
City of York Local Plan Examination

Hearing Statement on behalf of Defence Infrastructure Organisation (PM SID 345)

Matter 1: Legal Compliance

November 2019

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Summary and Overview

This Hearing Statement addresses MIQs 1.10 and 1.11, relating to Habitats Regulation Assessment. DIO's interest in that question relates solely to sites ST35 and H59. The issue is whether the allocation of these sites is consistent with the Habitats Regulations given the possible impacts on Strensall Common. DIO maintains that the site allocations are legally compliant, essentially because a wide range of mitigation strategies are available which, taken as a package, give the necessary certainty that adverse impacts would not arise from the development.

There is no clear evidence that, even without mitigation, adverse effects will be caused by an increase in the recreational use of the Common. The Common is already well used but its special ecological features remain unharmed. There has been no evidence produced through the Plan-making process, or otherwise, which indicates that building houses in and around York, and within / adjacent to Strensall, will impact adversely on the Common. All we know is there is a risk that increased use, absent mitigation, might give rise to adverse effects. So the issue is whether the available mitigation measures are capable of addressing that risk satisfactorily.

It is important to focus on the correct legal question at the plan-making stage. That is addressed at paragraphs 4.10 to 4.14 of DIO's July 2019 Representations. The overall question is whether the authority is satisfied that the project in question is *capable* of being carried out without any adverse impacts on the integrity of the Common. "Absolute certainty" is not required. More importantly, the detail of what mitigation will in fact be needed can be addressed as the specifics of the project emerge.

The critical overriding point is that, whereas there is some uncertainty about whether any adverse impacts would arise from the development of Sites ST35 and H59, it is clear that there are a wide range of strategies that are available to mitigate any such adverse impacts as might occur. CYC's 2019 HRA does not properly address the full range of these strategies and fails to reach a proper conclusion as to effectiveness even in relation to those strategies which it does address. It is clear from the material available to the Inspectors that the available mitigation strategies are more than adequate to address the impacts which may arise.

Other Legal Requirements

1.10 Has the Habitats Regulations Assessment (HRA) [CD012] and its Update [EX/CYC/14c] been undertaken in accordance with the Regulations? Has Natural England confirmed that the information set out in the HRA and the Updated HRA is sufficient and that the conclusions drawn are supported? Specifically;

a) Have mitigation measures been taken into account at the Screening stage (Stage 1)? If so, why?

Mitigation measures have not been taken into account at the Screening Stage (for either HRA). Mitigation measures have only been taken into account at Appropriate Assessment stage, in accordance with relevant case law.

b) Have all mitigation measures been considered as part of Appropriate Assessment (Stage 2)?

Neither CD012 nor EX/CYC/14c took account, as part of their Appropriate Assessments, of the full range of mitigation measures that are available in connection with the development of Sites ST35 and H59 and as a consequence of DIO owning the Common. However, DIO was satisfied that CD012 had identified sufficient mitigation measures and reached a sound and legally compliant conclusion, whereas the Assessment in EX/CYC/14c is inadequate and unsound.

We have three principal concerns about the way in which mitigation measures are dealt with in EX/CYC/14c. These are:

- a) it only has regard to some of the mitigation measures identified in the Footprint Ecology Report (Annex D to EX/CYC/14c); it does not have regard to the full range of mitigation measures that are available (see DIO Mitigation Measures Report at **Appendix 1** to this Statement and the answer to MIQ 1.11 below);
- b) it reaches conclusions on the likely efficacy of the mitigation measures identified by Footprint without having any evidence to support such conclusions (Footprint, for example, has not said that the mitigation measures that it has identified will not be effective (see below)) and in the face of evidence from other studies, SACs, SPAs and RAMSAR sites that indicate that measures of the types proposed at Strensall are perfectly appropriate and adequate; and
- c) it has failed to consider the effectiveness of the package of mitigation measures taken as a whole; it only considers their likely efficacy on an individual, measure by measure basis. In the light of the fact that DIO has the ability to deploy a complete and full package of mitigation measures, this presents a distorted or incomplete picture of what can be achieved.

c) Have any 'in combination' effects been taken into consideration?

As indicated above, EX/CYC/14c does not adequately examine the likely efficacy of mitigation measures deployed in combination.

The HRAs have not examined or assessed the 'in combination' effects of proposed development allocations. All proposed development allocations besides those promoted in respect of Sites ST35 and H59 were screened out prior to appropriate assessment. This is in spite of:

- a) the Footprint study (and now that carried out by PCP (see **Appendix F to Appendix 2** of this Statement), indicating that a significant percentage of existing users of the Common live beyond Strensall, particularly in other settlements and parts of York to the south and south west (the Footprint study indicates that 50% of visitors live beyond Strensall, the PCP study says just over 50%); and
- b) the Footprint study estimating by how much the use of the Common will increase if all of CYCs proposed housing allocations are developed and it concluding that levels of use could increase by 24%. Of this, Footprint estimates that 18% would derive from ST35 and H59 and the remaining 6% from other sites (Sites ST8, ST9 and ST14 in particular). Applying the same method of analysis to the PCP data suggests a similar level of increase overall (23.6%) but a different split between visitor origins (14% deriving from ST35/H59 and 9.6% from other sites).

Whilst we do not regard Footprint's forecasts as reliable (it is not necessarily the case that patterns of future use will be exactly as they are now), the studies do show that the Common is being used by a substantial number

of people that live in settlements other than Strensall and, if Footprint is right about future patterns of use, the evidence shows that the development of sites other than ST35 and H59 will have a material impact on the use of the Common. For the authors of the HRA to have screened out the likely effects deriving from a 6% increase in the level of use of the Common is wholly inappropriate.

In addition, there are no mitigation measures specified for Strensall Common anywhere in the Local Plan save within Policy SS19. There are, for example, no such provisions within the Policies for Sites ST8, ST9 or ST14 and there is no standalone Policy for the Common which specifies how it is to be protected against the risks presented by increased recreational use. Of course, if ST35 and H59 are removed from the Plan, Policy SS19 and the mitigation measures specified within it will be removed also, leaving the Common exposed to the unmitigated effects of these other projects. So far as we can tell, the HRAs have given this no consideration at all.

The mitigation measures which DIO has identified, and as required by Policy SS19 can only be secured by the retention of Policy SS19. Once "in combination" effects are considered, therefore, the benefits of retention of SS19 to the Common extend beyond the impact of this specific development, providing for a betterment of the current situation and ensuring appropriate management of new / additional users generated by other allocations in the Plan.

d) Have any other possible mitigation measures been considered?

It would appear that CD012 is based upon the mitigation measures specified in the submitted Plan version of Policy SS19 and that EX/CYC/14c is based only on some of the mitigation measures referred to in the Footprint Report.

1.11 With regard to the impact on Sites ST35 and H59, as a result of the Updated HRA [EX/CYC/14c]:

a) What mitigation measures for those sites were initially considered to be acceptable?

Details of the mitigation measures that were initially considered to be acceptable are embedded in Policy SS19 of the submitted Plan (as amended by CD003).

b) Why are these mitigation measures relating to those sites no longer considered acceptable?

It is unclear to DIO why these mitigation measures are no longer considered to be acceptable. DIO suggests that the lack of clarity is the result of a failure by CYC and NE to properly consider, and evidence its consideration of whether the mitigation measures available in this instance are adequate to avoid adverse impacts on Strensall Common. Further, DIO considers that when that exercise is properly undertaken, the Inspectors can be satisfied that the mitigation measures are sufficient to provide the necessary level of confidence that adverse impacts will indeed be avoided.

The change in CYC's approach appears to stem from post-submission concerns raised by Natural England ("NE") (see EX/CYC/1). These led to CYC commissioning a study and survey of the Common by Footprint Ecology. Its report was published in February 2019. In it, Footprint:

- a) described the 'possible impacts of recreation' on Strensall Common and examined whether there is specific evidence of such impacts on the Common itself. The information that it presented on 'possible

impacts' was lifted from a literature review, including evidence gathered in respect of other protected sites. The impacts referenced by Footprint are: trampling; fire; disturbance to grazing livestock; nutrient enrichment from dog fouling; contamination of ponds; contamination from fly tipping / littering; and damage to infrastructure. Footprint found: no evidence of issues arising from trampling (indeed it highlighted the benefits of moderate amounts of trampling in some areas; evidence on one incidence of fire but provided no information on the date or cause of this and did not identify any ecological threats or issues as a consequence of it; some evidence (albeit anecdotal and not documented) of livestock worrying but, again, no evidence if this impacting on the integrity of the SAC; no evidence of pond contamination; some limited evidence of fly tipping and littering in the vicinity of the car parks but noted that this is not a significant problem; and some evidence of graffiti and damage to signs which although not fundamental to the SAC, Footprint believes may convey the wrong impression to visitors and result in them taking less care than they would otherwise. Footprint did not identify any evidence of recreational use impacting on the integrity of the SAC;

- b) suggested that given the scale of development contemplated in the Local Plan, without mitigation an adverse effect on the integrity of the Common could not be ruled out; and
- c) went on to describe 'possible approaches to mitigation', including by reference to experience gained from protected sites elsewhere. The mitigation measures specified in the Footprint Report are: alternative green space; channelling visitors into the Common via the main access points (by installing robust boundary treatments to ST35/H59), the effect of which will be to enable the effective implementation of other measures that will help absorb the additional recreational pressure and help to resolve current issues; wardening; grazing; provision of a website or facebook page to communicate grazing information (stock locations); reducing drainage (re-wetting) and the associated provision of additional boardwalks; improved signage; the provision of low fencing around certain ponds; and monitoring;

The Footprint Report does not contain an analysis of the actual or likely efficacy of the mitigation measures that it describes. Critically, it does not say that the various mitigation measures it refers to, whether taken in isolation or in combination, will not be effective. It simply concludes by stating that, at plan-level HRA, it will be necessary to have confidence that the measures it referred to are feasible and achievable. As we have made clear, all of the measures referred to by Footprint, as well as additional measures identified by DIO, are feasible and achievable and so should be regarded as acceptable / sufficient for HRA purposes.

CYC cannot therefore point to the Footprint Report to explain why mitigation measures are no longer considered adequate.

At no point between receipt of the Footprint Report and publication of the 2019 HRA was DIO asked for its opinion on the findings of the Footprint work or for its opinion on the number and type of mitigation measures that could reasonably be deployed in respect of the Common. This we find extraordinary, given that QEB and the Common is owned, and the use of it is controlled, by the Secretary of State for Defence.

Notwithstanding the above, in February 2019, CYC published EX/CYC/14c. As indicated earlier in this Statement, this does not contain any form of evidence based analysis of the likely efficacy of the mitigation measures referred to by Footprint (or any other measures) yet concludes as follows: "*given the doubts*

surrounding the effectiveness of mitigation, the only reliable mechanism to avoid an adverse effect on the integrity of the European site is to REMOVE BOTH SS19/ST35 AND H59 FROM THE PLAN". This is totally inexplicable by reference to the available evidence, the overwhelming majority of which indicates that (i) there are a wide range of mitigation measures available in this instance; (ii) these are the same as or similar to mitigation measures used in respect of SACs, SPAs and other protected sites elsewhere in the UK (including sites that receive significantly more visitors than the Common); and (iii) all of the measures described are feasible and achievable.

We note that NE has endorsed EX/CYC/14c and CYC's proposal to remove ST35 and H59 from the Plan and has done so because it too is asserting that adverse effects cannot be ruled out. The position being taken by NE cannot be reconciled with (i) the Footprint work; (ii) the fact that in its own Site Improvement Plan for the Common (2014), it identified wardening as being the 'best way to tackle' irresponsible recreational use of the Common; (iii) the fact that NE has elsewhere found mitigation measures of the kinds proposed here to be perfectly acceptable; and (iv) it has raised no objection in respect of ST8, ST9, or ST14 which, based on the Footprint and PCP work would themselves give rise to a material increase in the use of the Common. As such, its approach is irrational and unreasonable.

In recent correspondence with our client, CYC (via Waterman) has indicated that evidence from the Footprint Report suggests that there is reasonable scientific doubt that mitigation measures previously considered cannot now be relied upon. As indicated above, this is plainly not the case. Footprint reached no such conclusions.

c) Have alternative mitigation measures been considered? If so, are there any that would satisfactorily address the problems identified?

In the light of the concerns expressed by CYC and NE, we have taken a detailed look at the type and number of mitigation measures that could be deployed, so as to mitigate against the adverse effects that might be caused by increased recreational use of the Common. We have done so having regard to:

- a) DIOs unique position as landowner and the work that it is already doing to safeguard and enhance the Common's ecological assets;
- b) relevant statutory provisions, as regards HRA and plan-making;
- c) mitigation measures being used elsewhere to protect SACs, SPAs and other designated assets;
- d) the results of the Footprint and PCP studies.

