blue damselfly	*Enallagma cyathigerum*	-	C	B	-	-	-
Blue-tailed damselfly	*Ischnura elegans*	-	B	B	C	B	-
Golden-ringed dragonfly	*Cordulegaster boltonii*	-	-	A	-	-	A
Black-tailed skimmer	*Orthetrum cancellatum*	-	-	-	-	B	-

16. ALLINGTON MANOR FARM

16.1 Habitat Assessment

Habitat assessments were conducted on thirty-one transects at Allington Manor Farm (Table 28; Figure 20), with transect numbers based on those used during a previous assessment of the site in 2011. Allington Manor Farm is located to the south of West Horton Farm and to the north-east of Itchen Valley Country Park respectively (Map 2).

Transects comprised a combination of ditches and carrier streams associated with a historic water meadow system. The majority of the watercourses were dry at the time of survey and therefore considered unsuitable for southern damselfly (Table 28). However, five transects were considered to support optimal and / or sub-optimal habitat characteristics for southern damselfly. This included the two main carrier streams that flow through the site (transects 1, 3, 17 and 18), and an associated cross ditch (transect 13) that runs parallel to the main carrier in the west of the site (Figure 20). Of particular note were transect 13 and the upper reaches of transects 1 and 17, where shallow margins and / or marginal berms allowed for silt accumulation and the associated development of emergent marginal vegetation including water-cress and water-speedwell, which provided both oviposition opportunities for adult females but also larval habitat (Photograph 10).

Table 28: Summary of habitat suitability assessments at Allington Manor Farm.

Transect No.	Watercourse Type	Habitat Suitability	Habitat Enhancement Potential	Assessment Justification
1	Carrier Stream	Optimal to sub-optimal	Low	Shallow margins in the upper reaches support the growth of emergent herbaceous vegetation providing opportunities for oviposition (and larval habitat at the base); the channel becomes wider and deeper, but bankside grazing has facilitated the development of marginal berms ensuring that relatively regular patches of suitable marginal vegetation was present along the length of the carrier stream; however, these were interspersed by sections dominated by tall monocotyledons including sedge, reed canary-grass and common reed, with bur-reed and ruderal vegetation also present, and with further sections of localised scrub and / or perched bank tops also present, resulting in areas of only sub-optimal habitat for southern damselfly.
2*	Ditch	Unsuitable	Unsuitable	Short ditch with a slow to moderate flow but enclosed within dense scrub for almost the entirety of its length.
3	Carrier Stream	Optimal to sub-optimal	Moderate	Wide carrier stream with sections characterised by one or a combination of fast flow over gravels, perched bank tops with a steep to vertical profile, and tree and scrub cover (particular in the lower reaches of the true right / north bank); however, other sections of the transect supported a moderate flow with marginal berms on either bank side, providing silt dominated habitat for larvae and emergent, marginal herbaceous vegetation for oviposition.

Transect No.	Watercourse Type	Habitat Suitability	Habitat Enhancement Potential	Assessment Justification
4*	Ditch	Unsuitable	Unsuitable	Dry, blind-ended ditch, predominately choked by tall monocotyledons including sedge and reed sweet-grass, but also with areas of localised scrub; no evidence that perennial water supply could be secured in the future.
5*, 6* & 6a*	Ditches	Unsuitable	Unsuitable	Dry ditches characterised by a combination of sections enclosed within dense scrub and open sections dominated by terrestrial grasses.
7*	Ditch	Unsuitable	Low	Dry ditch choked with monocotyledon vegetation that had become notably disconnected from main carrier.
8	Ditch	Unsuitable	Low	Wide, dry ditch dominated by swathes of a range of monocotyledons (e.g. sedge, reed sweet-grass, common reed etc.), iris and grasses; it is considered unlikely that a perennial water supply can be secured without impacting important existing watercourses.
9* & 10*	Ditches	Unsuitable	Low	Dry ditches dominated by grasses and terrestrial herbs, with localised patches of scrub associated; these ditches have become disconnected from the existing network, and it is considered unlikely that a perennial water supply can be secured without impacting important existing watercourses.
11* & 12*	Ditches	Unsuitable	Low	Dry ditches with sections characterised by grasses and terrestrial herbs with others dominated by tall, dense scrub; furthermore, both were disconnected from the existing network, and it is unclear whether a perennial water supply could be secured without impacting important existing watercourses.
13	Ditch	Largely optimal	Low	Medium sized (width and depth) ditch supporting a predominately moderate to slow flow, a silt dominated substrate, and extensive sections of well-established emergent / marginal herbaceous plant species for oviposition.
14 – 16	Ditches	Unsuitable	Unsuitable	Dry ditches dominated by terrestrial grasses / herbs and disconnected from the existing flowing network.

Transect No.	Watercourse Type	Habitat Suitability	Habitat Enhancement Potential	Assessment Justification
17*	Carrier Stream	Optimal to sub-optimal	Moderate	Upper reaches moderate width with fast flow over gravels and water-crowfoot, but well established emergent herbaceous plant species suitable for oviposition present at margins, in particular in association with marginal berms considered to have been created by grazing cattle; channel becomes slower and increasingly dominated by monocotyledons (e.g. reed sweet-grass and reed canary-grass, etc.) and localised scrub on bankside; retains some marginal emergent herbaceous plants, in particular in association with periodic berms, and even where these develop a bur-reed or monocotyledon dominated frontage, a fringe of herbs such as water-forget-me-not and water-speedwell was retained behind; the frequency of localised scrub increased downstream of its junction with transect 13, but despite this and the increasingly vertical / perched bank sides and tops, suitable oviposition / larval habitat was retained.
18*	Carrier Stream	Sub-optimal	Moderate	The carrier stream was variable in characteristics along this stretch, with both relatively slow and wide sections with silt, and narrower sections with faster flows over gravels present; bank sides and tops often dominated by reed sweet-grass and / or reed canary-grass, but marginal berms supporting emergent / marginal herbaceous plant species for the majority of its length.
19*	Ditch	Unsuitable	Unsuitable	Short, damp to dry ditch with mix of herbs, monocotyledon and scrub in the east; disconnected from transect 1.
20 – 22	Ditches	Unsuitable	Unsuitable	Dry ditches dominated by terrestrial grasses and disconnected from the existing flowing network.
23*	Ditch	Unsuitable	Unsuitable	Short, damp to dry ditch with mix of herbs, monocotyledon and scrub in the east; disconnected from transect 1.
24	Ditch	Unsuitable	Unsuitable	Dry ditch dominated by terrestrial grasses / herbs and disconnected from the existing network.
25*	Ditch	Unsuitable	Low	Dry ditch, perched and therefore disconnected from transect 1; initially passes through tall oak trees and scrub, then characterised by one or a combination of coarse grasses and sedge; it is unclear whether a perennial water supply can be secured without impacting on the important existing watercourses.

Transect No.	Watercourse Type	Habitat Suitability	Habitat Enhancement Potential	Assessment Justification
26 – 29	Ditches	Unsuitable	Low	Dry ditches disconnected from existing network and characterised by one or a combination of coarse grasses and sedge; would require the re-connection of, and sufficient off-take through, transect 25 to support a perennial flow.
30	Ditch	DNS	DNS	DNS
31	Ditch	Unsuitable	Unsuitable	Dry ditch dominated by terrestrial grasses / herbs and disconnected from the existing flowing network.

***** Unable to access the entire transect length due to dense and / or tall bankside vegetation / scrub

DNS – Did not survey

16.2 Adult count survey

Based on the suitability of the habitat features present, adult count surveys were conducted on five of the 31 transects subject to a formal habitat assessment at Allington Manor Farm.

16.2.1 Southern damselfly

In total, 441 male southern damselfly were recorded across the five transects surveyed (Table 29). Furthermore, a copulating pair was recorded on transects 1, 3 and 17, but no ovipositing females were recorded on any of the transects (Table 3).

Table 29: Southern damselfly abundance and density at Allington Manor Farm.

Transect No.	Transect Length (m)	Abundance (males)	Density (males per 100m)	Weather Criteria
1	640	116	18.13	Met
3	561	82	14.62	Met
13	132	71	53.97	Met
17	447	149	33.34	Met
18	144	23	15.97	Met

Southern damselfly were focused on two main carrier streams (transects 1 & 3 and 17 & 18), and one smaller ditch (transect 13) located within the northern half of the site (Figure 20). Transect 13 supported the greatest density of individuals, returning approximately three times as many males per 100m as transects 1, 3 and 18, and over one and a half as many males per 100m as transect 17. However, transects 1, 3 and in particular 17, were considered to be very important given the length of channel that supported this species and therefore the notable abundance recorded.

The majority of individuals recorded on both transects 1 and 17 were recorded in the upstream (northern) half of the transects. Furthermore, it was considered that transect 18 provided largely sub-optimal conditions for this species, and that the numbers present on this transect may have been augmented by its connection to each of transects 1, 17 and 13.

16.2.2 Other Odonata

In total, seven species of Odonata were recorded during the adult count surveys at Allington Manor Farm (Table 30). Banded demoiselle were the most abundant species with over 940 males recorded, and no fewer than 90 individuals present on each of the five transects. With the exception of southern damselfly, all other species were recorded at low abundances, with male blue-tailed damselfly the next most frequently recorded.

Figure 20: Allington Manor Farm

Southern Damselfly Study: Eastleigh Borough

Site boundary

Transect supporting SD

Transect not supporting SD

200m road buffer

River Itchen SAC

Eastleigh Borough boundary

Track
Spreads
Drain
Drains
Viaduct
River Itchen
Hog Wood
Willow Farm
Milkmead Copse
Vocus Copse
High Hill Row
Payne's Row
FB
SI
0
250
metres

Table 30. Abundance of male Odonata recorded during adult count surveys at Allington Manor Farm.

Common Name	Scientific Name	Transect Number				
		1	**3**	**13**	**17**	**18**
Southern damselfly	*Coenagrion mercuriale*	E	D	D	E	D
Banded demoiselle	*Calopteryx splendens*	E	E	D	E	D
Large red damselfly	*Pyrrhosoma nymphula*	A	A	-	A	A
Azure damselfly	*Coenagrion puella*	B	-	-	A	A
Common blue damselfly	*Enallagma cyathigerum*	C	-	-	-	-
Blue-tailed damselfly	*Ischnura elegans*	B	B	A	B	A
Golden-ringed dragonfly	*Cordulegaster boltonii*	B	B	A	A	A

17. ITCHEN VALLEY COUNTRY PARK

17.1 Habitat Assessment

As outlined previously (see section 3.2), only the area of Itchen Valley Country Park associated with the M27 was included within the study (Map 2). Habitat assessments were therefore only conducted on three transects at Itchen Valley Country Park (Table 31; Figure 21). These were located towards and along the boundary of Eastleigh Borough (Figure 21).

Transects comprised a main carrier stream that flows in a north-east to south-west direction through the Country Park, and forms part of the historic water meadow system at the site. The carrier stream, although dominated by dense monocotyledon vegetation (e.g. reed sweet-grass, reed canary-grass, etc.) and ruderals for much of all three transects, provided fewer suitable habitat features as it progressed towards and beyond the M27 crossing (Table 31). Specifically, transect 1 supported notably more sections with emergent herbaceous plant species to provide habitat for larvae and opportunities for ovipositing females than the two sections downstream (Figure 21).

Table 31: Summary of habitat suitability assessment at Itchen Valley Country Park.

Transect No.	Watercourse Type	Habitat Suitability	Habitat Enhancement Potential	Assessment Justification
1*	Carrier Stream	Sub-optimal to unsuitable	Moderate	This section of the carrier stream did support sections with a slow to moderate flow over shallow silt dominated margins, supporting emergent herbaceous plant species for ovipositing / larval habitat beneath; however, large extents of the bank tops were perched above the channel, and were dominated by tall monocotyledon vegetation such as reed sweet-grass, herbs and ruderals, with localised patches of willow and bramble scrub also present.
2*	Carrier Stream	Largely unsuitable	Low	This section of the carrier stream is predominantly wider and slower flowing, and supported only short sections of marginal berms to provide suitable habitat conditions for southern damselfly, with notable extents enclosed within scrub, shaded by tall bankside trees, and / or dominated by tall monocotyledons and ruderals.
3*	Carrier Stream	Largely Unsuitable	Low	This section of the carrier is wide, slow flowing and moderately deep, characterised by extensive lengths dominated by ribbon weed near the upstream end, and pondweed further downstream; the banksides were initially dominated by dense sedge and other monocotyledons, with willow scrub becoming increasingly prevalent and then dominant on the true right bank.