The results of this assessment, our Mitigation Measures Report, was submitted to CYC (and the Inspectors) on 7 November 2019, but is appended to this Statement for completeness. The mitigation measures described in the attached report expand on those listed in Policy SS19 and described by Footprint and are as follows:

- a) **Enhanced signage/information:** an assessment of existing signage and visitor information, identification of gaps / issues / opportunities for delivering improvements, and the design / implementation of a scheme of enhanced provision. Amongst other things, the assessment will determine whether it might be possible to provide live information on the location of grazing animals to assist dog owners (e.g website / facebook page referred to by Footprint);

- b) **provision of additional car park barriers:** the carrying out of an assessment of the existing car park barriers with a view to determining whether these need improving or adding; the undertaking of a review of when they are used and whether they should be used more regularly or over extended periods to deter / prevent inappropriate behaviour; and the implementation of any works that the assessment and review recommends;
- c) **wardening:** the Warden would: act as information / education provider; act as law enforcement agent and encourage desired behaviours; be responsible for general maintenance and upkeep: liaise with key stakeholders; and monitor and report;
- d) **managed access:** the creation within the Common of grazing zones defined by appropriately designed but dog proof fences and information provided to visitors at any given point of the zones that are being grazed and must therefore be avoided;
- e) **information packs for new residents:** each new home constructed at QEB (and on others sites as to be specified in the Local Plan) would be provided with a pack of information on the Common which describes: its ownership and use by the MoD as a military training facility, its special ecological qualities and how these are safeguarded; how it should and should not be used; the existence of the above mentioned Act and Bylaws; the role of the Wardens; the importance of adhering to the rules in respect of entry during live firing events; the grazing regime and the operation of the above mentioned zoning (if that is pursued); and details of other open spaces available nearby;
- f) **public open space within QEB:** there is an opportunity within the main QEB site to provide an extensive area of open space. If 500 dwellings were to be delivered on Site ST35, we estimate that some 15ha of open space could be provided alongside the housing, including a single block of about 7ha in the eastern half of the site in accordance with Policy GI6. This extensive area would be larger than the 1ha minimum for effective SANGs referred to in the New Forest SPD and would provide attractive and convenient areas for dog walking. Importantly, dogs could be walked off their leads on-site with no fear of there being a risk of livestock worrying;
- g) **residential layout and boundary treatment:** to discourage casual use of the Common (and encourage the use of the on-site open space) CYC could require that any housing development promoted on the QEB sites is designed so as to secure the north, eastern and southern boundaries of the site (for example by backing housing on to these boundaries, providing appropriate but secure fencing and having the warden monitor the condition of this, and not providing links from the development into the Common);
- h) **additional fencing:** the carrying out of an assessment of the condition of existing fencing along existing routes into the Common and the replacement / reinforcement of this in appropriate locations to discourage indiscriminate access and encourage visitors to access the Common via points containing signage / information; and
- i) **making of new byelaws (if required):** the Secretary of State for Defence has bye-law making powers under the Strensall Common Act. If improved monitoring and recording (e.g. by the Warden) indicates that, in spite of (a) – (h) above, inappropriate behaviours occur, the Secretary of State would make new byelaws thereby introducing additional controls. These could include, for example, rules that make it an offence to allow dogs off leads, either across the Common as a whole or in certain parts of it;

- j) **Alternative green space (AGS):** In addition, the Secretary of State is in the process of considering whether, in the event that monitoring indicates that inappropriate behaviours are occurring in spite of (a) – (i), he could make land available for the creation of alternative green space (AGS). The Secretary of State owns large tracts of land adjacent to QEB, but which lies outside the SSSI/SAC, and it may be that a part or parts of this could be made available if required.

In addition to the above, DIO could happily deliver the reduced drainage and pond fencing referred to by Footprint.

All of the above measures (save AGS which DIO will comment on further at the Hearing Sessions) are feasible and achievable.

In the light of the mitigation measures that DIO has identified as deliverable, DIO (via Wood) has produced a shadow HRA which examines the likely effects of increases in the recreational use of the Common. This is attached at **Appendix 2**. This concludes that, with mitigation, the development of Sites ST35 and H59, either alone or together with other development provided for in the Local Plan, would not result in adverse effects in respect of air quality, hydrology or adverse effects deriving from increased recreational use.

Appendix I

Mitigation Measures Report



Queen Elizabeth Barracks, Strensall, York
Strensall Common Special Area of Conservation
Report on Mitigation Measures for the City of York
Local Plan

November 2019

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Appendices

- Appendix I Site Location Plan
- Appendix II Opinion of James Maurici QC

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For and on behalf of GVA Grimley Limited t/a Avison Young

1. Introduction

Background

- 1.1 As the City of York Council ("CYC") is aware, Defence Infrastructure Organisation ("DIO") is part of the Ministry of Defence ("MoD"). It plays a vital role in supporting the armed forces by building, maintaining and servicing the infrastructure needed to support defence.
- 1.2 In November 2016, DIO announced its intention to vacate and dispose of three MoD sites in York: Queen Elizabeth Barracks (QEB), Towthorpe Lines and Imphal Barracks. In February of this year, it was confirmed that QEB will be vacated by 2024. A site location plan of QEB is provided at Appendix 1.
- 1.3 Since 2016, DIO has been promoting all three of its York sites for allocation for development in the emerging City of York Local Plan. DIO is committed to facilitating the redevelopment of these sites and its ambitions are fully aligned with Government objectives to make the best use of surplus public sector land and significantly boost the supply of new housing.
- 1.4 Shortly after the 2016 announcement, DIO opened a dialogue with CYC on the suitability and availability of its York assets and this was followed, during 2017 and into 2018 by numerous technical submissions and representations which dealt with the deliverability of housing (and employment development in the case of Towthorpe Lines) and site capacity. All three sites were tested for suitability by CYC, including through Sustainability Appraisal and Habitats Regulations Assessment ("HRA"). Ultimately, CYC was satisfied that all three sites represented suitable, sustainable and deliverable propositions and all three were allocated for development in the Local Plan submitted for examination in May 2018.
- 1.5 Post-submission, Natural England ("NE") raised concerns about the impact that new housing at QEB might have on the adjacent Strensall Common SAC. In response, CYC commissioned a survey that was intended to (i) provide it with a better understanding of how the Common is used and (ii) quantify the threat or risk posed to the Special Area of Conservation ("SAC") by additional housing proposed nearby. On receipt of the results of the survey, CYC commissioned a review of its HRA and the revised HRA concluded that CYC could not rule out the possibility of a development at QEB having an adverse effect on the integrity of the SAC. CYC subsequently resolved to promote a Modification to the Local Plan which, if agreed and endorsed by the Local Plan Inspectors, will result in the QEB allocations (SS19/ST35 and H59) being omitted and these sites being washed over by Green Belt.
- 1.6 On 7 May 2019, the Inspectors appointed to examine the York Local Plan wrote to CYC recommending further consultation on new evidence produced by CYC and its Proposed Modifications. The Inspector's also recommended that CYC consult directly with the MoD and NE with regard to particular matters concerning Sites ST35 and H59 and the updated HRA.
- 1.7 CYC consulted on the matters noted by the Inspectors between 10 June 2019 and 22 July 2019. DIO made representations to CYC in response on 22 July 2019.
- 1.8 DIO's representations contained detailed analysis of:

- a) CYCs assessment of the City's housing need – DIOs analysis indicates that the FOAN for housing specified in both the Publication Plan and CYCs Proposed Modifications (PM3, PM4, PM5, PM20, PM21, PM22)) are flawed and that the correct FOAN for housing is at least 997dpa;
 - b) the approach that CYC has taken to fixing its Green Belt boundary for the first time – DIOs analysis reveals fundamental shortcomings in CYCs assessment, particularly in the vicinity of QEB and Imphal Barracks;
 - c) CYCs assessment of the QEB allocations and the effect that the development of these sites would have on the integrity of the SAC – DIO is confident that it can put in place a range of measures that will not only mitigate any adverse effects that might be caused by the development of the QEB sites but will also result in current visitors being better managed, thus delivering a significant net gain in ecological terms. DIO concludes that it is not necessary for the PMs to be made in order to render the Plan sound. Insofar as QEB is concerned, the Plan was sound as submitted.
- 1.9 On 11 July 2019, DIO met with CYC, NE and Footprint Ecology to discuss their respective concerns about the QEB sites, and ways and means of mitigating potential adverse effects. During the course of that meeting, DIO offered to provide a more detailed description of the various mitigation measures that could be deployed in respect of the Common and this Report is the result. It has been prepared by Avison Young with the assistance of Wood and DIO and its purpose is (i) to review the key elements of CYCs evidence base so as to ensure that any mitigation measures promoted in this instance are designed to address the critical issues; (ii) to provide a brief commentary on the types of mitigation measures that are being deployed elsewhere in respect of SACs and SPAs, to highlight for the Local Plan Inspectors the types of measures and approaches that have been agreed / accepted as sound through other Local Plan processes; and (iii) to assist CYC, NE and the Local Plan Inspectors by describing a tailored package of mitigation measures that could be utilised in respect of the Common, thus ensuring that its integrity is safeguarded.

2. Legal Context

2.1 S. 20(2) of the Planning and Compulsory Purchase Act 2004 provides that an authority must not submit a draft plan for examination "unless (a) they have complied with any relevant requirements contained in regulations under this Part, and (b) they think the document is ready for independent examination". The York Local Plan was submitted for independent examination on 28 May 2018. Before being submitted, it was subjected to a HRA including an Appropriate Assessment. This focussed on a relatively small number of policies but included the proposed allocations at QEB (ST35 and H59). The Assessment concluded that the proposed allocations will have no adverse effect on the SAC, either in terms of the aquatic environment, recreational pressure, or air pollution. This, amongst other things, enabled CYC to conclude that the Local Plan was sound when it was submitted in accordance with s20(2) of the 2004 Act.

2.2 In April and June 2018, Natural England ("NE") wrote to CYC setting out concerns it had about the QEB proposals and, more specifically, concerns about the evidence CYC had relied upon when reaching the conclusions that it had in its HRA. This prompted CYC to commission a visitor survey of Strensall Common which was carried out by Footprint Ecology ("Footprint"). Footprint reached two pertinent conclusions. The first was as follows:

Given the scale of increase in access predicted from the visitor surveys, the proximity of new development and concerns relating to current impacts from recreation, adverse [sic] integrity on the SAC cannot be ruled out as a result of the quantum of development proposed. In addition, for individual allocations that are adjacent to the site it will be difficult to rule out adverse effects on integrity. Potential approaches to mitigation are considered below.

2.3 It then went on to provide a relatively cursory overview of a number of different mitigation measures that could be deployed at Strensall Common and then concluded as follows:

At plan-level HRA it will be necessary to have confidence that the above mitigation measures are feasible and achievable in order to rule out adverse effects on integrity on Strensall Common SAC as a result of recreation.

2.4 Footprint offered no concluding comment on whether the mitigation measures that it referenced in its Report are feasible and achievable and, as we note below, it made no attempt to determine which mitigation measures DIO could implement. We can find no other evidence of CYC having examined the various mitigation measures that might be available in this instance or any acknowledgement of the unique ability that DIO has to design and implement mitigation measures as owner of both the Common and adjacent land that it may be possible to use as alternative greenspace ("AGS" see below). As explained to CYC and NE during the meeting on 11 July, this land owning position combined with the statutory powers that the Secretary of State for Defence has, affords DIO the ability to do many things that an ordinary landowner or developer could not, including imposing additional controls over the use of the Common through new Bylaws.

2.5 In the light of the Footprint work, CYC commissioned a review of its HRA. An updated version of this was published in February 2019 and whilst it maintained that development at QEB would have no effect on the SACs aquatic environment or air pollution, it also stated that: "given the doubts surrounding the effectiveness

of mitigation, the only reliable mechanism to avoid an adverse effect on the integrity of the European site is to REMOVE BOTH SS19/ST35 AND H59 FROM THE PLAN".

2.6 DIO acknowledges the need for Appropriate Assessment under the Habitats Regulations and it is fully cognisant of the case-law that has shaped the way in which HRAs should now be undertaken (see below). It is also familiar with the Government's policies on conserving the natural environment as set out within paragraphs 109 – 125 of the National Planning Policy Framework (NPPF). It notes, in particular, its policies on encouraging the effective use of land by re-using land that has been previously developed land (paragraph 112), and conserving and enhancing biodiversity, which although intended to be applied in the planning application context speaks clearly of the role that can be played by appropriate mitigation measures (paragraph 118). It is mitigation that has been misunderstood and incorrectly assessed in this instance.

2.7 There are two points that need to be made here in terms of the law:

2.8 First, as was explained by the Court of Appeal on *R. (Mynnyd y Gwynt Ltd) v Secretary of State for Business Energy and Industrial Strategy* [2018] P.T.S.R. 1274 at para. 8:

*(5) Following assessment, the project in question may only be approved if the authority is convinced that it will not adversely affect the integrity of the site concerned. Where doubt remains, authorisation will have to be refused: see **Waddenzee**, at paras 56-57.*

*(6) Absolute certainty is not required. If no certainty can be established, having exhausted all scientific means and sources it will be necessary to work with probabilities and estimates, which must be identified and reasoned: see **Waddenzee**, points 107 and 97 of the Advocate General's opinion, endorsed in **Champion's case**, at para 41 and by Sales LJ in *Smyth v Secretary of State for Communities and Local Government* [2015] PTSR 1417, para 78.*

*(7) The decision-maker must consider secured mitigation and evidence about its effectiveness: **European Commission v Federal Republic of Germany** (Case C-142/16) EU:C:2017:301, para 38.*

2.9 DIO would draw particular attention to the fact that it is essential to consider the available evidence relating to the effectiveness of mitigation and that absolute certainty as to lack of effects is not the legal test. In any event, there are numerous examples around the UK of mitigation measures being deployed to control or prevent recreational impacts.

2.10 Second, the level of assessment required at the plan making stage is of course less than would be required for a planning application. Thus it was said by the Advocate-General in Case C-6/04 **Commission v UK** at para. 49 that "... an assessment of the implications of the preceding plans cannot take account of all the effects of a measure. Many details are regularly not settled until the time of the final permission. It would also hardly be proper to require a greater level of detail in preceding plans or the abolition of multi-stage planning and approval procedures so that the assessment of implications can be concentrated on one point in the procedure. Rather, adverse effects on areas of conservation must be assessed at every relevant stage of the procedure to the extent possible on the basis of the precision of the plan. This assessment is to be updated with increasing specificity in subsequent stages of the procedure."

2.11 So, critically, the level of assessment required at the Local Plan making stage is less than that required at a planning application stage. The HRA process to inform the Local Plan should be alive to this and the fact

that, at the Local Plan stage it is necessary only for the Secretary of State (through his Inspectors) to be satisfied that, in principle, an effective package of mitigation measures can be designed and implemented. Plainly, this has implications for the extent to which mitigation measures need to be explored, defined and tested at the Local Plan Examination stage and we are satisfied that this Report, combined with the Representations already made, provides ample information and assurances.

3. Strensall Common SAC – Qualify Features and Issues

- 3.1 The Strensall Common SAC was designated on 1 April 2005. The designated area extends to 569ha and lies between Flaxton Road / Loords Moor Road, York Lane, the A64 and Towthorpe Moor Lane, about 8KM to the north east of the centre of York. The information below has been lifted from NE documents.¹²

Qualifying Features

- 3.2 The SAC is divided into two large shallow depressions by a narrow strip where freely-draining sandy ridges cross from north-west to south-east. There are dry sandy ridges elsewhere. The common has four large, shallow ponds and many smaller ponds. As a result of this topography the site supports a complex mosaic of wet heaths and dry heath vegetation communities. It is the heaths that are the SACs qualifying features. The SAC does not hold any qualifying species.

European Dry Heaths

- 3.3 European dry heaths typically occur on freely-draining, acidic to circumneutral soils with a generally low nutrient content. Ericaceous dwarf-shrubs dominate the vegetation. On Strensall this type of vegetation is characterised by the H9a *Calluna vulgaris* (heather) - *Deschampsia flexuosa* (wavy hair grass) *Hypnum cupressiforme* (Hypnum moss) sub community with the H9e *Calluna vulgaris* (heather) - *Deschampsia flexuosa* (wavy hair grass) *Molinia caerulea* (purple moor-grass) sub-community where ground conditions are slightly wetter. U4e dry acidic grassland is also present in small patches and in a larger stand in the west of the common. These grassland communities form a mosaic with more typical heathland vegetation communities.
- 3.4 *Petty whin Genista angelica* is found within the H9 *Calluna vulgaris* - *Deschampsia flexuosa* community albeit a low frequencies and there are historic records of bird's-foot *Ornithopus perpusillus* (the most recent records being from the 1990s).

North Atlantic Wet Heaths with *Erica tetralix*

- 3.5 Wet heath usually occurs on acidic, nutrient-poor substrates, such as shallow peats or sandy soils with impeded drainage. The vegetation is typically dominated by mixtures of cross-leaved heath *Erica tetralix*, heather *Calluna vulgaris*, grasses, sedges and Sphagnum bog-mosses. At Strensall Common wet heath is well represented by extensive areas of M16 *Erica tetralix* - *Sphagnum compactum* wet heath. Although not normally considered a component community of the Northern Atlantic wet heaths with *Erica tetralix*; Wet heathland with cross-leaved heath Annex 1 feature, the M25a (*Molinia caerulea*-*Potentilla erecta* mire, *Erica tetralix* sub-community vegetation community forms an intimate mosaic with M16a. In some areas it has a high frequency of dwarf shrub species and shows close affinities to true wet heath.
- 3.6 The wet heath is noted for a number of locally uncommon plants including marsh gentian *Gentiana pneumonanthe*, and Cranberry *Vaccinium oxycoccus*. There are also historical records for bog rosemary *Andromeda polifolia*.

¹ European Site Conservation Objectives: Supplementary Advice on Conserving and Restoring Site Features: Strensall Common SAC (March 2019)

² Improvement Programme for England's Natura 2000 Sites: Site Improvement Plan, Strensall Common (December 2014)

NE Site Improvement Plan

- 3.7 NE's site Improvement Plan, issued in December 2014, identified three issues affecting the SAC, specified measures to address these and listed the delivery bodies whose involvement would be required to implement the measures described.
- 3.8 The issues identified by NE were: public access and disturbance, inappropriate scrub control and air pollution. All three were considered to be affecting both the wet and the dry heaths.
- 3.9 The mitigation measures listed by NE were: wardening (which it described as the best way to tackle irresponsible recreational use); on-going scrub clearance through the agri-environment scheme; and the production of a site nitrogen action plan. In addition to NE itself, the bodies listed as needing to be involved in the implementation of the measures described were: Yorkshire Wildlife Trust, DIO and Agreement holders.
- 3.10 The Plan went on to specify a number of sub-actions and provided cost estimates for each. These included: appointment of a range warden (£30,000); access strategy (£15,000); signage, education and awareness (£20,000); and scrub control through the Higher Level Stewardship agreement with the tenant farmer (which we return to later in this Report) (£5,000 per year).

NE Advice on Conserving and Restoring Site Features

- 3.11 The Supplementary Advice referred to at Footnote 1 above contains an extensive list of 'targets' for specific features within the SAC (e.g. maintain the total extent of the feature, maintain the distribution and configuration of the feature etc) and, alongside each, a series of detailed explanatory notes. The focus of the Advice is physical management of the heaths, rather than the management of recreational use. Nonetheless, it provides a helpfully detailed catalogue of the features on site and the actions that will need to be taken to ensure that they remain in good health.

4. Effects Requiring Mitigation at Strensall Common

- 4.1 CYC has based its assessment of the QEB allocations solely on the contents of the Footprint Report (February 2019). As will have been noted, DIO raised significant concerns about the Footprint work in its recent representations, including concerns about the robustness and representativeness of its data and how the data has been interpreted. Critically, the Footprint data does not tell us how many people are using the Common and nor does it give precise information on how it is being used. It also contains no evidence which indicates that recreational use of the Common is having an adverse effect on the integrity of the SAC. Indeed, so far as we can tell, there has been no assessment of the condition of the special features of the Common since NE surveyed it in 2011. At that point in time, NE found it to be favourable or unfavourable recovering (depending on the site unit) with no threats identified, and so not declining or obviously under threat at all. Finally, Footprint made only a partial attempt to assess or examine the types of measures that might be deployed to mitigate the effects of the recreational use of the Common and made no attempt to discuss these with DIO, in spite of the fact that it owns it.
- 4.2 The recreational effects / pressures identified in the Footprint Report are listed below, together with a brief summary of the extent to which Footprint considers they have the potential to adversely affect the integrity of the SAC:
- a) **trampling leading to vegetation wear:** Footprint noted some trampling during its surveys but concluded that this is not likely to impact on integrity of the SAC. Indeed, Footprint notes that moderate amounts of trampling may help maintain the open habitat. Footprint noted that there has been some problems with unauthorised access by motor bikes in the past and that if this were to recur it may cause wear and damage;
 - b) **increased risk of fire:** Footprint states that it found evidence of a fire in the northern (central) part of the Common, in an area of even-aged sward. The Footprint Report does not record the extent or effect of the fire but notes that the Dark Bordered Beauty Moth is potentially vulnerable to fire due to its distribution over a number of small hotspots. However, the Moth is not a qualifying feature of the SAC and, for HRA purposes, is not a relevant consideration. DIO also understands that NE has previously approved a burning plan promoted by the tenant farmer although this has since expired;
 - c) **disturbance to grazing livestock:** Footprint notes that grazing is an essential part to the on-going ecological management of the Common and refers, in its Report, to assertions made by the tenant farmer about incidents of livestock worrying by dogs off leads. The Report states that the Farmer has encountered such issues in most years and that the number of visitors and uncontrolled dogs have caused problems for stock management. Unfortunately, and unhelpfully, the Farmer has not catalogued these incidents or reported them to the Police, CYC or DIO. As a consequence, there is no formal record or evidence the scale of the issue and the extent to which it has impacted, or has the potential to impact, on the integrity of the SAC. We understand that there has been only one instance of sheep worrying this year [2019] and this was in a field beyond the Common;
 - d) **nutrient enrichment from dog fouling:** Footprint has noted signs of nutrient enrichment in close proximity to the Galtres and Scott Moncrieff car parks, and around some of the laybys close to the more heavily

used paths in the vicinity of the car parks. It concludes that this is likely to be linked to a dog walking culture, where picking up dog faeces is not prevalent. Whilst this is a matter that DIO should and will continue to tackle as part of its stewardship / management regime, Footprint does not identify it as an issue for the integrity of the SAC;

- e) **contamination of ponds:** at the time of Footprint's surveys, most of the ponds and small water bodies within the Common were dry. However, it went on to note that many are unlikely to be attractive to dog walkers as a consequence of them being surrounded by unstable wetland vegetation. Footprint did though note a risk in respect of the pond at SE6501 5942 which is close to a main track running north / south through the southern part of the Common. Here, Footprint noted the potential for excessive use by dogs to impact adversely on the Pillwort vegetation population. However, it did not identify any evidence of excessive use and did not say that if excessive use were to be noted in the future, it could not be addressed / mitigated;
- f) **contamination from fly tipping and littering:** Footprint noted that fly tipping is not a significant issue and although, during its surveys, there was some evidence of littering, this was usually confined to the car parks. Footprint has not asserted that either fly tipping or littering is having or could have any adverse impact on the integrity of the SAC;
- g) **damage to infrastructure and vandalism:** Footprint noted some graffiti damage to signs and graffiti sprayed on trees around the Scott Moncrieff and Galtres car parks. Whilst, plainly, such incidents are undesirable and are matters that DIO will need to continue to address as landowner, they have clearly been confined to the car parks and there is no risk of them having an adverse impact on the integrity of the SAC.

4.3 Whilst we would accept that some of the issues highlighted by Footprint have the potential to impact adversely on the integrity of the SAC, the key threats appear to be: a) livestock worrying by dogs off leads and the knock on effect that this might have on the grazing regime; b) a risk of fire; and c) dog fouling and, of these, livestock worrying appears to be the primary concern or the matter posing the greatest threat. This all said, it is important to note that Footprint has neither found nor presented any evidence of these issues giving rise to adverse impacts. This is in spite of it being a well-used space that draws visitors from across York and beyond. Accordingly, we are dealing here not with an SAC that is suffering demonstrable adverse effects, but an SAC that may be at greater risk of such effects in the future, if the recreational use of it increases and / or the behaviours of the users of the common change, resulting in more livestock worrying, more fires and more dog fouling.

4.4 Whilst we do not accept that the development of QEB with housing will necessarily result in a material increase in number of undesirable incidents, we do accept that additional housing here (and elsewhere within the 7.5km isochrone referred to by Footprint) is likely to give rise to an uplift in the use of the Common for recreational purposes. We also agree, therefore, that it is necessary and appropriate to consider how such use might be controlled or the risks / threats posed by such increased use could be mitigated,

4.5 In this regard, we take considerable comfort from the fact that the risks identified by Footprint are not unique to Strensall Common. Recreational use presents the same or similar risks to SACs and SPAs all over the UK and

in other locations, schemes of mitigation have been agreed that allow recreational uses to continue (and increase), whilst safeguarding the special environments that the areas hold.

5. Mitigation Measures Used Elsewhere

5.1 Numerous sites supporting nationally and internationally important habitats and species, and designated as SACs, SPAs and Ramsar sites, are accessible to the public. The pressures associated with recreational use of accessible sites are well known and, as a consequence, there are numerous examples of where management and mitigation strategies have been designed and implemented to address harmful effects already occurring, and minimise the risks of adverse effects arising in the future. For the purposes of this Report, we have looked at how recreational pressures are being dealt with at four major protected sites in other parts of the Country where significant housing growth is planned / being delivered and is expected to give rise to increased recreational pressure. These are: Dorset Heathlands SAC/SPA, Thames Basins Heath SPA (Hants/Surrey), Cannock Chase SAC (Staffs) and New Forest (includes several SAC and SPAs in Hants and Dorset). For each, we provide below a short description of its location and its special features before summarising how these are being safeguarded through the application of planning policy and guidance.

Dorset Heathlands SAC/SPA

Location, Extent and Special Features

5.2 The Dorset Heathlands SAC/SPA is located at the western edge of the Hampshire Basin in southern England, close to the Bournemouth and Poole urban areas. The Heathlands SAC covers an extensive complex of heathland sites amounting to some 5,700ha. The SPA was classified on 1 August 1998. Its special features include: Dartford Warbler, Nightjar, Woodlark, Hen Harrier, Merlin, Southern Damselfly and Great Crested Newt, wet heath, dry heath, peat, calcareous and alkaline fen meadow, Molinia grassland, old oak wood on sandy plains habitats. In addition, the SPA contains approximately 30 component SSSIs which are likely to have additional notified features.