***** Unable to access the entire transect length due to dense and / or tall bankside vegetation / scrub

17.2 Adult count survey

Adult count surveys were conducted on all three transects visited at Itchen Valley Country Park.

Location within county:

Figure 21: Itchen Valley Country Park

Southern Damselfly Study: Eastleigh Borough

Site boundary

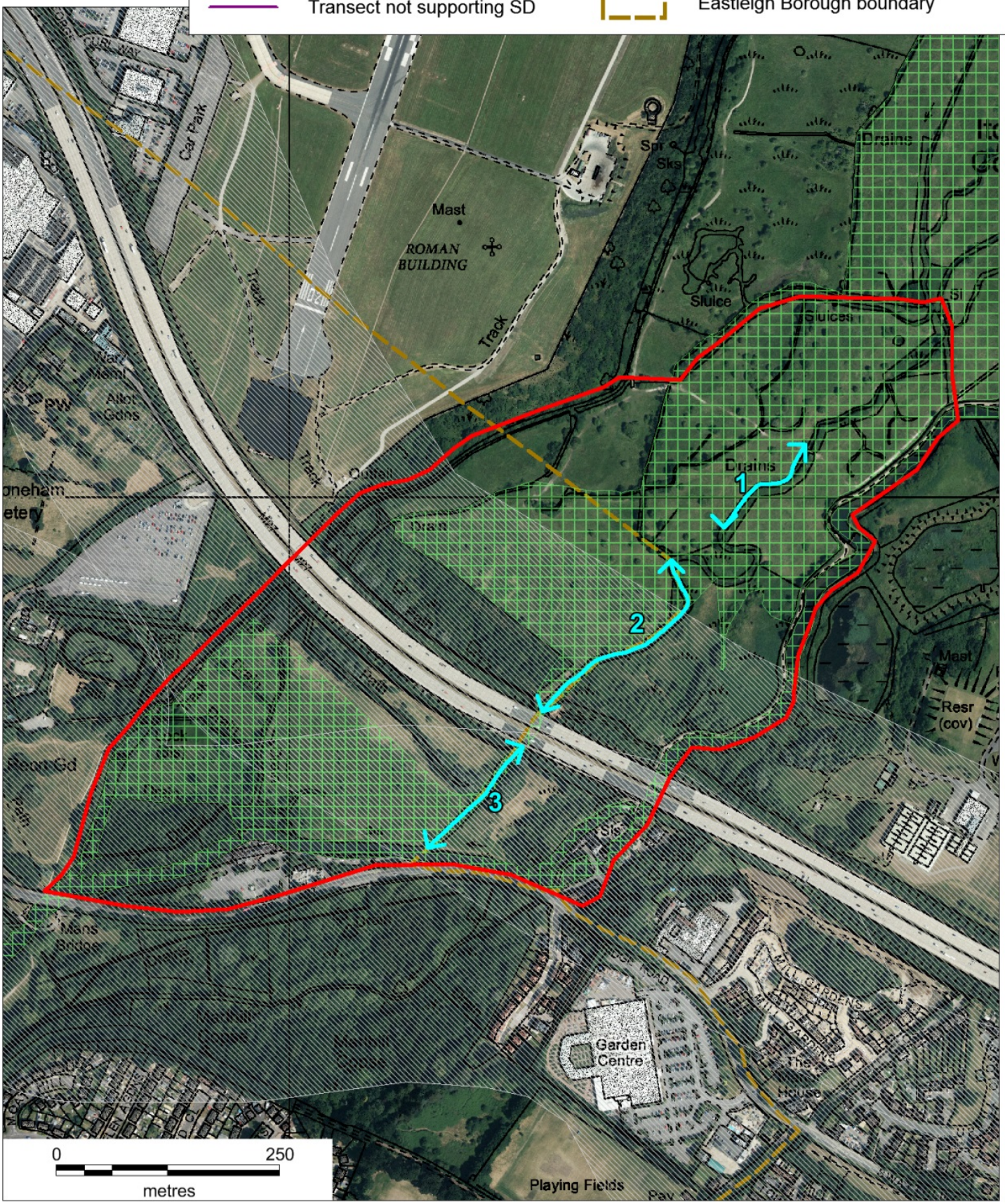
Transect supporting SD

Transect not supporting SD

200m road buffer

River Itchen SAC

Eastleigh Borough boundary



For enquiries relating to GIS data contact Catherine McGuire, email Catherine.McGuire@hiwwt.org.uk, tel: 01489 774455.

17.2.1 Southern damselfly

Male southern damselfly were recorded in moderate to very low numbers on all three transects subject to adult count surveys, with abundance and density decreasing as the carrier stream progressed downstream (Table 32). Furthermore, a copulating pair was recorded on transect 2, though no ovipositing females were recorded on any of the transects (Table 3).

Table 32: Southern damselfly abundance and density at Itchen Valley Country Park.

Transect No.	Transect Length (m)	Abundance (males)	Density (males per 100m)	Weather Criteria
1	136	27	19.85	Met
2	262	19	7.25	Met
3	157	2	1.27	Met

17.2.2 Other Odonata

In total, ten species of Odonata were recorded during the adult count surveys at Itchen Valley Country Park (Table 33). The majority of species were only recorded on a single occasion or at low numbers. However, banded demoiselle was noticeably more abundant than all other species, with 141 males recorded in total.

Table 33. Abundance of male Odonata recorded during adult count surveys at Itchen Valley Country Park.

Common Name	Scientific Name	Transect Number		
		1	2	3
Southern damselfly	*Coenagrion mercuriale*	D	C	B
Banded demoiselle	*Calopteryx splendens*	D	D	D
Large red damselfly	*Pyrrhosoma nymphula*	-	B	B
Azure damselfly	*Coenagrion puella*	-	-	A
Blue-tailed damselfly	*Ischnura elegans*	-	C	B
Emperor dragonfly	*Anax imperator*	-	-	A
Golden-ringed dragonfly	*Cordulegaster boltonii*	A	A	-
Broad-bodied chaser	*Libellula depressa*	-	-	A
Common darter	*Sympetrum striolatum*	A	-	-
Ruddy darter	*Sympetrum sanguineum*	-	B	-

18. SUMMARY AND DISUSSION

18.1 Summary of Desktop Studies

The data search conducted by HBIC returned 320 records within the search area between 2001 and 2016 inclusive. In addition to the main monitoring areas within Itchen Valley Country Park (200 records), five key areas were identified as supporting important and / or long standing populations of southern damselfly. Of these, the Highbridge Farm and Allington Manor Farm sites supported the majority of the records returned, with West Horton Farm, areas near GW Martin / Dunford's Land respectively, and the lower part of Itchen Valley Country Park, also considered important.

Long-term annual count data collected from Itchen Valley Country Park between 1999 and 2017 inclusive shows that, following a period of notable fluctuation (i.e. 1999 to 2004 inclusive), there has been a marked declining trend in the total number of adult southern damselfly recorded. Specifically, following a sharp decline in numbers between 2005 and 2013, there has been little recovery in the total counts over the four survey seasons since (Figure 4). Interrogation of the raw data collected between 2006 and 2017 inclusive presented a similar general trend of decreasing numbers of individuals, with this trend evident both across the site and within the individual ditches surveyed.

It is emphasised that survey effort was neither fully consistent between years, nor was it consistent between the individual ditches in 2012 and 2014. This would therefore explain a degree of the observed variation in the number of individuals recorded between years and ditches. These inconsistencies were a result of a combination of factors including resources (i.e. 2016 and 2017), weather, and associated ground conditions. However, it is considered highly likely that the decreasing trend in the total numbers of individuals recorded at the site, and within the individual ditches, provides an accurate indication that the size and / or strength of the southern damselfly population at the site has declined over the past twelve years.

18.2 Summary Field Surveys

Highbridge Farm and Allington Manor Farm recorded the highest number of transects with suitable habitat (8 and 5 of the relevant 19 transects respectively), supported a substantial proportion of all southern damselflies recorded (579 and 441 of the 1228 males recorded respectively), included the four transects that supported the highest abundances and densities of individuals, and were each considered to support a strong population of southern damselfly.

Ashtrim Nursery, Land behind GW Martin and the area of Itchen Valley Country Park included within this study were all considered to support a medium strength population of southern damselfly, all recording over 50 males across the site, and supporting sections of optimal and / or sub-optimal habitat.

Finally, although considered generally unsuitable for southern damselfly due to the habitat / habitat features currently present at these sites, Breach Farm, Dunford's Land, and West Horton Farm all support small areas of suitable habitat for southern damselfly, and were considered to support a weak population of this species. Furthermore, although two and a single male were recorded at Morris' Land and Withy Meadows respectively, these were considered to most likely be transient individuals, and these site with both Bishopstoke Park and Land associated with Toby Carvery were considered to be unsuitable for southern damselfly.

A number of opportunities for habitat enhancement were identified across the 13 survey sites. However, these have not been discussed in detail. Instead, these opportunities will be developed into a strategic conservation plan for southern damselfly, which will set out the key principles for the strategic conservation of this species in Eastleigh, outlining and prioritising the potential options for habitat enhancement and / or creation for this species in and around the borough.

18.3 Discussion

The results of the desktop and field studies indicate that only Highbridge Farm, Allington Manor Farm, and Itchen Valley Country Park support strong populations of southern damselfly located in, and immediately adjacent to, the Eastleigh Borough boundary. These sites are therefore considered the three most important sites within this study area. Furthermore, Highbridge Farm is located at and

immediately beyond the northern boundary of the borough, whereas Allington Manor Farm and Itchen Valley Country Park are located towards, at, or immediately beyond the southern boundary of the borough. Therefore, given its location and associated value in connecting southern damselfly populations in the lower and middle reaches of the Itchen Valley, Highbridge Farm is also considered strategically important in connecting sites across the wider Itchen Valley metapopulation.

Ashtrim Nursery and Land behind GW Martin are small sites, support relatively short extents of suitable / potentially suitable watercourses, and as a result support only medium strength southern damselfly populations. However, as outlined above, the three 'strong' populations of southern damselfly are located at either the northern or southern ends of the study area. Therefore, given the presence of a medium strength population, and as a consequence of their central location within the study area, Ashtrim Nursery and Land behind GW Martin are considered to be strategically important sites both within the study area and the lower Itchen Valley.

The localised distributions of the majority of males recorded (i.e. 92% of all males recorded within the study were recorded at four of the 13 sites), the unsuitability of the majority of sites / transects visited (Table 1; Appendix 3) and, given the inherently limited dispersal capabilities of the species (Purse, 2002; Rouquette, 2005), the distance between sites supporting strong and / or medium strength populations, is considered to be highly concerning. Furthermore, in addition to the concerning evidence of a decline in the number of individuals supported by the Itchen Valley Country Park, there is evidence for both a recent loss of suitable habitat and a marked decline in the strength of the population at West Horton Farm (Rouquette, 2005; Rushbrook, unpublished data; Rushbrook, personal observations). In combination, these findings indicate that southern damselfly has become localised and therefore at increased risk, or potentially already suffering, a decline in the strength of the metapopulation in and around Eastleigh Borough. It is therefore considered that urgent conservation action is required for this species in and around Eastleigh Borough.

Since the majority of the data assessed within this study is limited to a single year of collection, and since habitat condition was the only potential factor (of a number that may be influencing the distribution of the species in Eastleigh Borough) that was assessed, it is not appropriate to speculate what spectrum of factors is causing this localised distribution. However, what is clear to the author is that it is not only the size, but also the presence of beneficial management practices such as grazing and scrub control, that has resulted in Highbridge Farm, Allington Manor Farm, Ashtrim Nursery and Land behind GW Martin supporting the majority of individuals recorded. It is therefore considered that, in some parts of the borough at least, a programme of habitat enhancement and / or creation would facilitate an increase in the strength of the southern damselfly metapopulation present in and around Eastleigh Borough.

It is therefore intended that a strategic conservation plan for southern damselfly will be developed, which will set out the key principles for the strategic conservation of this species across the study area, outlining and prioritising the potential options for habitat enhancement and / or creation for this species in and around the borough.