Growth Context³

The five local planning authorities in the immediate vicinity of the Heathlands (Bournemouth, Christchurch, East Dorset, Poole and Purbeck) are planning between them to deliver some 35,000 new homes in the period to 2028⁴. The Authorities, their advisers and consultees (including Natural England) have noted that the Heathlands are under significant pressure from urban development, including pressures relating to: scrub encroachment, under-grazing, forestry and woodland management, drainage, water pollution, invasive species, habitat fragmentation, conflicting conservation objectives, air pollution (eutrophication), fire risk. Natural England has advised the authorities that development should be restricted within 400m of a designated heathland (primarily because of concerns about cat predation) and that no development should be allowed within 5KM of a designated heathland unless the effects of it are suitably mitigated. This, immediately, distinguishes the Heathlands from Strensall Common where no such advice has been given (notwithstanding Footprint's conclusions in respect of visitor isochrones), suggesting that the Common under less pressure from planned growth than the Heathlands are.

³ Source of pressures and measures information: The Dorset Heathlands Planning Framework 2015-2020, Supplementary Planning Document (January 2016), Visitor Access Patterns on Dorset Heathlands, ENRR 683 (Clarke et al, 2005), Heathland Mitigation Delivery Report April 2017-March 2018 (Urban Heaths Partnership, 2018), Analysis and Presentation of IPF

⁴ Dorset Heathland SPD identified housing numbers as follows: Bournemouth 14,600 with 6,815 remaining (2006-2026); Christchurch East Dorset 8,490 with 8,024 remaining (2013-2028); Poole 10,000 with 5,715 remaining (2006-2026); Purbeck 2,520 with 1,432 remaining (2006-2027).

Development Plan Policy

- 5.3 The adopted Local Plans for the authorities referred to above each contain policies that are designed to protect the SAC / SPA. By way of example, Policy PP32 of the Poole Local Plan⁵ (adopted November 2018) reads as follows:

Development will only be permitted where it would not lead to an adverse effect upon the integrity, either alone or in-combination, directly or indirectly, on nationally, European and internationally important sites. The Council will determine applications adversely affecting these sites in accordance with the recommendations of relevant Habitats Regulations Assessments and Supplementary Planning Documents....

To ensure that heathland sites are not harmed, residential development involving a net increase in dwellings or other uses such as tourist accommodation:

(a) will not be permitted within 400 metres of heathland as shown on the Policies Map, unless, as an exception, the type and occupier of residential development would not have an adverse effect upon the sites' integrity (e.g. nursing homes such as those limited to advanced dementia and physical nursing needs); and

(b) between 400 metres and 5 km of a heathland (everywhere else in Poole), will provide mitigation in accordance with the advice set out in the Dorset Heathlands Planning Framework SPD or appropriate to the adverse effects identified....

The Council will ensure that adequate mitigation is secured through the use of Strategic Access Management and Monitoring (SAMM) contributions and CIL/S106. Some developments will also be required to implement other mitigation measures, determined on a case by case basis. The Council will work with neighbouring Councils, statutory bodies and landowners to implement the mitigation measures and secure them in perpetuity. The mitigation strategy includes the provision of:

(a) Upton Country Park SANGs;

(b) SANGs within the concept of the Stour Valley Park, linked to housing sites UE1 North of Merley, UE2 North of Bearwood and U2 West of Bearwood; and

(c) other SANGs and Heathland Infrastructure Projects (HIPs) identified through updates of the Heathlands Planning Framework SPD.

The Council will review the Poole Local Plan by 2023. The review will need to assess whether the growth planned for 2023-2033 can be successfully mitigated. A study into the success of mitigation measures since 2007 will be a fundamental part of the evidence base. If there is no certainty that development will not have an adverse impact upon protected wildlife, the Council may not be able to grant planning permission for certain types of harmful development, such as housing.

Planning Guidance

- 5.4 The Joint Dorset Heathlands Planning Framework 2015-2020 established a charging regime in respect residential development proposed within 5km of the heathlands. In other words, it provided that the developers of such schemes would be expected to make financial contributions towards the delivery of mitigation measures, rather than carry out mitigation themselves. The financial obligation quoted in the SPD (in Appendix K) varies from £242-£355 per dwelling or £164-£241 per flat in Christchurch Borough Council (CBC)/ East Dorset District Council (EDDC) to Poole and Bournemouth respectively. These figures incorporate an upward adjustment to provide the certainty required by the Habitat Regulations and Natural England in respect of the efficacy of specified mitigation measures

⁵ Dorset Council is now the local authority for the Dorset unitary authority, created on 1 April 2019, and includes Purbeck and East Dorset.

- 5.5 Funds secured in accordance with the SPD (via Planning Agreements entered into under s106 of the Town and County Planning Act 1990) were then pooled by the authorities before being spent on Strategic Access Management and Monitoring (SAMM) and Heathland Infrastructure Projects (HIPs) which included the development of Suitable Alternative Natural Greenspaces (SANGs).
- 5.6 The Dorset Heathlands SPD has been agreed by all the local authorities in South East Dorset (i.e. Borough of Poole, Bournemouth Borough Council, Christchurch Borough Council, East Dorset District Council and Purbeck District Council). Dorset County Council is also signed up to the document in the light of its roles as delivery body.

Mitigation Measures and their Implementation

- 5.7 Mitigation measures funded on the back of new housing are implemented through the Urban Heaths Partnership (UHP). The UHP delivers mitigation on behalf of 14 partners, including NE, National Trust, Wildlife Trust, local councils, and the RSPB. Measures implemented include:
- education - including work with schools offering heathland related activities, increasing awareness of the importance of heathlands due to their wildlife and biodiversity, increased awareness of the consequences of fires and encouraging individual and community responsibility for heathland protection;
 - oversight of the Dorset Dogs Project - promoting awareness of heathland issues in respect of dogs, providing information, promoting non-sensitive sites and areas where dogs are allowed off leads and supporting land managers in providing positive access management for dog owners;
 - oversight of wardening services - overseeing those provided by local authority partners; and
 - monitoring - of recreational use of heathland sites and SANG, and of the occurrence of incidents (such as fires).
- 5.8 Additionally UHP also hosts a Grazing co-ordinator post which oversees grazing issues for the heathlands. In addition it oversees the Firewise Communities Project - a network of community groups building resilience against wildfire damage to residential properties (jointly funded, including by the Police and fire services).

Effectiveness of Mitigation Measures

- 5.9 An interim monitoring report by Footprint Ecology (Fearnley & Liley, 2011) reflected on the effectiveness of measures implemented following the introduction of the Interim Planning Framework 2006-2009. The Report states that:
- a) bird numbers have been increasing, but there have been fluctuations in recorded numbers;
 - b) studies in Dorset and across the Country show that mitigation measures should be tailored and site specific;
 - c) household survey information shows that different sites have different draws in relation to car and pedestrian borne visitors;

- d) capital projects to improve accessibility to areas of non-heathland adjacent and near to heathlands have been effective. However, it is still unclear as to whether this increased usage has diverted people from using the heaths;
- e) with no major SANGs delivered in South East Dorset it is not possible to establish how successful they will be;
- f) the management of heathland and SANGs offers the opportunity to divert harmful recreation activities from the heaths. However, monitoring has not yet been able to definitively prove that provision of SANG will necessarily intercept and deflect people who would otherwise visit the heaths. It is therefore important to continue to provide a range of mitigation measures besides SANGs;
- g) some studies of dog walkers have highlighted the benefits of and need for good communication and direct involvement with the dog walking community. Consistent signage and communication to all users is important; and
- h) mitigation measures for potentially damaging activities (e.g. dog walking, off road cycling, den building and unstructured play) need to be designed to improve site provision and make open spaces more naturalistic and multifunctional.

Thames Basins Heath SPA (Hants/Surrey)

Location, Extent and Special Features

- 5.10 The Thames Basins Heath SPA covers parts of Surrey, Hampshire and Berkshire. The designated area extends to some 8,300ha of heathland. The SPA has been designated in the light of the presence of three protected species of ground-nesting birds: the Dartford Warbler, Nightjar and Woodlark. The Heaths "complex" comprises 14 component SSSIs and includes the Thames Basin Heaths SPA, Thursley, Ash, Pirbright and Chobham SAC and Thursley, Hankley and Frensham Commons SPA.

Growth Context⁶

- 5.11 A significant number of new homes are planned to be delivered within the 11 local authority areas that fall within 5-7km of the SPA; over 11,000 dwellings proposed between 2006 and 2026 in Bracknell Forest alone. The various local planning authorities have noted recreational pressure arising from housing growth as a major concern. Particular risk and threats noted by the authorities include those relating to: under-grazing, forestry and woodland management, hydrological changes, inappropriate scrub control, invasive species, fire, air pollution (the impact of atmospheric nitrogen deposition), military use, and habitat fragmentation.

⁶ Source of pressures and measures information: A suite of relevant documents are available in respect of development and the Thames Basin Heaths SPA, for example Thames Basin Heaths SPA Supplementary Planning Document (Bracknell-Forest Council, April 2018), <https://www.surreyheath.gov.uk/residents/planning/planning-policy/thames-basin-heaths-special-protection-area-avoidance-measures>, and Thames Basin Heaths SPA Avoidance Strategy PSD, (Guildford Borough Council, 2017).

Development Plan Policy

- 5.12 An 'area wide' Policy for the protection for the SPA was first developed within the South East Plan (Policy NRM6 - Thames Basin Heaths Special Protection Area). This is still referred to in some of the older Local Plans in the area, including the Royal Borough of Windsor and Maidenhead Local Plan (June 2003). The Regional Plan provided that "*new residential development which is likely to have a significant impact on the ecological integrity of the TBH SPA will be required to demonstrate adequate measures are put in place to avoid or mitigate any potential adverse impacts.*" It then went on to establish three mitigation principles as follows:
- a) a 5km zone of influence where measures must be taken to ensure the integrity of the SPA is protected;
 - b) a 400 metre exclusion zone where mitigation measures are unlikely to be to be capable of protecting the integrity of the SPA, although the Plan went on to state that, in exceptional circumstances, it may be possible to demonstrate that mitigation measures are capable of protecting the SPA, and small locally determined zones will be set out in Local Plans, subject to agreement with NE; and
 - c) mitigation would be required to be delivered prior to occupation of proposed dwellings and in perpetuity⁷. Specific mitigation measures referred to in the Policy included a combination of access management and the provision of SANGs.
- 5.13 The more recently adopted Local Plans for the area build on the framework established by the Regional Plan and all contain policies designed to guard against adverse effects and ensure that, where necessary, mitigation is delivered⁸. Of the Policy and supporting text within these Plans, it is worth noting the following:
- a) the Rushmoor Local Plan (February 2019), at paragraph 12.3, cross refers to the TBH SPA Delivery Framework (see below) and notes the role that this has to play in encouraging "*a consistent approach to ensuring that development within the boundaries of affected local authorities would not have an adverse impact upon ground nesting birds in the SPA*". At paragraph 12.10 it states that "*large residential developments will provide bespoke mitigation that provides a combination of benefits, including SANG, biodiversity enhancement and green infrastructure improvements. Where developers propose a bespoke solution, this will be assessed on its own merits under the Habitats Regulations and will be agreed with the Council in consultation with Natural England*";
 - b) paragraph 4.41 of the Wokingham Core Strategy (January 2010) notes that "*Within 400m (linear) of the TBH SPA, the authority and Natural England do not consider it is generally possible to avoid impact from development. Therefore, no proposal for residential development will be allowed due to the risks of fires, fly-tipping, cat predation and other impacts. This view has been accepted by the Assessor who considered the validity of Natural England's evidence on the matter as part of the examination into the SEP. This approach is also consistent with the Appropriate Assessment and SEP Policy NRM6.*" The

⁷ These 'implementation' requirements are picked up in a number of local plan policies for example the Rushmoor Local Plan (February 2019) at para 12.4 "*Two forms of Mitigation SANG and SAMM are required in perpetuity and must be operational prior to first occupation of units to ensure SPA interests are not harmed.*"

⁸ Specific Local Policies for Thames Basin Heath SPA include Policy CS14 Bracknell Core Strategy DPD – Adopted February 2008; Policy CS13 in Elmbridge Core Strategy, Adopted 2011; Policy P5 in Guildford Borough Local Plan Adopted 25 April 2019; Policy NE1 in Rushmoor Local Plan, Adopted February 2019; Policy CP14B in Surrey Heath Core Strategy Adopted February 2012; Policy NE3 in Waverley Borough Local Plan Part 1, Adopted February 2018; Policy CS8 in Woking Core Strategy, Adopted November 2012; Policy CP8 of the Wokingham Borough Core Strategy, Adopted January 2010; Policy CSWB9 of the East Hampshire and South Downs Local Plan: Joint Core Strategy – Adopted June 2014.