19. REFERENCES

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- **Purse, B.V. (2002).** *The ecology of the southern damselfly (Coenagrion mercuriale - Charpentier) in Britain*. R&D Technical Report W1-021/TR, Environment Agency, Bristol.
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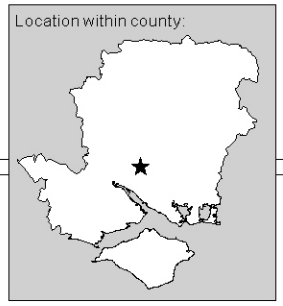
- **Thompson, D. J., Purse, B. V. & Rouquette, J. R. (2003b).** *Monitoring the southern damselfly*. Conserving Natura 2000 Rivers Monitoring Series No.8, English Nature, Peterborough.

MAPS



Map 1. Results of site selection process

Southern Damselfly Study: Eastleigh Borough

Ordnance Survey basemap (1:50,000)

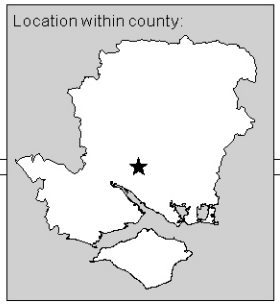
Arcadian

The Wildlife Trusts
Hampshire & Isle of Wight Wildlife Trust

Site included within study
Site scoped out of study
Site where access refused
River Itchen SAC
Eastleigh Borough boundary

N

For enquiries relating to GIS data contact Catherine McGuire, email Catherine.McGuire@hiwwt.org.uk, tel: 01489 774455.



Map 2. Location of survey sites

Southern Damselfly Study: Eastleigh Borough

Ordnance Survey basemap (1:50,000)

Arcadian

The Wildlife Trusts – Hampshire & Isle of Wight Wildlife Trust

Bishopstoke Fishing Club Land

Highbridge Farm

Breach Farm

Withy Meadows

Bishopstoke Park

Land behind GW Martin

Land associated with Toby Carvery

Ashtrim Nursery

Morris' Land

Dunford's Land

West Horton Farm

Allington Manor Farm

Itchen Valley Country Park

Site boundary

200m road buffer

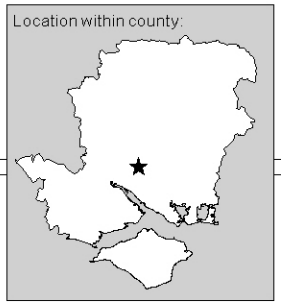
River Itchen SAC

Eastleigh Borough boundary

N

For enquiries relating to GIS data contact Catherine McGuire, email Catherine.McGuire@hiwwt.org.uk, tel: 01489 774455.

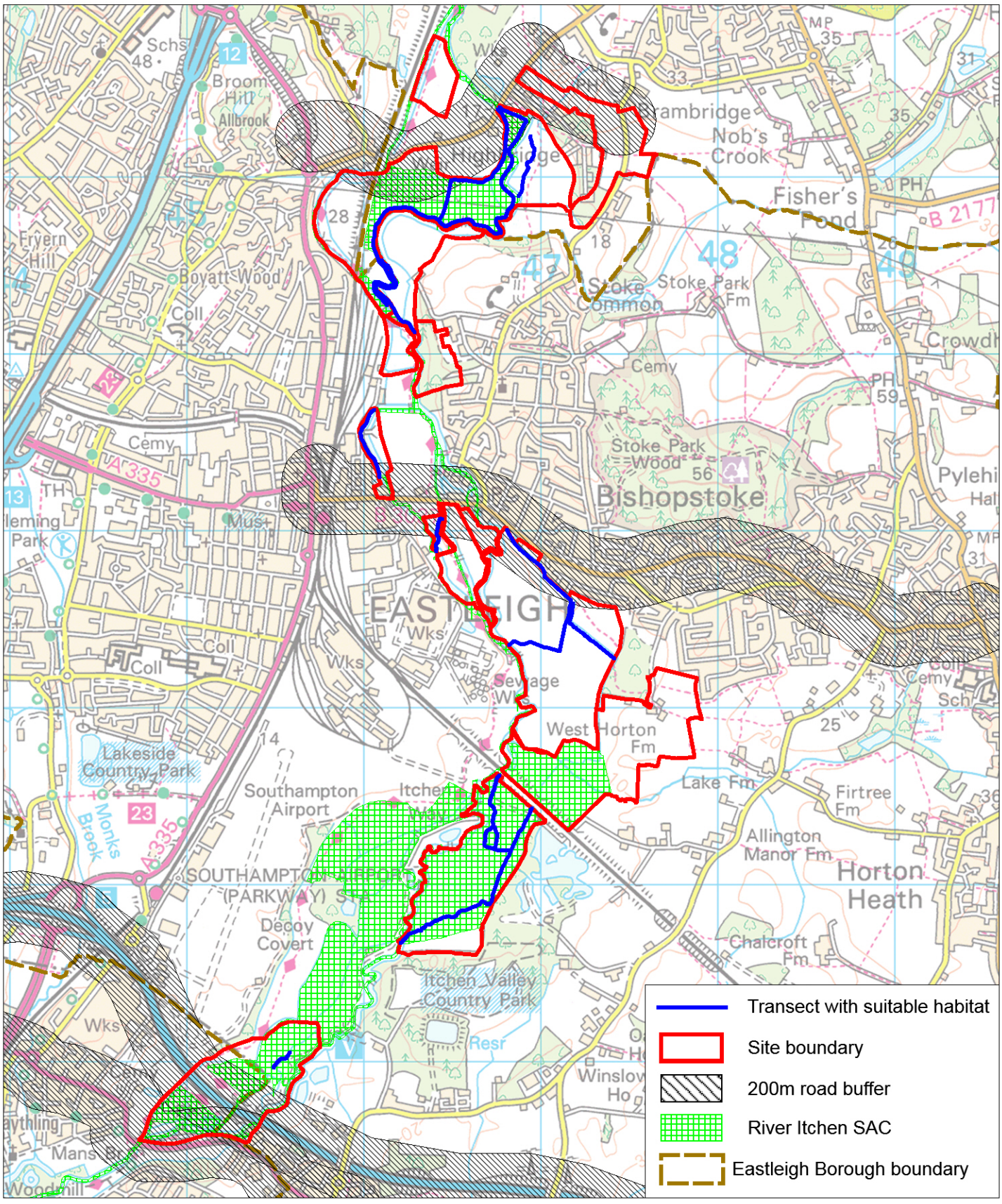
Location within county:



Map 3. Location of suitable habitat transects

Southern Damselfly Study: Eastleigh Borough

Ordnance Survey basemap (1:50,000)



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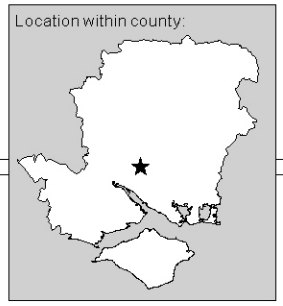
For enquiries relating to GIS data contact Catherine McGuire, email Catherine.McGuire@hiwwt.org.uk, tel: 01489 774455.



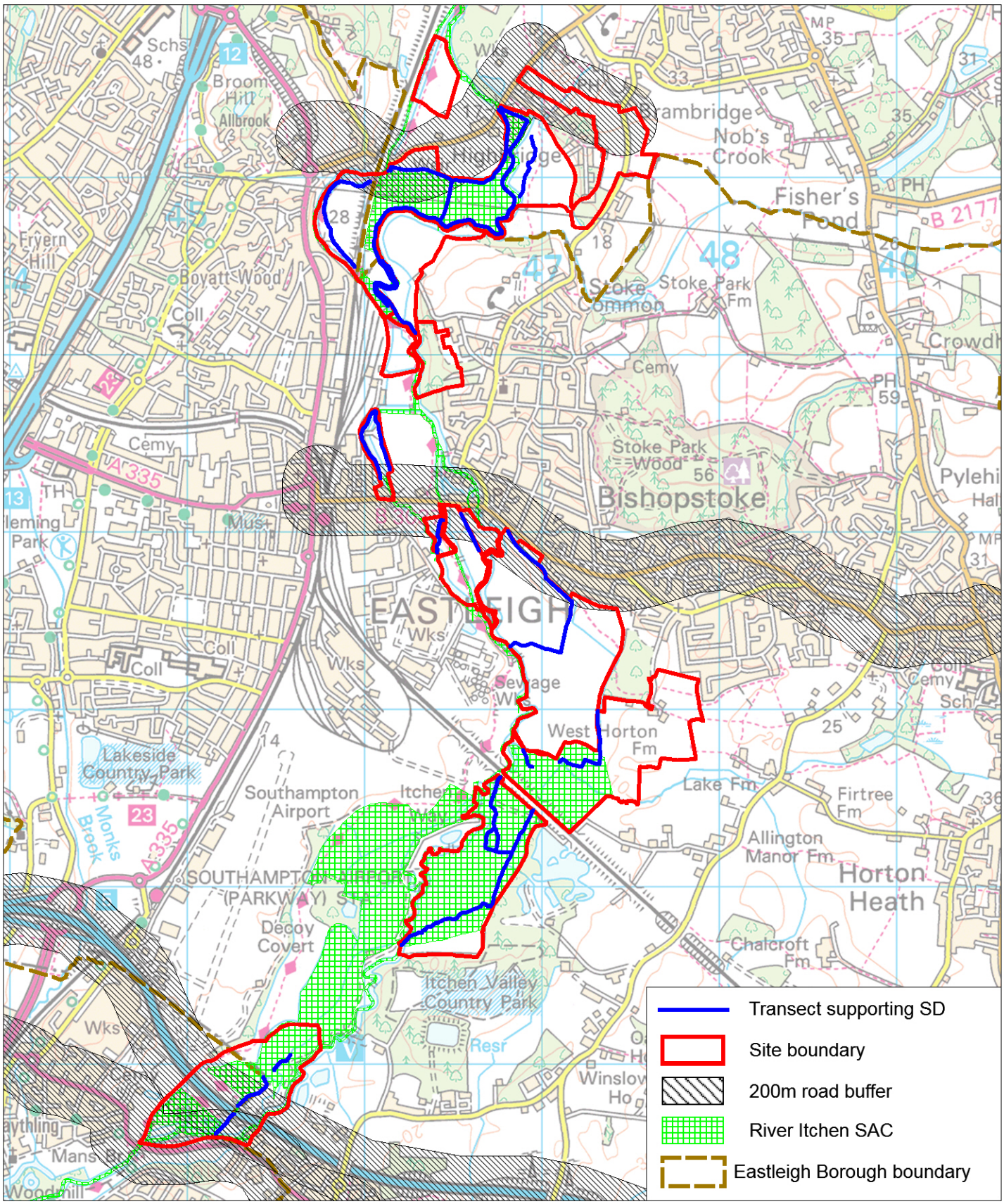
Map 4. Transects supporting southern damselfly

Southern Damselfly Study: Eastleigh Borough

Ordnance Survey basemap (1:50,000)

Arcadian

The Wildlife Trusts Hampshire & Isle of Wight Wildlife Trust



N

BAP Priority habitat, notable species and SINC data supplied by the Hampshire Biodiversity Information Centre on behalf of the HBIC Partnership.
Aerial photography courtesy of GetMapping plc. Produced on 6 September 2017 by Ben Rushbrook
For enquiries relating to GIS data contact Catherine McGuire, email Catherine.McGuire@hiwwt.org.uk, tel: 01489 774455.