Assessor noted at para 4.7.19 of his report that *"I conclude that the boundaries of the zones should be defined by travel distance rather than by linear distance. I find the 400 metre boundary for Zone A is robust and does not need to be modified, except to take into account any permanent barrier to the movement of cats"*⁹;

- c) Hart District Council has a Plan that is currently being examined (at Main Modifications stage). Emerging Policy NBE4 (which is not proposed to be amended) states that *"permission will not be granted for development that results in a net increase in residential units within this zone [400m] unless it can be demonstrated through an Appropriate Assessment that there will be no adverse effect on the integrity of the TBHSPA... Where further evidence demonstrates that the integrity of the TBHSPA can be protected using different linear thresholds or with alternative mitigation measures these must be agreed with the Council and Natural England."* Para 287 of the Plan states: *"It is not considered possible to mitigate impacts from the development of new homes within the exclusion zone up to 400m (linear) from the SPA due to the risks of fires, fly tipping, cat predation and other impacts. Therefore, proposals that would result in a net increase in the number of homes within the exclusion zone will not be supported. In exceptional circumstances this may vary with the provision of evidence that demonstrates that mitigation measures will be capable of protecting the integrity of the SPA. Any such proposals will be subject to Appropriate Assessment"*;
- d) The Guildford Borough Local Plan (25 April 2019) notes that 80 per cent of SPA visitors come from within 7KM of the heaths. To illustrate that mitigation measures are also required from beyond 5km we note, Policy P5 of Plan states that *"developments above 50 dwellings between 5 and 7 km of the SPA may be required to provide avoidance and mitigation measures."* also *"Where one or more adverse effects on the integrity of the SPA will arise, measures to avoid and mitigate these effects must be delivered and secured in perpetuity."* Similar policy provisions are made in the Waverley Borough Local Plan Part 1 (February 2018). That Plan goes on to state that *"On the basis of a grading, sites closest to the SAC will have greatest impact and a mitigation strategy should be tailored to address the impacts"*;
- e) the Bracknell Site Allocations Plan (July 2013) made allocations for housing which include site specific requirements for mitigation. For example, Policy SA4 stated that a particular 210 home scheme required *"in perpetuity provision of on-site bespoke SANG; financial contributions towards SAMM and any other measures to satisfy Habitat Regulations the Thames Basin Heaths SPA Avoidance and Mitigation Strategy and relevant guidance."* The supporting text to Policy CSWB4 of the East Hampshire and South Downs Local Plan: Joint Core Strategy (June 2014) makes similar provisions in respect of a 4,000 homes scheme. It states *"the proposed SANGs in the draft Masterplan can accommodate phases 1 and 2 of the proposed development.....based on locally-derived assessment criteria and the Thames Basin Heath's standard for the provision of SANGs (8 hectares per 1,000 head of population"*;

Planning Guidance

- 5.14 There have been Supplementary Planning Documents (SPDs) operating in support of the above mentioned development plan policies since 2009.¹⁰ Amongst other things, these provide details of the various mitigation

⁹ See paragraphs 4.7.19 and 10A(ii)(b) of the Assessor's Report on the Thames Basin Heaths Delivery Plan, published 19 Feb 2007. The Assessor's Report is available at https://www.lewes-eastbourne.gov.uk/_resources/assets/inline/full/0/256995.pdf.

¹⁰ Thames Basin Heaths Special Protection Area Supplementary Planning Documents - Runnymede SPG (Amended November 2009); Woking Borough Avoidance Strategy 2010-2015; Wokingham Avoidance Strategy (April 2010); Windsor and Maidenhead

measures in respect of which developer contributions will be sought and the rates at which these will be requested. The measures referenced within the documents include management and monitoring regimes and SANGs. A SANGs tariff is also included which outlines specific contributions for residential units depending on bedroom size¹¹.

- 5.15 In addition to the SPA specific SPDs, certain of the local planning authorities have introduced other forms of guidance that has the potential to limit the external effects of new housing proposals. For example, Hampshire County Council has produced guidance on "Planning for dog ownership in new developments"¹² in connection with the proposed redevelopment of the former Bordon Garrison. This notes that 27% of new home owners are likely to have a dog and to minimise the effects of dogs on the SPA it will be important to provide attractive, safe, accessible, and convenient off-lead spaces close to planned homes. The guidance includes masterplanning and landscape advice in respect of house and garden design and the provision of greenspace which not only meets SANG requirements but also delivers off-lead circular walks of around 2.7km. Greenspace design recommendations include providing a choice of open/enclosed landscapes, free draining and naturalistic paths, car parking, clear information about off-lead access and desired behaviours, separation from hazards such as roads, and seating. Management of fouling is an issue that, it states, is to be tackled through careful positioning of bins, the display of clear information about desired behaviours and ensuring there is long-term funding for bin maintenance.

Mitigation Measures and their Implementation

- 5.16 The development plans and SPDs provide a framework for securing, on the back of developments proposed within 7KM of the SPA, financial contributions (or in the case of (b) below direct provision) towards one or both of:
- a) SAMM activities, including the provision of information and education, guidance on access management, wardening and the promotion of alternative recreation sites; and
 - b) SANGs, in respect of which developers may either make a contribution towards strategic SANGs or make in-kind, bespoke provision. The policy framework provides that SANGs should be delivered at a ratio of 8ha of per 1,000 population, with SANGs of different sizes having different agreed catchments (e.g. a 2-12ha SANGs has a catchment of 2km, a 12-20ha SANGs a catchment of 4km, and SANGs over 20ha have a 5km catchment [Note: a SANG with no parking has a catchment limit of 400m]).
- 5.17 The contributions required in respect of SANGs and SAMM activities are calculated on a sliding scale based on the size of the proposed development and where it lies relative to the SPA. For SANGs, the authorities require contributions of between £3,500 and £8,000 per new dwelling and, for SAMM activities, between £400 and £1000 per dwelling. If a developer can demonstrate that the impact of his proposals can be mitigated in some other way, the framework allows for these numbers to be negotiated down or away.

(July 2010); Guildford (July 2017); Bracknell Forest (April 2018); Surrey Heath (November 2018); Rushmoor Avoidance and Mitigation Strategy (August 2019); Waverley Avoidance Strategy (November 2018).

¹¹ See Para 3.72 of the Guildford SPD (July 2017).

¹² Hants County Council (2013) Planning for dog ownership in new developments: reducing conflict – adding value. Access and greenspace design guidance for planners and developers. Guidance produced by Stephen Jenkinson, Access and Countryside Management Ltd. [documents.hants.gov.uk/ccbs/countryside/planningfordogownership.pdf – accessed April 2019]s

Cannock Chase SAC (Staffs)

Location, Extent and Special Features

The Cannock Chase SAC lies within the Cannock Chase AONB, to the south east of Stafford and to the north of Cannock. It covers approximately 1,244ha and is the most extensive designated area in the Midlands. It was designated on 1 April 2005 for its wet heath, dry heath, mire, swamp, woodland habitats and invertebrates.

Growth Context¹³

- 5.18 Some 78,000 new homes are planned to be delivered within 15km of the SAC in the period to 2026, across 10 local authority areas¹⁴. Annual visitor numbers are estimated at 1.7million, and are predicted to increase by 15% as a result of this growth. The surrounding local authorities (Stafford Borough, South Staffordshire, Lichfield, East Staffordshire and Wolverhampton City Council) have formed an SAC Partnership and have been working together for some time to understand the condition of the SAC and the effects of the recreational pressures that it faces. They have identified significant development related issues in respect of under-grazing, hydrological changes, drainage, disease, invasive species, air pollution (eutrophication) and fire. Evidence produced by Footprint to inform the preparation of the various Local Plans in the vicinity has indicated that the "in combination" impact of proposals involving a net increase of one or more dwellings within a 15KM radius of the SAC would have an adverse effect on its integrity unless avoidance and mitigation measures are deployed. This contrasts with Footprint's assessment of Strensall Common where it reached no such conclusion and has not commented at all on mitigation measures required in respect of developments beyond those at QEB. This again suggests that the Common under less pressure than other SACs are yet Cannock Chase SAC is another example where, in spite of its sensitivity to change, the surrounding local authorities have adopted mitigation over prohibition when it has come to planning for housing growth.

Development Plan Policy

- 5.19 Each of the local authorities referred to above either has adopted or emerging development plan policies that are designed to protect the SAC from adverse recreational and other effects. None imposes a ban on development as a means of safeguarding the integrity of the SAC. Instead, the authorities require the developers of housing schemes within 15KM of the SAC to make financial contributions towards the mitigation of adverse effects. By way of example, Policy CP13 of the Cannock Chase Local Plan Part 1 (adopted 2014) states that:

"Development will not be permitted where it would be likely to lead directly or indirectly to an adverse effect upon the integrity of the European Site network and the effects cannot be mitigated. To be in accordance with the Local Plan and for detailed development proposals to be permitted, the issues raised in any relevant Habitat Regulations Assessments should be taken into account by developers."

¹³ Source of pressures and measures information: Cannock Chase Visitor Impact Mitigation Strategy (Footprint Ecology, 2010), Cannock Chase SAC – Planning and Evidence Base Review (Hoskin and Liley, 2017), Site Improvement Plan Cannock Chase (Natural England, 2014).

¹⁴ See Cannock Chase SAC Visitor Survey, Footprint Ecology, 21 December 2012, see summary – Including the following Councils: Birmingham (Sutton Coldfield only), Cannock Chase, Dudley, East Staffordshire, Lichfield, Sandwell, South Staffordshire, Stafford, Wolverhampton, Walsall.

In order to retain the integrity of the Cannock Chase Special Area of Conservation (SAC) all development within Cannock Chase District that leads to a net increase in dwellings will be required to mitigate adverse effects. The on-going work by relevant partner authorities will develop a Mitigation and Implementation Strategy (SPD). This may include contributions to habitat management; access management and visitor infrastructure; publicity, education and awareness raising; provision of Suitable Alternative Natural Green Space (SANGS) within development sites where they can be accommodated and where they cannot by contributions to off-site alternative green space; and measures to encourage sustainable travel.

The effective avoidance and/or mitigation of any identified adverse effects must be demonstrated and secured prior to approval of the development. This policy has jurisdiction over developments within Cannock Chase District only; however it will be implemented jointly with neighbouring authorities via the application of complementary policies in partner Local Plans as appropriate."

- 5.20 A similar Policy (Policy NE6) is also included in the Stafford Borough Local Plan, although rather than applying to all development that would result in a net increase in dwelling numbers in the Borough, it refers to proposals within the 15KM zone specified by Footprint.

Planning Guidance

- 5.21 In 2017, the SAC Partnership agreed to publish guidance on the mitigation of the impact of new residential development on the SAC. This was issued in May of that year. The Guidance¹⁵ references the Footprint work and the 15KM zone of influence mentioned above. However, it goes on to note that financial contributions towards the mitigation of adverse effects will only be sought from developers promoting housing schemes within 8KM of the SAC. It then adds the following:

"Following the production of the Footprint Ecology evidence base, additional advice has been received from Natural England. This has directed the Cannock Chase SAC Partnership authorities to consider mitigating any likely significant effects through the provision of on-site mitigation measures, such as those set out in section 3 of this guidance note. The use of measures seeking to avoid significant effects, such as offsite Suitable Alternative Natural Greenspaces (SANGs), is not being pursued at this time. This is primarily due to uncertainties regarding their effectiveness and their relatively high cost when compared to on-site mitigation measures".

- 5.22 The Guidance also notes that:

"There is also a range of existing SAC and visitor management expenditure outside of those detailed in this guidance note, much of which seeks to manage the impacts of existing visitor pressures on the SAC. These primarily arise from Staffordshire County Council in its role as a site owner and manager and include the following measures:

- *Country Park Infrastructure and Visitor Management and Maintenance (£290,000 per year) - SAC Habitat Management (£206,400 per year)*
- *Volunteer Input to Infrastructure and Habitat Management (25,000 hours per year – equivalent to £268,000 per year)*
- *Other measures within the Cannock Chase Area of Outstanding Natural Beauty (AONB) Management Plan and Visitor Mitigation Strategy*

The mitigation measures detailed in section 3 of this guidance are directly targeted at mitigating impacts arising from new planning permissions and Local Plan policies, where these increase the number of residents within the Zone of Influence. Put simply, they take account of other measures targeted towards the management of the SAC in the absence of new development (such as those set out above) and then consider what additional measures may be required as new development comes forward within the Zone of Influence."

¹⁵ Cannock Chase Special Area of Conservation (SAC) Guidance to mitigate the impact of new residential development (January 2017).

5.23 Finally, it states that: Natural England supports the use of Guidance to Mitigate the Impact of New Residential Development.

Mitigation Measures and their Implementation

5.24 Section 3 of the above mentioned Guidance, lists a range of mitigation measures that, it states, have been costed by Natural England in collaboration with the SAC Partnership. These are as follows:

- a) Project Initiation – business plan; agreement of Partner responsibilities; recruitment of project staff;
- b) Staff – one full time project manager and one full time visitor engagement officer;
- c) Engagement of three of four key sectors – walkers and dog walkers, cyclists, and horse riders via volunteering and education programmes, and promotional and interpretation material;
- d) Strategies - an overarching strategy for visitors and nested strategies for car parking, track and footpath management and each visitor sector, plus a monitoring strategy;
- e) Physical management - improvement of paths and tracks; implementation of parking plan; way marking and on-site interpretation panels; and
- f) Monitoring.

5.25 The total cost of the above measures, over the 15 year life of the various Local Plans in the area, was calculated at £1.97m. This was then divided by the number of new homes that were expected to be built within 8KM of the SAC (8495) to arrive at a cost per dwelling to be sought via Planning Agreements. In the case of Cannock Chase District, the LPA seeks a financial contribution of £221 per new dwelling to cover the cost of SAC related mitigation.

Effectiveness of Mitigation Measures

5.26 In 2017, Footprint reported to the SAC Partnership the following advice:

- a) it is very difficult to set a precise level of mitigation necessary for a defined level of growth because of the inevitable complexity of estimating the effectiveness of measures for European site habitats that are influenced by a multitude of factors over time;
- b) notwithstanding the above, in designing an avoidance and mitigation package, it should be comprehensive enough to have confidence that they adequately meet the recreation increases predicted. That confidence comes from the following:
 - a good range of measures rather than reliance on a small number,
 - at least some of the measures that are relatively flexible in terms of how much additional access they can mitigate for,
 - having evidence of their effectiveness and suitability,

- having early warning monitoring to trigger adaptations (which themselves should be known and similarly tested),
- c) formal monitoring data are not yet available to inform a view on its SAMM effectiveness as it is in its early stages of implementation; but
- d) the SAMM appears to be fit for purpose in relation to actual housing numbers being delivered against the Local Plan.