PHOTOGRAPHS

Photograph 1: Suitable marginal habitat on transect 4 at Highbridge Farm

Photograph 2: Sub-optimal habitat present in lower reaches or transect 9 at Highbridge Farm

Photograph 3: Developing marginal berm on transect 1c at Breach Farm with water-forget-me-not

Photograph 4: Transect 1 at Withy Meadows illustrating dense vegetative growth in dry channel

Photograph 5: Localised patch of water-speedwell with some water-cress at Land behind GW Martin

Photograph 6: Abundant emergent herbaceous vegetation for oviposition at Ashtrim Nursery

Photograph 7: Dense emergent herbaceous vegetation on the lower reaches of transect 2 at Dunford's Land

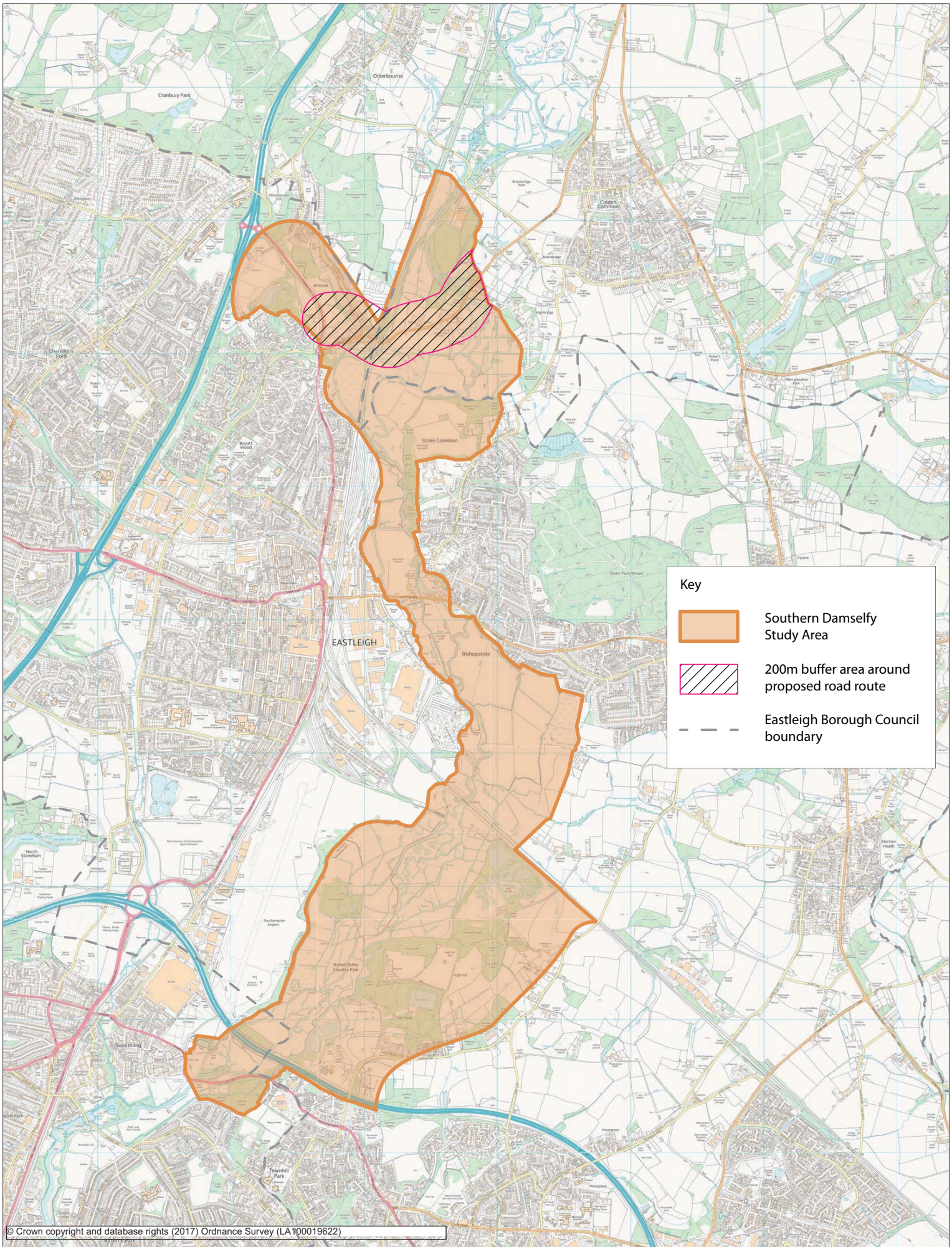
Photograph 8: Section of transect 5 at West Horton Farm enclosed within tall, dense scrub

Photograph 9: Localised patch of abundant water-cress growth on transect 4 at West Horton Farm

Photograph 10: Section of transect 17 at Allington Manor where cattle are creating valuable marginal berms

APPENDICES

Appendix 1:
Southern damselfly study area



EASTLEIGH BOROUGH COUNCIL

Implementation & Design

Title:

Southern Damselfly Study Area

Scale:
1:25000

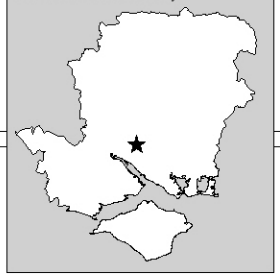
Map Ref:
SU4618

Date:
16/05/2017

N

Appendix 2:
Itchen Valley County Park monitoring ditches

Location within county:



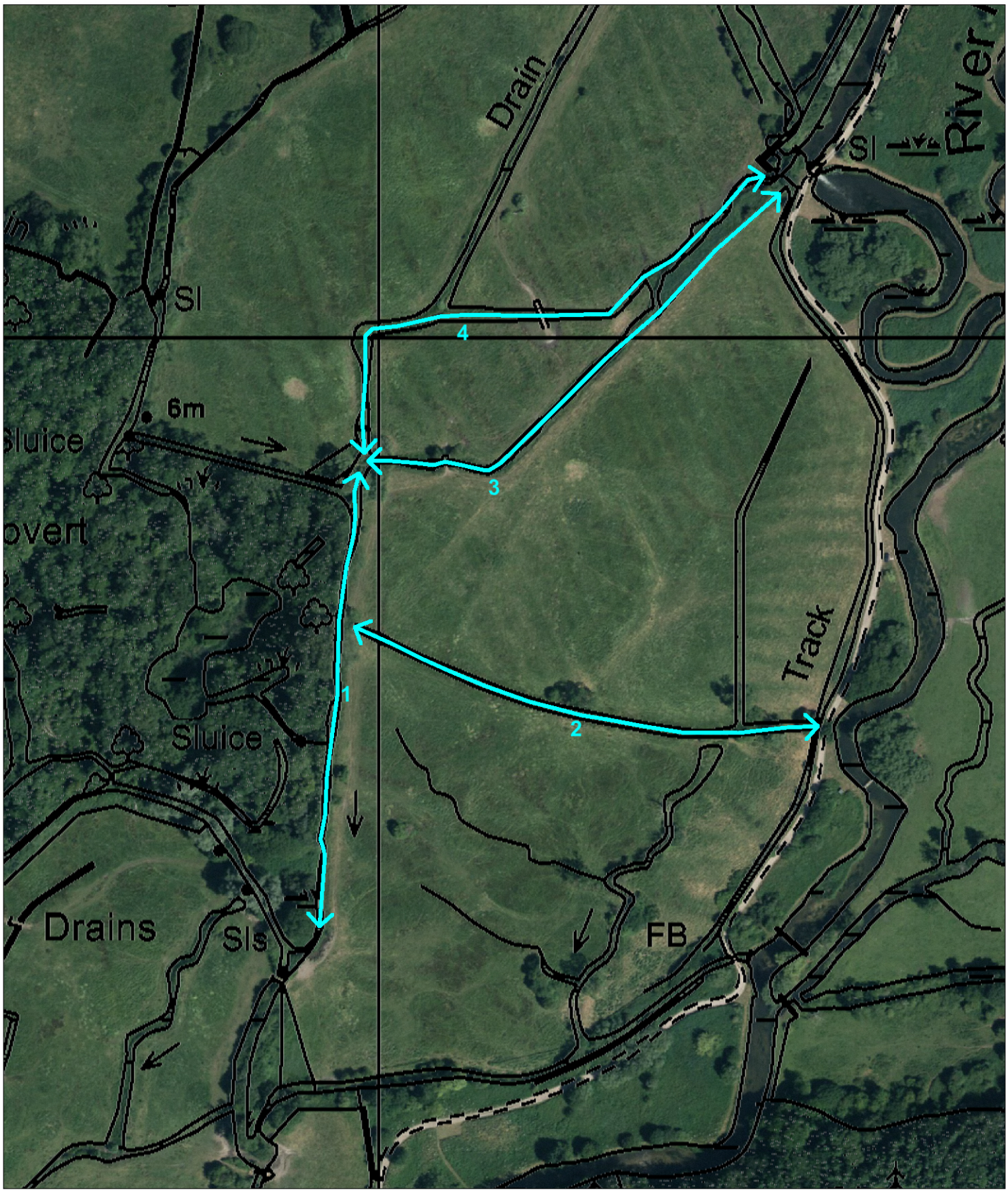
IVCP Monitoring Ditches

Ordnance Survey basemap (1:10,000)

Scale 1:2656

Hampshire and Isle of Wight Wildlife Trust
Beechcroft House, Vicarage Lane
Curdridge SO32 2DP
web: www.hwt.org.uk

Hampshire & Isle of Wight Wildlife Trust



Appendix 3:
Results of habitat assessments at all thirteen sites

Appendix 3: Results of habitat assessments for all thirteen sites.

Site Name & Transect No.	Length (m)	Watercourse Type	Habitat Suitability	Habitat Enhancement Potential	Entire Length Accessible
Bishopstoke FC - T1	194	Ditch	Unsuitable	Low	No
Bishopstoke FC - T2	213	Ditch	Unsuitable	Low	Yes
Bishopstoke FC - T3	360	Ditch	Unsuitable	Low	No
Bishopstoke FC - T4	279	Ditch	Unsuitable	Low	No
Bishopstoke FC - T5	97	Ditch	Largely unsuitable	Low to Moderate	Yes
Highbridge Farm - T1	421	Carrier Stream	Sub-optimal	High	Yes
Highbridge Farm - T2a	103	Carrier Stream	Sub-optimal	High	No
Highbridge Farm - T2b	149	Carrier Stream	Sub-optimal	High	No
Highbridge Farm - T2c	397	Carrier Stream	Unsuitable	Moderate	Yes
Highbridge Farm - T3	229	Carrier Stream	Optimal to sub-optimal	High	Yes
Highbridge Farm - T4	1382	Main River†	Optimal‡	Low to Moderate	Yes
Highbridge Farm - T5	1075	Main River†	Optimal‡ to sub-optimal	Low to Moderate	Yes
Highbridge Farm - T6	191	Carrier Stream	Unsuitable	Unsuitable	No
Highbridge Farm - T7	200	Ditch	Unsuitable	Moderate	Yes
Highbridge Farm - T8	85	Ditch	Unsuitable	Unsuitable	No
Highbridge Farm - T9	372	Ditch	Sub-optimal to unsuitable	High	No
Highbridge Farm - T10	548	Ditch	Unsuitable	Unsuitable	No
Highbridge Farm - T11	200	Ditch	Unsuitable	Unsuitable	No
Highbridge Farm - T12	189	Ditch	Unsuitable	Unsuitable	No
Highbridge Farm - T13	34	Ditch	Unsuitable	Unsuitable	No
Highbridge Farm - T14	247	Ditch	Unsuitable	Unsuitable	No
Highbridge Farm - T15	198	Ditch	Unsuitable	Unsuitable	No
Highbridge Farm - T16	97	Ditch	Unsuitable	Unsuitable	No
Highbridge Farm - T17	162	Ditch	Unsuitable	Unsuitable	Yes
Highbridge Farm - T18	81	Ditch	Unsuitable	Unsuitable	Yes
Highbridge Farm - T19	248	Ditch	Unsuitable	Moderate	Yes
Highbridge Farm - T20	-	Ditch	DNS	DNS	DNS
Highbridge Farm - T21	-	Ditch	DNS	DNS	DNS
Highbridge Farm - T22	506	Ditch	Unsuitable	Moderate	Yes
Highbridge Farm - T23	139	Ditch	Unsuitable	Moderate	Yes
Highbridge Farm - T24	354	Ditch	Unsuitable	Moderate	Yes
Highbridge Farm - T25	228	Ditch	Unsuitable	Moderate	Yes
Highbridge Farm - T26	-	Ditch	DNS	DNS	DNS
Highbridge Farm - T27	66	Ditch	Unsuitable	Unsuitable	No
Highbridge Farm - T28	46	Ditch	Unsuitable	Unsuitable	No
Highbridge Farm - T29	28	Ditch	Unsuitable	Unsuitable	No

Site Name & Transect No.	Length (m)	Watercourse Type	Habitat Suitability	Habitat Enhancement Potential	Entire Length Accessible
Highbridge Farm - T30	136	Ditch	Unsuitable	Unsuitable	No
Highbridge Farm - T31	357	Ditch	Unsuitable	Low	Yes
Highbridge Farm - T32	759	Carrier Stream	Largely unsuitable	Low	No
Highbridge Farm - T33	50	Ditch	Unsuitable	Moderate	No
Highbridge Farm - T34	150	Ditch	Unsuitable	Unsuitable	No
Highbridge Farm - T35	362	Ditch	Unsuitable	Unsuitable	No
Breach Farm - T1a	-	Main River	DNS	DNS	DNS
Breach Farm - T1b	-	Main River	DNS	DNS	DNS
Breach Farm - T1c	661	Main River[†]	Sub-optimal[‡] to unsuitable	Moderate	Yes
Breach Farm - T2	834	Carrier Stream	Unsuitable	Moderate	No
Breach Farm - T3	224	Ditch	Unsuitable	Unsuitable	Yes
Breach Farm - T4	243	Ditch	Unsuitable	Unsuitable	Yes
Withy Meadows - T1	389	Ditch	Unsuitable	Moderate	No
Withy Meadows - T2	168	Ditch	Unsuitable	Unsuitable	No
Bishopstoke Park - T-	-	-	-	-	-
GW Martin - T1	431	Stream	Optimal to sub-optimal	High	Yes
GW Martin - T2	339	Stream	Largely unsuitable	Low	No
Ashtrim Nursery - T1	200	Ditch	Optimal to sub-optimal	Moderate	Yes
Ashtrim Nursery - T2	74	Ditch	Unsuitable	Low	Yes
Morris' Land - T1	192	Ditch	Unsuitable	Low	No
Morris' Land - T2	133	Ditch	Unsuitable	Low	No
Morris' Land - T3	66	Ditch	Unsuitable	Moderate	Yes
Morris' Land - T4	106	Ditch	Unsuitable	Moderate	Yes
Morris' Land - T5	80	Ditch	Unsuitable	Low	No
Morris' Land - T6	237	Ditch	Largely unsuitable	Low	Yes
Toby Carvery - T1	88	Ditch	Unsuitable	Unsuitable	No
Dunford's Land - T1	553	Carrier Stream	Sub-optimal to unsuitable	Low	No
Dunford's Land - T2	559	Carrier Stream	Sub-optimal to unsuitable	Low	No
Dunford's Land - T3	490	Carrier Stream	Sub-optimal to unsuitable	Low	No
Dunford's Land - T4	488	Ditch	Unsuitable	Unsuitable	No
Dunford's Land - T5	253	Ditch	Unsuitable	Unsuitable	No
Dunford's Land - T6	202	Ditch	Unsuitable	Unsuitable	No
Dunford's Land - T7	492	Ditch	Unsuitable	Unsuitable	No
Dunford's Land - T8	-	Ditch	DNS	DNS	DNS

Site Name & Transect No.	Length (m)	Watercourse Type	Habitat Suitability	Habitat Enhancement Potential	Entire Length Accessible
Dunford's Land - T9	295	Ditch	Unsuitable	Unsuitable	No
Dunford's Land - T10	293	Carrier Stream	Unsuitable	Unsuitable	No
Dunford's Land - T11	316	Carrier Stream	Unsuitable	Unsuitable	No
Dunford's Land - T12	-	Carrier Stream	DNS	DNS	DNS
Dunford's Land - T13	187	Ditch	Unsuitable	Unsuitable	No
Dunford's Land - T14	195	Ditch	Unsuitable	Unsuitable	No
West Horton Farm - T1	233	Carrier Stream	Largely unsuitable	High	No
West Horton Farm - T2	317	Ditch	Unsuitable	High	No
West Horton Farm - T3	207	Carrier Stream	Unsuitable	High	No
West Horton Farm - T4	465	Carrier Stream	Largely unsuitable	High	No
West Horton Farm - T5	169	Carrier	Unsuitable	Unsuitable	No
West Horton Farm - T6	188	Ditch	Unsuitable	High	Yes
West Horton Farm - T7	114	Ditch	Unsuitable	High	Yes
West Horton Farm - T8	186	Carrier Stream	Unsuitable	Moderate	No
West Horton Farm - T9	374	Carrier Stream	Unsuitable	Unsuitable	No
West Horton Farm - T10	300	Ditch	Unsuitable	Low	Yes
Allington Manor - T1	640	Carrier Stream	Optimal to sub-optimal	Low	Yes
Allington Manor - T2	73	Ditch	Unsuitable	Unsuitable	No
Allington Manor - T3	561	Carrier Stream	Optimal to sub-optimal	Moderate	Yes
Allington Manor - T4	159	Ditch	Unsuitable	Unsuitable	No
Allington Manor - T5	75	Ditch	Unsuitable	Unsuitable	No
Allington Manor - T6	131	Ditch	Unsuitable	Unsuitable	No
Allington Manor - T6a	718	Ditch	Unsuitable	Unsuitable	No
Allington Manor - T7	169	Ditch	Unsuitable	Low	No
Allington Manor - T8	871	Ditch	Unsuitable	Low	Yes
Allington Manor - T9	577	Ditch	Unsuitable	Low	No
Allington Manor - T10	208	Ditch	Unsuitable	Low	No
Allington Manor - T11	491	Ditch	Unsuitable	Low	No
Allington Manor - T12	186	Ditch	Unsuitable	Low	No
Allington Manor - T13	132	Ditch	Largely optimal	Low	Yes
Allington Manor - T14	24	Ditch	Unsuitable	Unsuitable	Yes
Allington Manor - T15	113	Ditch	Unsuitable	Unsuitable	Yes
Allington Manor - T16	88	Ditch	Unsuitable	Unsuitable	Yes
Allington Manor - T17	447	Carrier Stream	Optimal to sub-optimal	Moderate	No
Allington Manor - T18	144	Carrier Stream	Sub-optimal	Moderate	No
Allington Manor - T19	56	Ditch	Unsuitable	Unsuitable	No

Site Name & Transect No.	Length (m)	Watercourse Type	Habitat Suitability	Habitat Enhancement Potential	Entire Length Accessible
Allington Manor - T20	150	Ditch	Unsuitable	Unsuitable	Yes
Allington Manor - T21	51	Ditch	Unsuitable	Unsuitable	Yes
Allington Manor - T22	125	Ditch	Unsuitable	Unsuitable	Yes
Allington Manor - T23	80	Ditch	Unsuitable	Unsuitable	No
Allington Manor - T24	37	Ditch	Unsuitable	Unsuitable	Yes
Allington Manor - T25	411	Ditch	Unsuitable	Low	No
Allington Manor - T26	443	Ditch	Unsuitable	Low	Yes
Allington Manor - T27	46	Ditch	Unsuitable	Low	Yes
Allington Manor - T28	75	Ditch	Unsuitable	Low	Yes
Allington Manor - T29	127	Ditch	Unsuitable	Low	Yes
Allington Manor - T30	-	Ditch	DNS	DNS	DNS
Allington Manor - T31	87	Ditch	Unsuitable	Unsuitable	Yes
Itchen Valley CP - T1	136	Carrier Stream	Sub-optimal to unsuitable	Moderate	No
Itchen Valley CP - T2	262	Ditch	Largely unsuitable	Low	No
Itchen Valley CP - T3	157	Carrier Stream	Unsuitable	Low	No

† Assessment was focused on habitats present along one bank only

‡ In the context of a large river channel

DNS – Did not survey

Appendix 4:

Results returned from an HBIC data search within 1km of the Eastleigh Borough boundary

Southern Damselfly *Coenagrion mercuriale* Species Records

Search Area: Within 1km of Eastleigh Borough
Date: 06/04/2017
HBIC Ref: 6841

See this Legislation Explanatory Document for a document explaining notable species statuses and legislation.

HBIC has its own extensive database of habitat and higher plant data for the County. In addition, HBIC hold copies of datasets belonging to partner organisations. Through data exchange agreements with these organisations HBIC is provided with regular database updates and can supply species information on their behalf. HBIC currently holds copies of the following datasets:

- Data administered by the Hampshire and Isle of Wight Wildlife Trust
- Hampshire Odonata records from The Dragonfly Recording Network, maintained by the British Dragonfly Society
- Independent Hampshire Entomologist's records

It is important that these species recording groups (where relevant to the data provided) are acknowledged in any document produced by the data requester where data is incorporated into the document, as a matter of course.

The following are Southern Damselfly *Coenagrion mercuriale* records from the above datasets within the search area recorded in the last 15 years.

Invertebrates - Odonata

Coenagrion mercuriale (Southern Damselfly)

EU Habitats Directive Annex 2np
IUCN_GB_2001:EN
Wildlife & Countryside Act Schedule 5, Section 9, Part 1 (killing/injuring)
Wildlife & Countryside Act Schedule 5, Section 9, Part 1 (taking)
Wildlife & Countryside Act Schedule 5, Section 9, Part 4a
Wildlife & Countryside Act Schedule 5, Section 9, Part 4b
Wildlife & Countryside Act Schedule 5, Section 9, Part 4c
Hampshire BAP species

Grid Ref.	Grid Ref blurred.	Location	Date	Recorder	Provenance	Quantity
SU462167		ALLINGTON 1	05/11/2001	Anon		1
SU462167		ALLINGTON 1	16/04/2002	Anon		2
SU462167		ALLINGTON 1	17/01/2002	Anon		1
SU46261674		Allington 1	05/11/2001	Unknown	Not recorded	1
SU46261674		Allington 1	16/04/2002	Unknown	Not recorded	2
SU46261674		Allington 1	17/01/2002	Unknown	Not recorded	1
SU467175		ALLINGTON 10	05/11/2001	Anon		1
SU467175		ALLINGTON 10	16/04/2002	Anon		6
SU46731753		Allington 10	05/11/2001	Unknown	Not	1

Invertebrates - Odonata

Coenagrion mercuriale (Southern Damselfly)

EU Habitats Directive Annex 2np

IUCN_GB_2001:EN

Wildlife & Countryside Act Schedule 5, Section 9, Part 1 (killing/injuring)

Wildlife & Countryside Act Schedule 5, Section 9, Part 1 (taking)

Wildlife & Countryside Act Schedule 5, Section 9, Part 4a

Wildlife & Countryside Act Schedule 5, Section 9, Part 4b

Wildlife & Countryside Act Schedule 5, Section 9, Part 4c

Hampshire BAP species

Grid Ref.	Grid Ref blurred.	Location	Date	Recorder	Provenance	Quantity
					recorded	
SU46731753		Allington 10	16/04/2002	Unknown	Not recorded	6
SU463167		ALLINGTON 2	16/04/2002	Anon		1
SU46371679		Allington 2	16/04/2002	Unknown	Not recorded	1
SU466168		ALLINGTON 4	05/11/2001	Anon		1
SU46611689		Allington 4	05/11/2001	Unknown	Not recorded	1
SU466172		ALLINGTON 8	16/04/2002	Anon		1
SU46681727		Allington 8	16/04/2002	Unknown	Not recorded	1
SU467174		ALLINGTON 9	17/01/2002	Anon		2
SU46721744		Allington 9	17/01/2002	Unknown	Not recorded	2
SU462166		Allington Manor	26/06/2001	Dave Thompson		2
SU463167		Allington Manor	26/06/2001	Dave Thompson		1
SU466168		Allington Manor	26/06/2001	Dave Thompson		1
SU466169		Allington Manor	26/06/2001	Dave Thompson		1
SU466169		Allington Manor	26/06/2001	Dave Thompson		2
SU466172		Allington Manor	25/06/2001	Dave Thompson		1
SU466172		Allington Manor	26/06/2001	Dave Thompson		1
SU467170		Allington Manor	26/06/2001	Dave Thompson		1
SU467171		Allington Manor	25/06/2001	Dave Thompson		1
SU467171		Allington Manor	26/06/2001	Dave Thompson		2
SU467171		Allington Manor	26/06/2001	Dave Thompson		3

Invertebrates - Odonata

Coenagrion mercuriale (Southern Damselfly)

EU Habitats Directive Annex 2np
IUCN_GB_2001:EN
Wildlife & Countryside Act Schedule 5, Section 9, Part 1 (killing/injuring)
Wildlife & Countryside Act Schedule 5, Section 9, Part 1 (taking)
Wildlife & Countryside Act Schedule 5, Section 9, Part 4a
Wildlife & Countryside Act Schedule 5, Section 9, Part 4b
Wildlife & Countryside Act Schedule 5, Section 9, Part 4c
Hampshire BAP species