New Forest SAC/SPA/RAMSAR

Location, Extent and Special Features

- 5.27 The New Forest SAC is situated on the south coast of England and straddles Hampshire and Wiltshire. It lies immediately north of the Solent and between the settlements of Bournemouth and Southampton. The SAC covers 28,000ha and supports an extensive and complex mosaic of habitats including wet and dry heaths and associated bogs and mires, wet and dry grasslands including Molinia meadows, ancient pasture woodlands, permanent and temporary ponds and a network of streams and rivers. The SAC was designated on 1 April 2005.
- 5.28 The features of the New Forest SPA include the Dartford warbler, honey buzzard, nightjar, woodlark, hobby and wood warbler which are all breeding, with the hen harrier in winter.
- 5.29 There are a number of other designated sites in the vicinity including: New Forest SPA / Ramsar, Solent Maritime SAC, Solent and Southampton Water SPA/Ramsar site, Southampton and Isle of Wight Lagoons SAC, River Avon SAC/ SPA, Avon Valley Ramsar site, Dorset Heaths SAC, Dorset Heathlands SPA/ Ramsar site.

Growth Context¹⁶

- 5.30 The current adopted Local Plan for New Forest District provides for the development of an additional 3,920 dwellings in the period 2006-2026. This is set to increase to over 10,500 for the period to 2036. The LPA has identified numerous development related pressures that it is concerned about and the include pressures related to drainage, inappropriate scrub control, fish stocking, the deer population, air pollution, change in land management, inappropriate ditch management, forestry and woodland management, invasive species, vehicles and inappropriate cutting/mowing.

Development Plan Policy

- 5.31 Part 2 of the New Forest Local Plan (adopted April 2014) includes Policy DM3 which deals with the "mitigation of impacts on European nature conservation sites". It is more detailed than the Policies that appear in other Plans and reads as follows:

" Except as provided for in the first paragraph of Policy DM2, development will only be permitted where the Council is satisfied that any necessary mitigation is included such that, in combination with other developments, there will not be adverse effects on the integrity of:

¹⁶ Source of pressures and measures information: Site Improvement Plan New Forest (Natural England, 2014), Mitigation Strategy for European Sites, Recreational Pressure from Residential Development SPD (New Forest DC, 2014)

- *the New Forest European nature conservation sites (the New Forest SAC; New Forest SPA; the New Forest Ramsar site) or*
- *the Solent Coast European nature conservation sites (the Solent Maritime SAC; Solent and Isle of Wight Lagoons SAC; Solent and Southampton Water SPA; Solent and Southampton Water Ramsar site).*

For residential development, the required suite of mitigation measures relating to the European nature conservation sites consists of a combination of the following measures:

(a) Provision of alternative natural green spaces (SANGS) and recreational routes: new or improved open space and recreational routes of a quality and type suitable to attract residents of new development within the Plan Area who might otherwise visit the European nature conservation sites for recreation. These will be delivered by:

- *Additional areas of publicly accessible natural green space (30 to 40 ha) of SANGS quality*
- *Enhancing the character and accessibility of existing public open spaces to provide additional areas of publicly accessible natural green space of SANGS quality;*
- *Improvements to walking routes and the connectivity between local green spaces, to be more attractive to local visitors who might otherwise visit the European nature conservation sites.*

(b) Access and Visitor Management: measures to manage the number of recreational visits to the New Forest European sites and the Solent Coast European sites; and to modify visitor behaviour within those sites so as to reduce the potential for harmful recreational impacts.

(c) Monitoring of the impacts of new development on the European nature conservation sites and establishing a better evidence base: to reduce uncertainty and inform future refinement of mitigation measures. To achieve these mitigation measures, all residential developments that result in additional dwellings will be required to provide for appropriate mitigation and/or financial contributions towards off-site mitigation. This will need to be agreed and secured prior to approval of the development. The required level of contributions (to be set out in more detail in the Mitigation Strategy Supplementary Planning Document) will be based on x/y where:

x = the assessed overall cost of the package of mitigation measures set out in (a) and (b) above needed to offset potentially harmful visits to the European nature conservation sites, and

y = the number of contributing dwellings (having regard also to the size of the dwellings).

On sites of 50 or more dwellings, the full mitigation requirements should be met by provision of SANGS on-site or close to the site, based on a standard of 8ha of SANGS per 1,000 population. The details of the SANGS will need to be agreed with Natural England as part of the planning application process. This provision should be available for new occupants of the development at the time of first occupation. Informal open space required by Policy CS7 will be accepted as a part of the mitigation contribution where it is demonstrated as contributing towards SANGS requirements.

In addition, all residential developments will be required to contribute towards monitoring [measure (c)]."

5.32 The Authority is also in the process of preparing a new Local Plan and Policy 10 of the Regulation 19 version of that document reads as follows:

Except as provided for in the first paragraph of Policy 9 (saved Policy DM2): Nature Conservation, Biodiversity and Geodiversity, development will only be permitted where the Council is satisfied that any necessary mitigation, management or monitoring measures are included such that, in combination with other plans and development proposals, there will not be adverse effects on the integrity of any of the following International Nature Conservation sites:

- *the New Forest SAC, the New Forest SPA and the New Forest RAMSAR site;*
- *the Solent Maritime SAC, Solent and Isle of Wight Lagoons SAC, the Solent and Southampton Water SPA, and the Solent and Southampton Water RAMSAR site;*

- *the River Avon SAC and River Avon RAMSAR site; and*
- *The River Itchen SAC.*

For residential development adverse effects can be adequately mitigated by implementing pre-approved measures relevant to the site location, including as set out in the New Forest (outside of the National Park) Mitigation Strategy and in the Solent Recreation Mitigation Strategy, and to be set out in the forthcoming River Avon Nutrient Management Plan (2019 Update). For non-residential developments, the requirement for mitigation will be considered on case-by-case basis with regard to the nature, scale and location of the proposed use.

The pre-approved mitigation measures for residential developments currently include:

- I. For developments providing 49 or fewer net additional units of residential accommodation, a financial contributions towards the provision of mitigation measures as set out below and in the New Forest Mitigation Strategy:*
 - (a) Projects for the provision of alternative natural recreational green spaces and recreational routes: new or improved open space and recreational routes of a quality and type suitable to attract residents of new development within the Plan Area who might otherwise visit the International Nature Conservation sites for recreation; and*
 - (b) Access and Visitor Management: measures to manage the number of recreational visits to the New Forest and Southampton Water and Solent Coast International Nature Conservation sites; and to modify visitor behaviour within those sites so as to reduce the potential for harmful recreational impacts; and*
 - (c) Monitoring of the impacts of new development on the International Nature Conservation sites and establishing a better evidence base: to reduce uncertainty and inform future refinement of mitigation measures.*
- II. For developments of 50 or more net additional residential dwellings:*
 - (a) Direct provision by the developer of at least 8 hectares of natural recreational greenspace per 1,000 population located on the development site or directly adjoining and well connected to it; and*
 - (b) A financial contributions towards Access and Visitor Management and Monitoring as set out above at i(b) and i(c).*
- III. Additionally for all residential developments within 5.6km of the Solent and Southampton Water SPA, as shown on Figure 5.1, a financial contribution is required towards a Solent-wide programme of visitor management, monitoring and development mitigation projects.*
- IV. Additionally for residential developments within the catchment of the River Avon, a financial contribution or other appropriate mechanisms to achieve phosphorus-neutral development.*
- V. Additionally for all residential developments, a financial contribution towards monitoring and, if necessary (based on future monitoring outcomes) managing or mitigating air quality effects within the New Forest SPA, SAC and RAMSAR site.*

Planning Guidance

- 5.33 The local authority has adopted two guidance documents since 2014, the most recent of which is the most pertinent and is its Mitigation for Recreational Impacts on European Sites SPD. It covers not only the New Forest SAC / SPA and Ramsar sites but 10 other SACs, SPAs and Ramsar sites in the near vicinity. The SPD describes the relevant statutory provisions and the national and local policy context; describes the evidence underpinning the need and rationale for the effects of development to be mitigated (including evidence provided by Footprint – see below); the Authority's preferred approach to mitigation (that being on-site first (i.e. within development), supplemented by or replaced by financial contributions to off-site measures); its

approach to monitoring; they type and quantum of measures required; and information on how measures are to be delivered.

5.34 The Footprint work referred to above noted / recommended the following:

"The Footprint Ecology Report "Changing patterns of visitor numbers within the New Forest (Footnote 7)" emphasised the need to tailor a package of mitigation measures to the unique nature of the New Forest and its visitor patterns but also points out that, the large area of land, existing expertise in access management, and an infrastructure already geared to cope with large numbers of visitors provide a good starting point. Suggested mitigation measures comprise:

- *A monitoring strategy – detailed field work to understand low densities of the three indicator species (nightjar, woodlark and Dartford warbler); regular monitoring of other key species and locations where there are concerns about recreational pressure; annual monitoring of visitor levels; monitoring of changes in visitor patterns associated with access management measures.*
- *Refinement of visitor models – accounting for the spatial distribution of paths and points of interest within the New Forest; incorporating actual route data; exploring the spatial distribution of other species to predicted visitor pressure.*
- *Car-parking – managing car parking to re-distribute visitors.*
- *Access and visitor management measures - promotion of less sensitive areas to visitors; provision of interpretation and path enhancement in less sensitive areas; promotion of issues such as the need to keep dogs on leads.*
- *Alternative green space – the report states that any alternative green space must be very carefully considered in terms of its ability to attract people who would otherwise visit the New Forest"*

5.35 Insofar as SANGs is concerned, the SPD prefers on site (within development) provision, or provision close to planned homes (which contrasts with Footprint's work on Strensall) and notes that, to be effective, SANGs needs to extend to at 1ha in each instance.

5.36 Notwithstanding this the New Forest Mitigation Strategy for recreational pressure from Residential development SPD (2014)¹⁷ indicates, in para 2.18, that the Footprint Study (Urban development in the New Forest) found little merit in establishing a development exclusion zone around New Forest's existing settlements such as the 400m zone used for other heathland SPAs. This reflects in part the particular travel patterns of the New Forest's recreational users. Instead the report recommended resources be pooled into a strategic mitigation scheme focussed on people management and designed to complement the National Park's existing Recreation Management Strategy.

Mitigation Measures and their Implementation

5.37 In addition to SANGs, the 2018 SPD lists a large number of 'off-site' mitigation projects which it splits into deliver tranches of 2018-2025 and 2026-2036. It notes that the programme of projects will be agreed through an annual review and the implementation priorities defined in the Council's Infrastructure Delivery Plan.

5.38 There are a total of 36 mitigation projects listed in the SPD. These include schemes to:

- a) enhance existing public open spaces in the District;

¹⁷ We understand that there is now a review of this mitigation strategy, issued as a consultation draft in 2018. As far as we can see, this latter document does not suggest that a 400m buffer be introduced.

- b) create additional or enhanced walks;
- c) improve signage and interpretation boards;
- d) enhance the provision of benches and bins;
- e) improve car parking facilities;
- f) clear vegetation;
- g) improve access; and
- h) re-surfacing footways.

5.39 Each project is costed and provision made for the making of financial contributions by developers either by CIL or S106 Agreements.

Effectiveness of Mitigation Measures

5.40 The Council has been monitoring a number of projects designed to mitigate the impact of recreational pressures arising from new residential development. Early indications are that:

"where comparable data for 'before' and 'after' measurements of recreational usage is available, this is clearly indicating that the mitigation projects are accommodating/ absorbing increased levels of local recreational activity. Therefore these projects do appear to be functioning for their intended purpose and are absorbing potential increases in recreational use that may otherwise have occurred in the nearby European nature conservation sites designated in the New Forest. There is also very limited evidence that these projects may result in a decrease in activity on nearby PROWs within the National Park".