Grid Ref.	Grid Ref blurred.	Location	Date	Recorder	Provenance	Quantity
SU467172		Allington Manor	25/06/2001	Dave Thompson		1
SU467172		Allington Manor	25/06/2001	Dave Thompson		2
SU467172		Allington Manor	26/06/2001	Dave Thompson		1
SU467172		Allington Manor	26/06/2001	Dave Thompson		2
SU467175		Allington Manor	25/06/2001	Dave Thompson		1
SU467176		Allington Manor	25/06/2001	Dave Thompson		1
SU467176		Allington Manor	26/06/2001	Dave Thompson		1
SU468171		Allington Manor	25/06/2001	Dave Thompson		1
SU468171		Allington Manor	25/06/2001	Dave Thompson		2
SU468171		Allington Manor	26/06/2001	Dave Thompson		1
SU468171		Allington Manor	26/06/2001	Dave Thompson		2
SU468172		Allington Manor	26/06/2001	Dave Thompson		1
SU467188		Bishopstoke	08/06/2003	Dave Thompson		1
SU467188		Bishopstoke	10/06/2003	Dave Thompson		1
SU467189		Bishopstoke	08/06/2003	Dave Thompson		1
SU467189		Bishopstoke	08/06/2003	Dave Thompson		2
SU467189		Bishopstoke	10/06/2003	Dave Thompson		1
SU467189		Bishopstoke	10/06/2003	Dave Thompson		3
SU462197		Gully Copse	08/06/2003	Dave Thompson		1

Invertebrates - Odonata

Coenagrion mercuriale (Southern Damselfly)

EU Habitats Directive Annex 2np

IUCN_GB_2001:EN

Wildlife & Countryside Act Schedule 5, Section 9, Part 1 (killing/injuring)

Wildlife & Countryside Act Schedule 5, Section 9, Part 1 (taking)

Wildlife & Countryside Act Schedule 5, Section 9, Part 4a

Wildlife & Countryside Act Schedule 5, Section 9, Part 4b

Wildlife & Countryside Act Schedule 5, Section 9, Part 4c

Hampshire BAP species

Grid Ref.	Grid Ref blurred.	Location	Date	Recorder	Provenance	Quantity
SU462197		Gully Copse	08/06/2003	Dave Thompson		10
SU462197		Gully Copse	08/06/2003	Dave Thompson		2
SU462197		Gully Copse	08/06/2003	Dave Thompson		3
SU462197		Gully Copse	08/06/2003	Dave Thompson		4
SU462197		Gully Copse	08/06/2003	Dave Thompson		6
SU462197		Gully Copse	10/06/2003	Dave Thompson		1
SU462198		Gully Copse	08/06/2003	Dave Thompson		1
SU462198		Gully Copse	08/06/2003	Dave Thompson		5
SU462198		Gully Copse	08/06/2003	Dave Thompson		7
SU464207		Highbridge	26/06/2001	Dave Thompson		1
SU464207		Highbridge	26/06/2001	Dave Thompson		2
SU464208		Highbridge	26/06/2001	Dave Thompson		1
SU464208		Highbridge	26/06/2001	Dave Thompson		2
SU464208		Highbridge	26/06/2001	Dave Thompson		3
SU464209		Highbridge	26/06/2001	Dave Thompson		1
SU464209		Highbridge	26/06/2001	Dave Thompson		2
SU464209		Highbridge	26/06/2001	Dave Thompson		3
SU464209		Highbridge	26/06/2001	Dave Thompson		4
SU464209		Highbridge	26/06/2001	Dave Thompson		7

Invertebrates - Odonata

Coenagrion mercuriale (Southern Damselfly)

EU Habitats Directive Annex 2np

IUCN_GB_2001:EN

Wildlife & Countryside Act Schedule 5, Section 9, Part 1 (killing/injuring)

Wildlife & Countryside Act Schedule 5, Section 9, Part 1 (taking)

Wildlife & Countryside Act Schedule 5, Section 9, Part 4a

Wildlife & Countryside Act Schedule 5, Section 9, Part 4b

Wildlife & Countryside Act Schedule 5, Section 9, Part 4c

Hampshire BAP species

Grid Ref.	Grid Ref blurred.	Location	Date	Recorder	Provenance	Quantity
SU467210		Highbridge	26/06/2001	Dave Thompson		1
SU465210		Highbridge Farm Water Meadows	19/07/2014	David Hubble	Not recorded	2
SU466208		Highbridge Farm, Allbrook	05/06/2010	David Hubble	Not recorded	2
SU466208		Highbridge Farm, Allbrook	12/06/2010	David Hubble	Not recorded	Present
SU466208		Highbridge Farm, Allbrook	21/06/2014	David Hubble	Not recorded	Present
SU464208		HIGHBRIDGE MEADOW 1	25/04/2002	Anon		9
SU464208		HIGHBRIDGE MEADOW 1	28/01/2002	Anon		2
SU464208		HIGHBRIDGE MEADOW 1	30/10/2001	Anon		1
SU46452080		Highbridge Meadow 1	25/04/2002	Unknown	Not recorded	9
SU46452080		Highbridge Meadow 1	28/01/2002	Unknown	Not recorded	2
SU46452080		Highbridge Meadow 1	30/10/2001	Unknown	Not recorded	1
SU464209		HIGHBRIDGE MEADOW 2	28/01/2002	Anon		7
SU464209		HIGHBRIDGE MEADOW 2	30/10/2001	Anon		1
SU46492091		Highbridge Meadow 2	28/01/2002	Unknown	Not recorded	7
SU46492091		Highbridge Meadow 2	30/10/2001	Unknown	Not recorded	1
SU465209		HIGHBRIDGE MEADOW 3	28/01/2002	Anon		7
SU46522099		Highbridge Meadow 3	28/01/2002	Unknown	Not recorded	7
SU467209		HIGHBRIDGE MEADOW 5	25/04/2002	Anon		6
SU467209		HIGHBRIDGE MEADOW 5	28/01/2002	Anon		2

Invertebrates - Odonata

Coenagrion mercuriale (Southern Damselfly)

EU Habitats Directive Annex 2np

IUCN_GB_2001:EN

Wildlife & Countryside Act Schedule 5, Section 9, Part 1 (killing/injuring)

Wildlife & Countryside Act Schedule 5, Section 9, Part 1 (taking)

Wildlife & Countryside Act Schedule 5, Section 9, Part 4a

Wildlife & Countryside Act Schedule 5, Section 9, Part 4b

Wildlife & Countryside Act Schedule 5, Section 9, Part 4c

Hampshire BAP species

Grid Ref.	Grid Ref blurred.	Location	Date	Recorder	Provenance	Quantity
SU467209		HIGHBRIDGE MEADOW 5	30/10/2001	Anon		1
SU46762099		Highbridge Meadow 5	25/04/2002	Unknown	Not recorded	6
SU46762099		Highbridge Meadow 5	28/01/2002	Unknown	Not recorded	2
SU46762099		Highbridge Meadow 5	30/10/2001	Unknown	Not recorded	1
SU468212		HIGHBRIDGE MEADOW 6	25/04/2002	Anon		1
SU46802128		Highbridge Meadow 6	25/04/2002	Unknown	Not recorded	1
SU463208		HIGHBRIDGE RIVER 1	30/10/2001	Anon		1
SU46302081		Highbridge River 1	30/10/2001	Unknown	Not recorded	1
SU468212		HIGHBRIDGE RIVER 5	28/01/2002	Anon		1
SU46862122		Highbridge River 5	28/01/2002	Unknown	Not recorded	1
SU468213		HIGHBRIDGE RIVER 6	25/04/2002	Anon		2
SU46842137		Highbridge River 6	25/04/2002	Unknown	Not recorded	2
SU468208		Highbridge: meadow by Itchen: junction of field drain and Itchen	14/06/2003	M.C. Harvey		6
SU46872089		Highbridge: Meadow By Itchen: Junction Of Field Drain And Itchen	14/06/2003	Martin C. Harvey	Not recorded	6
SU451156		Itchen Valley Country Park	21/06/2005	Bryan J Pinchen		164
SU451156		Itchen Valley Country Park	21/06/2005	Bryan J Pinchen		19
SU451156		Itchen Valley Country Park	21/06/2005	Bryan J Pinchen		24
SU451156		Itchen Valley	21/06/2005	Bryan J		36

Invertebrates - Odonata

Coenagrion mercuriale (Southern Damselfly)

EU Habitats Directive Annex 2np

IUCN_GB_2001:EN

Wildlife & Countryside Act Schedule 5, Section 9, Part 1 (killing/injuring)

Wildlife & Countryside Act Schedule 5, Section 9, Part 1 (taking)

Wildlife & Countryside Act Schedule 5, Section 9, Part 4a

Wildlife & Countryside Act Schedule 5, Section 9, Part 4b

Wildlife & Countryside Act Schedule 5, Section 9, Part 4c

Hampshire BAP species

Grid Ref.	Grid Ref blurred.	Location	Date	Recorder	Provenance	Quantity
		Country Park		Pinchen		
SU451156		Itchen Valley Country Park	21/06/2005	Bryan J Pinchen		4
SU451156		Itchen Valley Country Park	21/06/2005	Bryan J Pinchen		58
SU451156		Itchen Valley Country Park	21/06/2005	Bryan J Pinchen		66
SU4516		Itchen Valley Country Park	10/07/2001	A.P. Fowles		Present
SU4516		Itchen Valley Country Park	25/05/2002	P. Budd		15
SU460169		Itchen Valley Country Park	23/07/2008	P. Allen		21-100
SU460169		Itchen Valley Country Park	23/07/2008	P. Allen		42771
SU4516		Itchen Valley Country Park	25/05/2002	Philip Budd	Not recorded	15
SU444157		Itchen Valley Country Park #1	25/06/2001	P. Budd		7
SU444157		Itchen Valley Country Park #1	25/06/2001	Philip Budd	Not recorded	7
SU460168		Itchen Valley Country Park, Far ditch	04/07/2011	P. Allen		10
SU459166		Itchen Valley Country Park, Private meadow	04/07/2011	P. Allen		20
SU459165		Itchen Valley Country Park, Side stream	04/07/2011	P. Allen		20
SU460162		Itchen Valley CP	13/07/2004	P.A. Beckett		21-100
SU450156		IVCP Lower	26/06/2001	Dave Thompson		1
SU450156		IVCP Lower	26/06/2001	Dave Thompson		2
SU450156		IVCP Lower	26/06/2001	Dave Thompson		4
SU451156		IVCP Lower	26/06/2001	Dave		1

Invertebrates - Odonata

Coenagrion mercuriale (Southern Damselfly)

EU Habitats Directive Annex 2np

IUCN_GB_2001:EN

Wildlife & Countryside Act Schedule 5, Section 9, Part 1 (killing/injuring)

Wildlife & Countryside Act Schedule 5, Section 9, Part 1 (taking)

Wildlife & Countryside Act Schedule 5, Section 9, Part 4a

Wildlife & Countryside Act Schedule 5, Section 9, Part 4b

Wildlife & Countryside Act Schedule 5, Section 9, Part 4c

Hampshire BAP species

Grid Ref.	Grid Ref blurred.	Location	Date	Recorder	Provenance	Quantity
				Thompson		
SU451156		IVCP Lower	26/06/2001	Dave Thompson		2
SU451156		IVCP Lower	26/06/2001	Dave Thompson		3
SU451156		IVCP Lower	26/06/2001	Dave Thompson		5
SU454161		IVCP Lower	26/06/2001	Dave Thompson		2
SU454161		IVCP Lower	26/06/2001	Dave Thompson		5
SU455162		IVCP Lower	26/06/2001	Dave Thompson		1
SU455162		IVCP Lower	26/06/2001	Dave Thompson		2
SU456162		IVCP Lower	26/06/2001	Dave Thompson		1
SU456162		IVCP Lower	26/06/2001	Dave Thompson		2
SU450156		IVCP LOWER 1	06/11/2001	Anon		1
SU45031562		Ivcp Lower 1	06/11/2001	Unknown	Not recorded	1
SU455162		IVCP LOWER 10	07/11/2001	Anon		10
SU455162		IVCP LOWER 10	08/05/2002	Anon		5
SU455162		IVCP LOWER 10	24/01/2002	Anon		4
SU45561622		Ivcp Lower 10	07/11/2001	Unknown	Not recorded	10
SU45561622		Ivcp Lower 10	08/05/2002	Unknown	Not recorded	5
SU45561622		Ivcp Lower 10	24/01/2002	Unknown	Not recorded	4
SU456162		IVCP LOWER 11	07/11/2001	Anon		1
SU456162		IVCP LOWER 11	08/05/2002	Anon		4
SU456162		IVCP LOWER 11	24/01/2002	Anon		1
SU45601622		Ivcp Lower 11	07/11/2001	Unknown	Not recorded	1

Invertebrates - Odonata

Coenagrion mercuriale (Southern Damselfly)

EU Habitats Directive Annex 2np

IUCN_GB_2001:EN

Wildlife & Countryside Act Schedule 5, Section 9, Part 1 (killing/injuring)

Wildlife & Countryside Act Schedule 5, Section 9, Part 1 (taking)

Wildlife & Countryside Act Schedule 5, Section 9, Part 4a

Wildlife & Countryside Act Schedule 5, Section 9, Part 4b

Wildlife & Countryside Act Schedule 5, Section 9, Part 4c

Hampshire BAP species

Grid Ref.	Grid Ref blurred.	Location	Date	Recorder	Provenance	Quantity
SU45601622		Ivcp Lower 11	08/05/2002	Unknown	Not recorded	4
SU45601622		Ivcp Lower 11	24/01/2002	Unknown	Not recorded	1
SU451156		IVCP LOWER 2	06/11/2001	Anon		1
SU451156		IVCP LOWER 2	08/05/2002	Anon		1
SU45191566		Ivcp Lower 2	06/11/2001	Unknown	Not recorded	1
SU45191566		Ivcp Lower 2	08/05/2002	Unknown	Not recorded	1
SU453158		IVCP LOWER 3	06/11/2001	Anon		10
SU453158		IVCP LOWER 3	08/05/2002	Anon		3
SU45331582		Ivcp Lower 3	06/11/2001	Unknown	Not recorded	10
SU45331582		Ivcp Lower 3	08/05/2002	Unknown	Not recorded	3
SU454158		IVCP LOWER 4	06/11/2001	Anon		1
SU454158		IVCP LOWER 4	08/05/2002	Anon		8
SU454158		IVCP LOWER 4	23/01/2002	Anon		2
SU45441588		Ivcp Lower 4	06/11/2001	Unknown	Not recorded	1
SU45441588		Ivcp Lower 4	08/05/2002	Unknown	Not recorded	8
SU45441588		Ivcp Lower 4	23/01/2002	Unknown	Not recorded	2
SU454159		IVCP LOWER 5	06/11/2001	Anon		1
SU454159		IVCP LOWER 5	08/05/2002	Anon		7
SU45411595		Ivcp Lower 5	06/11/2001	Unknown	Not recorded	1
SU45411595		Ivcp Lower 5	08/05/2002	Unknown	Not recorded	7
SU454160		IVCP LOWER 7	06/11/2001	Anon		1
SU454160		IVCP LOWER 7	08/05/2002	Anon		3
SU454160		IVCP LOWER 7	23/01/2002	Anon		1
SU45421603		Ivcp Lower 7	06/11/2001	Unknown	Not recorded	1

Invertebrates - Odonata

Coenagrion mercuriale (Southern Damselfly)

EU Habitats Directive Annex 2np

IUCN_GB_2001:EN

Wildlife & Countryside Act Schedule 5, Section 9, Part 1 (killing/injuring)

Wildlife & Countryside Act Schedule 5, Section 9, Part 1 (taking)

Wildlife & Countryside Act Schedule 5, Section 9, Part 4a

Wildlife & Countryside Act Schedule 5, Section 9, Part 4b

Wildlife & Countryside Act Schedule 5, Section 9, Part 4c

Hampshire BAP species

Grid Ref.	Grid Ref blurred.	Location	Date	Recorder	Provenance	Quantity
SU45421603		Ivcp Lower 7	08/05/2002	Unknown	Not recorded	3
SU45421603		Ivcp Lower 7	23/01/2002	Unknown	Not recorded	1
SU455161		IVCP LOWER 8	06/11/2001	Anon		1
SU455161		IVCP LOWER 8	08/05/2002	Anon		2
SU455161		IVCP LOWER 8	24/01/2002	Anon		1
SU45581619		Ivcp Lower 8	06/11/2001	Unknown	Not recorded	1
SU45581619		Ivcp Lower 8	08/05/2002	Unknown	Not recorded	2
SU45581619		Ivcp Lower 8	24/01/2002	Unknown	Not recorded	1
SU456160		IVCP Middle	27/06/2001	Dave Thompson		1
SU456160		IVCP Middle	27/06/2001	Dave Thompson		2
SU456160		IVCP Middle	27/06/2001	Dave Thompson		3
SU457162		IVCP Middle	27/06/2001	Dave Thompson		1
SU458163		IVCP Middle	27/06/2001	Dave Thompson		1
SU458163		IVCP Middle	27/06/2001	Dave Thompson		2
SU458164		IVCP Middle	27/06/2001	Dave Thompson		11
SU458164		IVCP Middle	27/06/2001	Dave Thompson		2
SU458164		IVCP Middle	27/06/2001	Dave Thompson		3
SU458164		IVCP Middle	27/06/2001	Dave Thompson		4
SU458166		IVCP Middle	26/06/2001	Dave Thompson		1
SU458166		IVCP Middle	26/06/2001	Dave Thompson		2

Invertebrates - Odonata

Coenagrion mercuriale (Southern Damselfly)

EU Habitats Directive Annex 2np

IUCN_GB_2001:EN

Wildlife & Countryside Act Schedule 5, Section 9, Part 1 (killing/injuring)

Wildlife & Countryside Act Schedule 5, Section 9, Part 1 (taking)

Wildlife & Countryside Act Schedule 5, Section 9, Part 4a

Wildlife & Countryside Act Schedule 5, Section 9, Part 4b

Wildlife & Countryside Act Schedule 5, Section 9, Part 4c

Hampshire BAP species

Grid Ref.	Grid Ref blurred.	Location	Date	Recorder	Provenance	Quantity
SU458166		IVCP Middle	26/06/2001	Dave Thompson		4
SU459166		IVCP Middle	26/06/2001	Dave Thompson		2
SU459166		IVCP Upper	26/06/2001	Dave Thompson		5
SU459167		IVCP Upper	26/06/2001	Dave Thompson		1
SU459167		IVCP Upper	26/06/2001	Dave Thompson		2
SU460166		IVCP Upper	26/06/2001	Dave Thompson		1
SU460166		IVCP Upper	26/06/2001	Dave Thompson		3
SU460166		IVCP Upper	26/06/2001	Dave Thompson		5
SU460169		IVCP Upper	27/06/2001	Dave Thompson		1
SU460169		IVCP Upper	27/06/2001	Dave Thompson		3
SU460169		IVCP Upper	30/06/2001	Dave Thompson		1
SU461169		IVCP Upper	27/06/2001	Dave Thompson		1
SU461169		IVCP Upper	27/06/2001	Dave Thompson		2
SU461170		IVCP Upper	27/06/2001	Dave Thompson		1
SU461170		IVCP Upper	27/06/2001	Dave Thompson		4
SU461172		IVCP Upper	30/06/2001	Dave Thompson		2
SU461172		IVCP Upper	30/06/2001	Dave Thompson		3
SU461172		IVCP Upper	30/06/2001	Dave Thompson		4
SU462173		IVCP Upper	30/06/2001	Dave Thompson		2

Invertebrates - Odonata

Coenagrion mercuriale (Southern Damselfly)

EU Habitats Directive Annex 2np

IUCN_GB_2001:EN

Wildlife & Countryside Act Schedule 5, Section 9, Part 1 (killing/injuring)

Wildlife & Countryside Act Schedule 5, Section 9, Part 1 (taking)

Wildlife & Countryside Act Schedule 5, Section 9, Part 4a

Wildlife & Countryside Act Schedule 5, Section 9, Part 4b

Wildlife & Countryside Act Schedule 5, Section 9, Part 4c

Hampshire BAP species

Grid Ref.	Grid Ref blurred.	Location	Date	Recorder	Provenance	Quantity
SU456161		IVCP-MID 1	14/01/2002	Anon		6
SU456161		IVCP-MID 1	29/04/2002	Anon		6
SU45611610		Ivcp-mid 1	14/01/2002	Unknown	Not recorded	6
SU45611610		Ivcp-mid 1	29/04/2002	Unknown	Not recorded	6
SU457163		IVCP-MID 10	15/01/2002	Anon		2
SU457163		IVCP-MID 10	18/10/2001	Anon		10
SU457163		IVCP-MID 10	29/04/2002	Anon		7
SU45711637		Ivcp-mid 10	15/01/2002	Unknown	Not recorded	2
SU45711637		Ivcp-mid 10	18/10/2001	Unknown	Not recorded	10
SU45711637		Ivcp-mid 10	29/04/2002	Unknown	Not recorded	7
SU457165		IVCP-MID 11	15/01/2002	Anon		3
SU457165		IVCP-MID 11	18/10/2001	Anon		10
SU457165		IVCP-MID 11	29/04/2002	Anon		1
SU45781653		Ivcp-mid 11	15/01/2002	Unknown	Not recorded	3
SU45781653		Ivcp-mid 11	18/10/2001	Unknown	Not recorded	10
SU45781653		Ivcp-mid 11	29/04/2002	Unknown	Not recorded	1
SU456161		IVCP-MID 2	14/01/2002	Anon		1
SU456161		IVCP-MID 2	17/10/2001	Anon		1
SU456161		IVCP-MID 2	29/04/2002	Anon		10
SU45641611		Ivcp-mid 2	14/01/2002	Unknown	Not recorded	1
SU45641611		Ivcp-mid 2	17/10/2001	Unknown	Not recorded	1
SU45641611		Ivcp-mid 2	29/04/2002	Unknown	Not recorded	10
SU455160		IVCP-MID 3	14/01/2002	Anon		6
SU455160		IVCP-MID 3	17/10/2001	Anon		1

Invertebrates - Odonata

Coenagrion mercuriale (Southern Damselfly)

EU Habitats Directive Annex 2np

IUCN_GB_2001:EN

Wildlife & Countryside Act Schedule 5, Section 9, Part 1 (killing/injuring)

Wildlife & Countryside Act Schedule 5, Section 9, Part 1 (taking)

Wildlife & Countryside Act Schedule 5, Section 9, Part 4a

Wildlife & Countryside Act Schedule 5, Section 9, Part 4b

Wildlife & Countryside Act Schedule 5, Section 9, Part 4c

Hampshire BAP species

Grid Ref.	Grid Ref blurred.	Location	Date	Recorder	Provenance	Quantity
SU455160		IVCP-MID 3	29/04/2002	Anon		2
SU45501600		Ivcp-mid 3	14/01/2002	Unknown	Not recorded	6
SU45501600		Ivcp-mid 3	17/10/2001	Unknown	Not recorded	1
SU45501600		Ivcp-mid 3	29/04/2002	Unknown	Not recorded	2
SU455159		IVCP-MID 4	29/04/2002	Anon		8
SU45511594		Ivcp-mid 4	29/04/2002	Unknown	Not recorded	8
SU457165		IVCP-MID 5	15/01/2002	Anon		2
SU457165		IVCP-MID 5	17/10/2001	Anon		10
SU457165		IVCP-MID 5	29/04/2002	Anon		4
SU45791658		Ivcp-mid 5	15/01/2002	Unknown	Not recorded	2
SU45791658		Ivcp-mid 5	17/10/2001	Unknown	Not recorded	10
SU45791658		Ivcp-mid 5	29/04/2002	Unknown	Not recorded	4
SU458166		IVCP-MID 6	15/01/2002	Anon		20
SU458166		IVCP-MID 6	17/10/2001	Anon		10
SU458166		IVCP-MID 6	29/04/2002	Anon		11
SU45881664		Ivcp-mid 6	15/01/2002	Unknown	Not recorded	20
SU45881664		Ivcp-mid 6	17/10/2001	Unknown	Not recorded	10
SU45881664		Ivcp-mid 6	29/04/2002	Unknown	Not recorded	11
SU457162		IVCP-MID 7	15/01/2002	Anon		8
SU457162		IVCP-MID 7	18/10/2001	Anon		10
SU457162		IVCP-MID 7	29/04/2002	Anon		2
SU45751626		Ivcp-mid 7	15/01/2002	Unknown	Not recorded	8
SU45751626		Ivcp-mid 7	18/10/2001	Unknown	Not recorded	10
SU45751626		Ivcp-mid 7	29/04/2002	Unknown	Not	2

Invertebrates - Odonata

Coenagrion mercuriale (Southern Damselfly)

EU Habitats Directive Annex 2np

IUCN_GB_2001:EN

Wildlife & Countryside Act Schedule 5, Section 9, Part 1 (killing/injuring)

Wildlife & Countryside Act Schedule 5, Section 9, Part 1 (taking)