Conclusions on Case Studies

5.41 There are a number of key points that are highlighted by the cases that we have examined. These are:

- a) it is not uncommon for members of the public to have access to SACs, SPAs and other designated sites. As a consequence, many local [planning authorities are having to grapple with (and have grappled with) the pressures that come with such freedoms;
- b) many of the UKs designated sites extend over far larger areas than Strensall Common and have much more challenging and complex relationships with adjacent / nearby urban areas;
- c) the SACs / SPAs that we have examined draw visitors from very wide areas and have zones of influence that range from 5KM to 15KM and even extend across entire Districts;
- d) each of the designated areas referred to above is under significant additional pressure from planned housing growth (in most cases at levels far exceeding that envisaged in York) and in all cases the sensitivity of the designated area is such that the local planning authorities have concluded that mitigation measures must be required in all cases where development is proposed with the defined zone of influence (in other words, they cannot allow a single additional new home without also securing mitigation measures - this is not the approach being taken in York). Notwithstanding this heightened level

of sensitivity to change, each of the local planning authorities with responsibilities in respect of designated sites has concluded that it is possible to mitigate against adverse impacts by designing simple mitigation measure and securing the delivery of these through design, planning conditions and Planning Agreements;

- e) there are two cases above where buffer zones have been defined (400m zones within which most types of housing are resisted) but these are distinguishable from Strensall Common - in these instances the qualifying species include ground nesting birds that it is necessary to protect from the threats posed by pet (and particularly cat) predation. In addition, the New Forest SAC/SPA/RAMSAR includes ground nesting birds but no such buffer has been recommended. The qualifying features of the Common do not include species at risk from cat predation and so a buffer zone is not required;
- f) in most of the cases that we have examined, the local planning authorities have adopted generally worded, over-arching development plan policies and then added detailed requirements through the adoption of supplementary guidance. Notwithstanding the sensitivity and complexity of the SACs / SPAs that they are dealing with, none of these local planning authorities has found it necessary, at the plan-making stage, to make detailed provisions in respect either of the types of mitigations measures that will be required or when / how they will be delivered;
- g) each of the local planning authorities examined favours the use of a range of mitigation measures (rather than relying on one measure or a small number of measures) and, in most cases, these are paid for by developers but then delivered by either a local authority or other responsible body;
- h) in the cases that we have examined, all of the local authorities reference the same or similar mitigation measures – there is a high degree of consistency of approach and a relatively limited range of techniques used to mitigate against the effects of recreational pressure. These include: monitoring (of use and impacts); wardening; the delivery of SANGs (within developments and off-site); the enhancement of existing public open spaces elsewhere; enhanced signage and visitor information; and physical works (such as scrub clearance, the treatment of invasive species, the construction or improvement of footpaths, waymarking, the provision of bins, and habitat restoration); and
- i) Footprint has advised a number of the local planning authorities referred to above and has worked with them to define appropriate packages of mitigation measures (measures such as those described later in this Report). At Cannock Chase (where urban areas almost completely enclose the AONB), Footprint noted the difficulties associated with setting levels of mitigation relative to planned housing growth, and highlighted the importance of having confidence, nonetheless, that the proposed mitigation measures will address forecast increases in pressure, but went on to provide very clear and simple advice on how such confidence is gained and concluded that the SAMM designed for the Chase is fit for purpose. As will be seen, DIO is proposing to go further in terms of both specifying and delivering mitigation measures than the authorities have that surround Cannock Chase.

6. Mitigation Measures Proposed at Strensall Common

Introduction

- 6.1 DIO has given careful consideration to how the recreational risks and threats associated with the proposed development of the QEB sites may be mitigated. It has identified a package of measures that it is satisfied are sufficient to not only prevent adverse effects from arising as a consequence of this development but deliver better management of current users also. DIO's exploration of this issue, and its proposals for mitigation, go beyond that normally required or expected at the Plan-making stage (see Sections 2 and 5 above). Indeed, DIO is going further in this instance than certain local planning authorities have when setting the policy framework for SACs and SPAs that are apparently more sensitive to development and under greater development related pressure than Strensall Common and where the special features of the protected areas are more extensive and / or complex.
- 6.2 In this Section, we describe the mitigation measures that are capable of being deployed on the back of or in association with the development of the QEB sites. In accordance with national planning policy and guidance, these are measures designed to prevent adverse effects from occurring, rather than compensate for such effects. However, before doing so we describe the work that is already being undertaken by MoD/DIO and others to maintain the Common and the integrity of the SAC. This provides important context.

Existing / On-going Management Activities

- 6.3 Strensall Common is owned by the Secretary of State for Defence and forms part of the MoD's training estate. It contains six small arms firing ranges for live firing, a no danger area range, and a bivouac site. It is used for dry training (no use of live ammunition) such as drills, patrolling and team building. Under the Strensall Common Act, the Common is made available to the public for recreational use when military training is not taking place.
- 6.4 As a Government Department, MoD/DIO has stewardship obligations and is required to take reasonable steps to conserve and enhance the special features of Sites of Special Scientific Interest when carrying out its statutory duties. This involves the delivery of onsite adaptive management and habitat enhancement. If a problem is identified, the management regime is adapted to deal with the issue. The management of MOD sites takes place through the implementation of Integrated Rural Management Plans (IRMPs).
- 6.5 The nature conservation interest of Strensall Common is recognised by its designation as a Special Area of Conservation (SAC) and SSSI. This interest is protected from damage through the regulation of military activity by range standing orders and positive management takes place through use of the MOD SSSI Programme and Conservation Stewardship Fund, which is managed by DIO Technical Services. Works carried out in recent years have included scrub clearance, the installation of boardwalks and the provision of small enclosures to protect the food plant of the rare dark bordered beauty moth.
- 6.6 In accordance with its stewardship obligations, DIO (including in-house ecologists) works in partnership with a number of organisations to ensure that the Common is appropriately and effectively managed. DIO also liaises with a variety of organisations, including CYC and individuals. For example a Conservation Group

meets twice yearly which coordinates activities and surveys carried out by voluntary bodies and academics including Freshwater Habitats Trust, Butterfly Conservation, Yorkshire Wildlife Trust, as well as Natural England.

- 6.7 The MOD/DIO has an agricultural tenant, who is responsible for grazing the Common at certain times during the course of the year (the Common is not grazed constantly). This is an important part of the management regime and, as a reflection of its importance, the Farmer has a Higher Level Environmental Stewardship agreement with Natural England. Amongst other things, this ensures that the grazing regime is subject to regular reviews.

Additional Mitigation Measures Available

- 6.8 Insofar as additional mitigation measures are concerned, DIO considers that the following could be deployed:
- a) **Enhanced signage/information:** an assessment of existing signage and visitor information, identification of gaps / issues / opportunities for delivering improvements, and the design / implementation of a scheme of enhanced provision. Amongst other things, the assessment will determine whether it might be possible to provide live information on the location of grazing animals to assist dog owners. Ultimately, the objective will be to ensure all main and secondary points of access to the Common have appropriate visitor information. This will help educate visitors on the special qualities of the Common, appropriate behaviours, the importance of grazing and the avoidance of worrying, the dangers associated with the firing ranges, and the laws and bylaws operating as a means of controlling activities. Insofar as the latter is concerned, it will be important to improve awareness of the fact that it is already an offence to wilfully disturb any animal or allow dogs to foul the Common. Enhanced signage will also provide information in respect of additional mitigation measures implemented from the list below;
 - b) **provision of additional car park barriers:** the carrying out of an assessment of the existing car park barriers with a view to determining whether these need improving or adding; the undertaking of a review of when they are used and whether they should be used more regularly or over extended periods to deter / prevent inappropriate behaviour; and the implementation of any works that the assessment and review recommends;
 - c) **wardening:** the appointment of 1 Warden at a cost of £40,000 per annum, funded through S106 Obligations or CIL. The Warden would:
 - i. act as **information / education provider:** a warden would provide an on-site presence delivering information and helping educate visitors. This would include information in relation to site designation, its sensitivity, the grazing regime, how recreational use impacts on the Common's special qualities, what constitutes appropriate and inappropriate behaviour and works being carried out by DIO or others to enhance the area. Wardens could also be actively involved in the design / placement of signage, the development of promotional literature, communication via social media, and the arrangement of educational / community visits and activities;
 - ii. act as **law enforcement agents and encouraging desired behaviours:** Bylaws made in 1972 prohibit certain acts including: *behaving in a way that offends against public decency, wilfully obstructs or*

interferes with others, pollutes any water, climbing or damaging fences or structures, wilfully disturbs, injures or takes any animal. It also require visitors to obtain the permission of the Secretary of State for Defence before carrying out certain activities including, inter alia: *carrying out trade and selling goods, exhibiting notices, making a display/ performance including a parade or procession, making public speeches, encamping on the common or sleeping out during darkness, causing or lighting a fire, driving or riding, grazing any animal; damaging vegetation or interfering with land.* In addition, the Common is subject to the provisions of the Dogs (Fouling of Land Act) 1996. Wardens would monitor for breaches of the Act and Bylaws, act as a visible deterrent and encourage appropriate behaviours;

- iii. be responsible for **general maintenance and upkeep**: wardens would patrol the Common and would (a) note features that require attention e.g. habitat, gates, bins, fences, signage, livestock and then (b) implement schemes of repair, management, enhancement or bring matters to the attention of DIO or other bodies / individuals as necessary;
- iv. **liaise with key stakeholders**: acting as a point of contact and liaising with a range of stakeholders including the MoD; CYC; NE; the tenant farmer; neighbours; the Parish Council; local interest or volunteer groups; and blue light services, dealing with questions, concerns and communicating changes in use / management regimes and the details of any planned works;
- v. **monitor and report**: recording and reporting of incidents and monitoring how the Common is used so that if additional mitigation measures are required, these can be designed and deployed in a targeted manner. The Wardens will also be required to report on the effectiveness of mitigation, progress in respect of works / liaison and budgets;
- vi. **Have a tailored presence throughout the year**: presence of warden would be most important during the grazing season. This should complement the role of the Training Area Marshall whose remit is primarily military but nonetheless provides a useful on-site presence year round;

We note that in 2014, in its Site Improvement Plan, NE highlighted wardening as being the 'best way to tackle' irresponsible recreational use of the Common.

- d) **managed access**: the creation within the Common of grazing zones defined by appropriately designed but dog proof fences and information provided to visitors at any given point of the zones that are being grazed and must therefore be avoided;
- e) **information packs for new residents**: each new home constructed at QEB (and on others sites as to be specified in the Local Plan) would be provided with a pack of information on the Common which describes: its ownership and use by the MoD as a military training facility, its special ecological qualities and how these are safeguarded; how it should and should not be used; the existence of the above mentioned Act and Bylaws; the role of the Wardens; the importance of adhering to the rules in respect of entry during live firing events; the grazing regime and the operation of the above mentioned zoning (if that is pursued); and details of other open spaces available nearby;
- f) **public open space within QEB**: there is an opportunity within the main QEB site to provide an extensive area of open space. The masterplan as currently drawn incorporates open areas extending to 10.44ha

in total. This includes semi-natural green space, amenity spaces, and more formally laid out play / sports areas. The less formal green spaces on site would be extensive (certainly larger than the 1ha minimum for effective SANGs referred to in the New Forest SPD) and would provide attractive and convenient areas for dog walking. Importantly, dogs could be walked off their leads on-site with no fear of there being a risk of livestock worrying;

- g) **residential layout and boundary treatment:** to discourage casual use of the Common (and encourage the use of the on-site open space) CYC could require by Local Plan Policy, and insist at the planning application stage, that any housing development promoted on the QEB sites is designed so as to secure the north, eastern and southern boundaries of the site (for example by backing housing on to these boundaries, providing appropriate but secure fencing and having the warden monitor the condition of this, and not providing links from the development into the Common). Without direct routes into the Common, residents of the development wanting to access it would be required travel between 1,300m and 1,920m to get to the Common via Strensall Road and Ox Carr Lane. For those wanting to make a short / casual visit to the Common, this would likely be unattractive and therefore limit the use of it. The Public Open Space within QEB (f) would be accessible, subject to greater natural surveillance and within convenient walking distance;
- h) **additional fencing:** the carrying out of an assessment of the condition of existing fencing along existing routes into the Common and the replacement / reinforcement of this in appropriate locations to discourage indiscriminate access and encourage visitors to access the Common via points containing signage / information; and
- i) **making of new byelaws (if required):** the Secretary of State for Defence has bye-law making powers under the Strensall Common Act. If improved monitoring and recording (e.g. by the Warden) indicates that, in spite of (a) – (h) above, inappropriate behaviours occur, the Secretary of State would make new byelaws thereby introducing additional controls. These could include, for example, rules that make it an offence to allow dogs off leads, either across the Common as a whole or in certain parts of it. We attach the opinion of James Maurici QC on this matter (**Appendix 2**).

6.9 In addition to the above, the Secretary of State is in the process of considering whether, in the event that monitoring indicates that inappropriate behaviours are occurring in spite of (a) – (i), he could make land available for the creation of alternative green space (AGS). The Secretary of State owns large tracts of land adjacent to QEB, but which lies outside the SSSI/SAC, and it may be that a part or parts of this could be made available if required.

6.10 The parcels of land that, on the face of it, may be most suitable for use as AGS are shown edged green on the aerial image overleaf¹⁸. These comprise: a 16.4ha parcel to the immediate south of QEB (AGS1); and a 5.18ha parcel to the immediate north (AGS2). Part of the southern parcel is currently used by the tenant Farmer and so, in addition to considering whether he can make the land available at all, the Secretary of State is also considering how doing so might affect the Farmer. This includes exploring whether the Farmer could continue to use part of the southern parcel whilst the remainder is made available to members of the public. The parcel to the north is unconstrained.

¹⁸ Source: Google Earth, Avison Young and Defence Infrastructure Organisation

of mitigation measures are agreed and mechanisms put in place to secure timely delivery, thus providing the necessary assurance at this, the Plan-making stage, that adverse impacts can be avoided.

- 6.14 At the planning application stage, we would expect the Local Planning Authority to use a combination of design control, planning conditions and Planning Agreements to define exactly the package of mitigation measures that is to be implemented, when measures need to be delivered and how they are to be delivered. It is likely that a number of the measures listed above will need to be secured by Planning Agreement and, as owner of the Common and adjacent land, the Secretary of State would be a signatory to any such Agreement. In the unlikely event that the Secretary of State disposed of the Common or other land, the Obligations entered into would run with the land and would, therefore, be assumed by any successors in title.
- 6.15 Most of the mitigation measures listed above would either be delivered on site, as part of the development itself, or up front, prior to either first occupation or a certain number of occupations. DIO itself may take direct responsibility for implementing a number of the measures. However, the making of new bylaws would not, we suggest, need to be delivered up front, but could be called upon in the event that the other measures specified fail to prevent inappropriate behaviours. It will be necessary, at the planning application stage, to design a monitoring regime that enables behaviours to be recorded, and to agree thresholds (triggers) beyond which it would be unacceptable to proceed without further mitigation measures being deployed. In the light of the conclusions reached by Footprint, we would expect such triggers to be linked to matters such as incidents of livestock worrying.