Wildlife & Countryside Act Schedule 5, Section 9, Part 4a

Wildlife & Countryside Act Schedule 5, Section 9, Part 4b

Wildlife & Countryside Act Schedule 5, Section 9, Part 4c

Hampshire BAP species

Grid Ref.	Grid Ref blurred.	Location	Date	Recorder	Provenance	Quantity
					recorded	
SU458163		IVCP-MID 8	15/01/2002	Anon		3
SU458163		IVCP-MID 8	29/04/2002	Anon		1
SU45811630		Ivcp-mid 8	15/01/2002	Unknown	Not recorded	3
SU45811630		Ivcp-mid 8	29/04/2002	Unknown	Not recorded	1
SU459165		IVCP-MID 9	18/10/2001	Anon		1
SU459165		IVCP-MID 9	29/04/2002	Anon		3
SU45941657		Ivcp-mid 9	18/10/2001	Unknown	Not recorded	1
SU45941657		Ivcp-mid 9	29/04/2002	Unknown	Not recorded	3
SU460166		IVCP-UPPER 1	02/05/2002	Anon		32
SU460166		IVCP-UPPER 1	02/11/2001	Anon		10
SU460166		IVCP-UPPER 1	15/01/2002	Anon		80
SU46051663		Ivcp-upper 1	02/05/2002	Unknown	Not recorded	32
SU46051663		Ivcp-upper 1	02/11/2001	Unknown	Not recorded	10
SU46051663		Ivcp-upper 1	15/01/2002	Unknown	Not recorded	80
SU459167		IVCP-UPPER 2	02/05/2002	Anon		5
SU459167		IVCP-UPPER 2	02/11/2001	Anon		10
SU459167		IVCP-UPPER 2	24/01/2002	Anon		2
SU45971676		Ivcp-upper 2	02/05/2002	Unknown	Not recorded	5
SU45971676		Ivcp-upper 2	02/11/2001	Unknown	Not recorded	10
SU45971676		Ivcp-upper 2	24/01/2002	Unknown	Not recorded	2
SU459169		IVCP-UPPER 3	02/05/2002	Anon		1
SU45991692		Ivcp-upper 3	02/05/2002	Unknown	Not recorded	1
SU460169		IVCP-UPPER 4	02/05/2002	Anon		22

Invertebrates - Odonata

Coenagrion mercuriale (Southern Damselfly)

EU Habitats Directive Annex 2np

IUCN_GB_2001:EN

Wildlife & Countryside Act Schedule 5, Section 9, Part 1 (killing/injuring)

Wildlife & Countryside Act Schedule 5, Section 9, Part 1 (taking)

Wildlife & Countryside Act Schedule 5, Section 9, Part 4a

Wildlife & Countryside Act Schedule 5, Section 9, Part 4b

Wildlife & Countryside Act Schedule 5, Section 9, Part 4c

Hampshire BAP species

Grid Ref.	Grid Ref blurred.	Location	Date	Recorder	Provenance	Quantity
SU460169		IVCP-UPPER 4	19/10/2001	Anon		10
SU460169		IVCP-UPPER 4	24/01/2002	Anon		3
SU46011694		Ivcp-upper 4	02/05/2002	Unknown	Not recorded	22
SU46011694		Ivcp-upper 4	19/10/2001	Unknown	Not recorded	10
SU46011694		Ivcp-upper 4	24/01/2002	Unknown	Not recorded	3
SU460169		IVCP-UPPER 5	02/05/2002	Anon		2
SU460169		IVCP-UPPER 5	19/10/2001	Anon		10
SU460169		IVCP-UPPER 5	24/01/2002	Anon		5
SU46071695		Ivcp-upper 5	02/05/2002	Unknown	Not recorded	2
SU46071695		Ivcp-upper 5	19/10/2001	Unknown	Not recorded	10
SU46071695		Ivcp-upper 5	24/01/2002	Unknown	Not recorded	5
SU461170		IVCP-UPPER 6	02/05/2002	Anon		4
SU461170		IVCP-UPPER 6	19/10/2001	Anon		1
SU461170		IVCP-UPPER 6	24/01/2002	Anon		2
SU46141705		Ivcp-upper 6	02/05/2002	Unknown	Not recorded	4
SU46141705		Ivcp-upper 6	19/10/2001	Unknown	Not recorded	1
SU46141705		Ivcp-upper 6	24/01/2002	Unknown	Not recorded	2
SU461172		IVCP-UPPER 9	02/05/2002	Anon		1
SU461172		IVCP-UPPER 9	19/10/2001	Anon		1
SU461172		IVCP-UPPER 9	24/01/2002	Anon		3
SU46151723		Ivcp-upper 9	02/05/2002	Unknown	Not recorded	1
SU46151723		Ivcp-upper 9	19/10/2001	Unknown	Not recorded	1
SU46151723		Ivcp-upper 9	24/01/2002	Unknown	Not recorded	3
SU455160		Lower Itchen Water	16/06/2005	M. Drake		Present

Invertebrates - Odonata

Coenagrion mercuriale (Southern Damselfly)

EU Habitats Directive Annex 2np

IUCN_GB_2001:EN

Wildlife & Countryside Act Schedule 5, Section 9, Part 1 (killing/injuring)

Wildlife & Countryside Act Schedule 5, Section 9, Part 1 (taking)

Wildlife & Countryside Act Schedule 5, Section 9, Part 4a

Wildlife & Countryside Act Schedule 5, Section 9, Part 4b

Wildlife & Countryside Act Schedule 5, Section 9, Part 4c

Hampshire BAP species

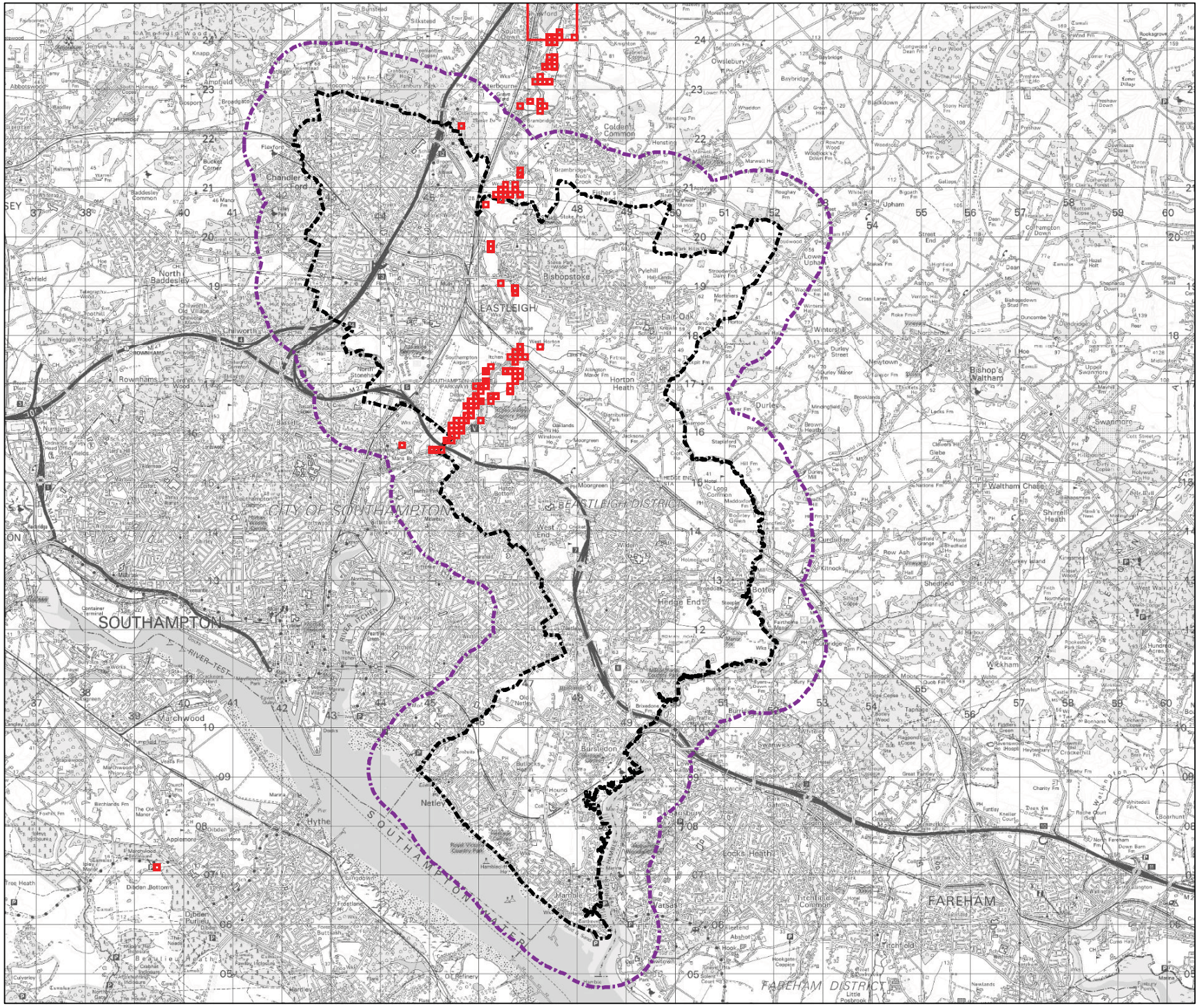
Grid Ref.	Grid Ref blurred.	Location	Date	Recorder	Provenance	Quantity
		Meadows				
SU460169		Lower Itchen Water Meadows	05/06/2005	A. Welstead		Present
SU460169		Lower Itchen Water Meadows	16/06/2005	M. Drake		Present
SU4617		Lower Itchen Water Meadows	04/05/2005	Anon		Present
SU464190		River Itchen Near Bishopstoke	21/07/2010	David Hubble	Not recorded	1
SU468175		West Horton	25/06/2001	Dave Thompson		1
SU468176		West Horton	25/06/2001	Dave Thompson		1
SU468176		West Horton	25/06/2001	Dave Thompson		4
SU468176		West Horton	26/06/2001	Dave Thompson		1
SU468176		West Horton	26/06/2001	Dave Thompson		2
SU468176		West Horton	26/06/2001	Dave Thompson		4
SU468176		West Horton	27/06/2001	Dave Thompson		1
SU468176		West Horton	27/06/2001	Dave Thompson		3
SU468177		West Horton	26/06/2001	Dave Thompson		1
SU468177		West Horton	26/06/2001	Dave Thompson		2
SU468177		West Horton	27/06/2001	Dave Thompson		1
SU468176		WEST HORTON 1	15/04/2002	Anon		2
SU46811765		West Horton 1	15/04/2002	Unknown	Not recorded	2
SU469175		WEST HORTON 3	15/04/2002	Anon		1
SU46991758		West Horton 3	15/04/2002	Unknown	Not recorded	1

Further notes

- The location names, where shown, are the originals given by the recorders and may not match any formal name for the location or other colloquial names by which the location may also be known.
- The grid references, where shown, are the originals given by the recorders and may indicate the specific location of the species, a central grid reference representing a larger survey area, or a grid square.
- Where species have been deemed as 'sensitive' by the relevant specialist species recording group the location name will not be shown and the grid reference may have been altered to give a less precise position specified by the species recording group. Where grid references have been changed, the 'Grid Ref Blurred' column will contain a 'yes'.
- Many of the records have been supplied by specialist species recording groups. Whilst every reasonable effort is made to validate information supplied to the Hampshire Biodiversity Information Centre the accuracy or comprehensiveness of this information cannot be guaranteed.
- Records do not necessarily represent evidence of breeding at a site; please contact HBIC if further details are required for any of these records.
- Whilst a species may have been recorded at a site, this does not indicate that the species is still present. Equally, the absence of a species from a site does not signify that it is absent, only that it has not been recorded, that the site has not been surveyed for this species, or that HBIC has not been informed of its presence.
- Negative quantities correspond to the DAFOR scale (plus very rare and 'locally' criteria) as follows:
    - -1 = Dominant (DAFOR)
    - -2 = Abundant (DAFOR)
    - -3 = Frequent (DAFOR)
    - -4 = Occasional (DAFOR)
    - -5 = Rare (DAFOR)
    - -6 = Very Rare
    - -21 = Locally Dominant
    - -22 = Locally Abundant
    - -23 = Locally Frequent
- Negative records are not included in species lists.

Appendix 5:

Distribution of southern damselfly records returned from an HBIC data search within 1km of the Eastleigh Borough boundary



Hbic

Hampshire Biodiversity Information Centre

HBIC Ref: 6841

A Map showing the distribution of Southern Damselfly records with a 6 figure grid refernce or better:

Legend

- 1km Search Area
- Eastleigh Borough
- Southern Damselfly Records

N

Created: 06/04/2017
Scale at A3: 1:75,000

0 400 800 1,600 2,400 3,200 Meters