7. Conclusion

- 7.1 DIO considers that CYC, its technical advisers, and NE have reached unsound conclusions in respect of the likely effects of the development of the QEB sites (and other sites where no specific mitigation measures are provided for in emerging Policy) and that they have not given appropriate consideration (as required by the Regulations) to the numerous mitigation measures that could be deployed at Strensall Common to prevent adverse effects from occurring. As a consequence, and most importantly, it is also concerned that CYC is promoting Modifications to the Local Plan that are not required to make it sound.
- 7.2 Notwithstanding these concerns, DIO has given careful consideration to the types of mitigation measures that could be utilised in the context of the QEB proposals, in order to provide all relevant stakeholders and the Local Plan Inspectors with the confidence and comfort that they need at this stage. In doing so, careful regard has been had to the relevant statutory provisions, the qualifying features of the SAC, the risks that recreational uses present, how such pressures are being addressed elsewhere in the Country and, importantly, the role that the Secretary of State for Defence (DIO) can play in managing / mitigating the use of the Common as the owner of it.
- 7.3 DIO has concluded that there are a number of steps that can be taken to better manage the existing use of the Common and mitigate against inappropriate behaviours going forward, thereby mitigating fully any potential adverse effects that might otherwise occur as a consequence of the development of the QEB sites whilst also delivering a betterment on existing conditions. The measures that it has identified are all deliverable and are consistent with measures being deployed in respect of other SACs and SPAs in other parts of the Country. Moreover, they are consistent with measures regarded by NE as 'the best way to tackle irresponsible recreational use' and consistent with measures that Footprint has endorsed elsewhere.
- 7.4 We are satisfied that the package of measures listed are sufficient to enable the Local Plan Inspectors to conclude (as Inspectors have elsewhere) that adverse impacts associated with proposed housing development can be avoided and that by allowing development to proceed at QEB, there will be a betterment achieved as consequence of improved management of existing users. Importantly, it enables the Inspectors to endorse the redevelopment of a soon to be redundant brownfield site and further the Government's aim to address the housing crisis in a sustainable manner.

Appendix I
Site Location Plan



Defence
Infrastructure
Organisation

ESTABLISHMENT
RED LINE PLAN
STRENSALL
QUEL

- Site Area - 31.32ha
- SFA sites

Scale 1:5,000

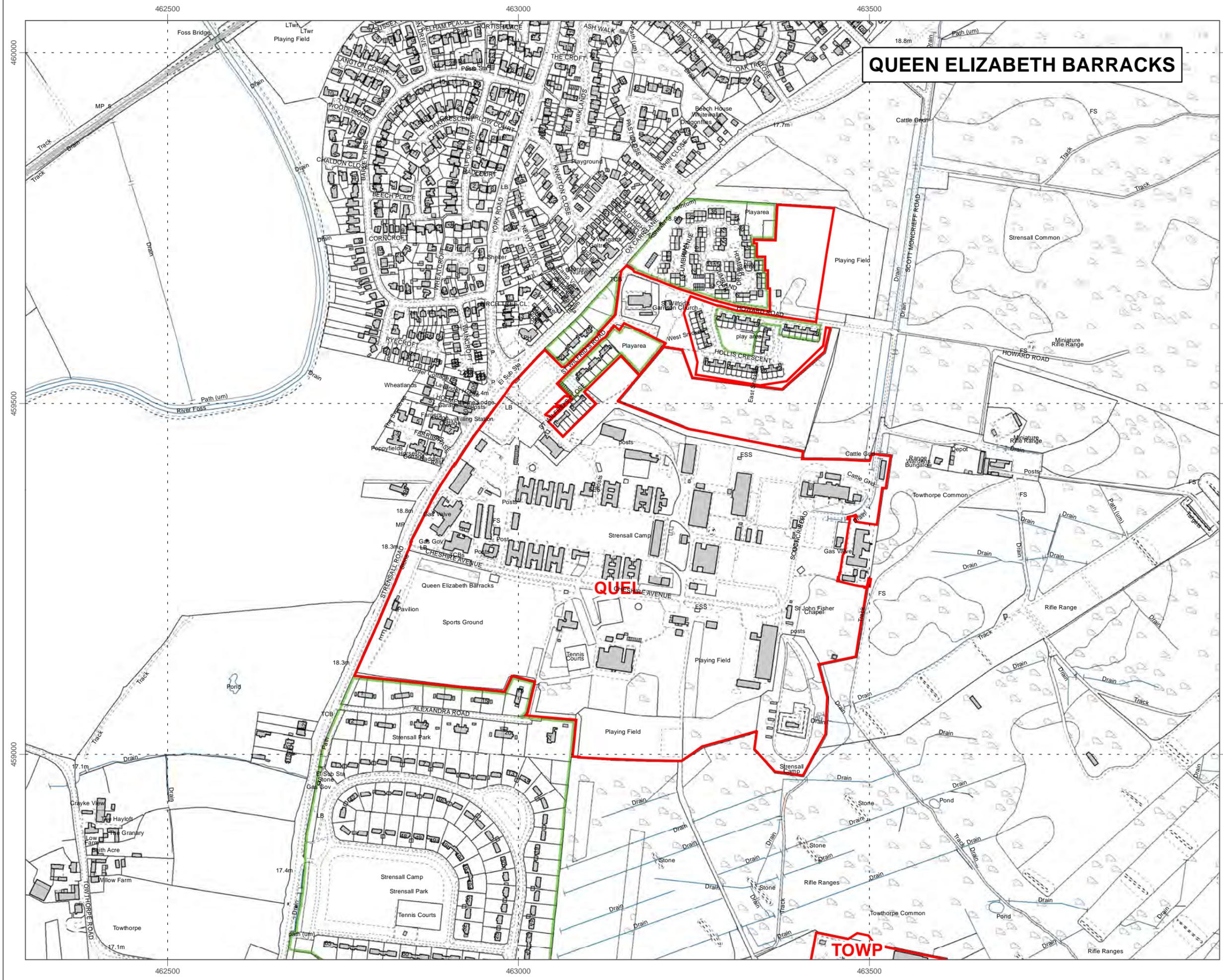
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Appendix II

Opinion of James Maurici QC

IN THE MATTER OF STRENSALL COMMON

OPINION

Introduction

1. I am asked to for my opinion on whether the Secretary of State for Defence (“**the Secretary of State**”), as owner of the land known as Strensall Common, has the ability to impose a ban on people walking their dogs without a lead, or to impose fines for dog fouling, or impose other similar measures.

Background

2. The context for this advice is the current consultation on proposed modifications to the draft City of York Local Plan (“**the Draft Plan**”). The proposed modifications, dated June 2019, are backed by an updated “appropriate assessment” under the Conservation of Habitats and Species Regulations 2017, dated February 2019 (“**the HRA**”). One of the proposed modifications is to delete draft policy SS19, which seeks to allocate land known as the Queen Elizabeth Barracks (“**QEB**”) for the development of 500 homes. QEB is near Strensall Common, and is also owned by the Secretary of State. The reason for the proposed modification is as follows:

“Site removed following the outcomes of the Habitat Regulations Assessment (Feb 2019), which has not been able to rule out adverse effects on the integrity of Strensall Common Special Area of Conservation (SAC).”

3. The HRA at para. 3.60 notes in respect of Strensall Common:

“Of particular concern is the worrying of livestock by dogs, especially when off the lead and the degree to which. Given the importance of the grazing regime to site management and the achievement of the conservation objectives, this represents a considerable threat should the number of visitors and their dogs increase.”

4. At para. 4.20, the HRA noted the key findings of Footprint Ecology, who were commissioned by the City of York Council (“**the Council**”) to undertake a visitor assessment in respect of Strensall Common. These findings included that 70% of interviewed visitors brought dogs, and 45% of dogs accompanying interviewees were off the lead, and recreational impacts including “*eutrophication from dog fouling*” were evident, though limited and generally concentrated in fairly close proximity to the car parks. The report of Footprint Ecology stated:

“... [the] worrying of livestock by dogs ... is already resulting in a loss of animals and may jeopardise future grazing. Appropriate grazing will be a vital tool in restoring the SAC to favourable condition.”

5. At paras. 4.29-4.37, the HRA considers the proposed wardening activities for Strensall Common, in part with a view to “securing better behaviour from dog-walkers and their dogs”, but raises concerns over their reliability and effectiveness as mitigation against increased recreational pressures. The recommendation of the HRA at para. 4.40 is as follows:

Given the doubts surrounding the effectiveness of mitigation, the only reliable mechanism to avoid an adverse effect on the integrity of the European site is to REMOVE ... SS19 ... FROM THE PLAN.”

6. Appendix D to the HRA is the Footprint Ecology report. Potential mitigation measures are considered at para. 10.6 onwards. At para. 10.13, the role of wardening is said to include:

“Directly influencing the behaviour of any visitors likely to cause problems, for example dogs off leads around livestock”

7. Much of what is said in the HRA is disputed; but for these purposes that does not matter. It is relevant only by way of background.

Analysis

8. In my view, the Secretary of State does have the power to impose the additional measures envisaged to mitigate against recreational pressures.
9. Strensall Common is governed by the Strensall Common Act 1884 (“**SCA**”). As noted in the first recital to the SCA, the “*soil in the common known as Strensall Common*” was purchased by agreement pursuant to the Military Forces Localisation Act 1872. The mere purchase of the land by agreement did not itself deal with any rights of common. Therefore, the SCA provided for the ascertaining and acquisition of, and compensation for, “*all commonable and other rights existing in or over Strensall Common*”: see section 2 and the preamble. Upon payment of compensation for the compulsory purchase of the commonable and other rights, “*all such commonable and other rights shall cease and be extinguished*” by operation of section 2.
10. I have been provided with a plan annotated in the bottom right hand corner: “*Strensall Common as copied from the plan in County Hall Archivists office. As attached to Strensall Common Act 1884*”. The land within the red line boundary is identified as Strensall Common (attached).

11. The preamble to the SCA also indicates that the Act additionally provided for “*the use of the said Common and adjoining land for military and other purposes*”.
12. Section 5 is concerned with the powers of the Secretary of State in relation to using the land for military purposes.
13. Section 6(1) goes on to provide that:

“Whenever the open portion of Strensall Common, and also any land held by the Secretary of State which adjoins or is near to Strensall Common and is for the time being unenclosed, is not required to be used for any military purpose, the Secretary of State shall permit the same to be used by Her Majesty’s subjects for exercise and recreation, and such portion of the said common or land as is so permitted to be used is in this Act referred to as the recreation ground land.”
14. Section 6(2) makes provision for the times when the recreation ground land is required for military purposes.
15. Critically for the purposes of this Opinion, section 6(3) provides as follows:

“The Secretary of State may from time to time make, and when made revoke and vary, byelaws for the government of the recreation ground land when not used for any military purpose, and the preservation of order and good conduct thereon, and for the prevention of nuisances, obstructions, encampments, and encroachments thereon, and for the prevention of any injury to the same, or to anything growing or erected thereon, and for the prevention of anything interfering with the orderly use thereof by the public for the purpose of exercise and recreation.”
16. Section 6(4) provides that a person committing an offence against any such byelaw shall be liable to a fine and may be removed from Strensall Common. Section 6(5) sets out the procedure for making byelaws, which includes publicising any proposals, inviting objections, and considering any objections before making the decision.
17. The byelaws currently in force – the Strensall Common Byelaws 1972 – were made on 14 February 1972 (SI 1972/246) (“**the Byelaws**”). They govern the land of Strensall Common when not used for military purposes. Byelaw 3 sets out a number of prohibited acts, which include:

“(6) any act which pollutes or is likely to pollute any water
 ...
 (10) wilfully disturbing, injuring or taking any animal, bird or egg”
18. Under Byelaw 4, there are further acts which require written permission, including:

“(13) cutting, digging, damaging or removing any grass, turf or growing crops;
 (14) cutting, defacing or damaging any growing tree or shrub or removing any timber, tree, shrub or wild flower roots”

19. Doing anything prohibited under Byelaw 3 or without permission under Byelaw 4 is an offence: see Byelaw 5.
20. In my view, the Byelaws could be varied to introduce, for example, a ban on dog walking without a lead, or a fine for dog fouling, or other such similar measures. Such measures fall within the wide scope of the power to make byelaws in section 6(3) of the SCA: see, in particular, the words “*the preservation of order and good conduct thereon*”, the “*prevention of nuisances*”, “*the prevention of injury*” to the recreation ground land and to “*anything growing ... thereon*”, and “*for the prevention of anything interfering with the orderly use thereof by the public*”.
21. It is notable that the Byelaws already contain measures which are aimed at protecting the land and wildlife on Strensall Common.
22. The proposed additional mitigation measures – i.e. expressly prohibiting certain activities (backed with sanctions) rather than simply encouraging good behaviour – go beyond the wardening proposal considered by the HRA and by Footprint Ecology. Para. 4.39 of the HRA specifically notes the possibility that alternative mitigation measures might come forward, and that the recommendation to remove policy SS19 from the Draft Plan is contingent on “*the absence of further mitigation at this stage*”. Therefore, in my view it is necessary for the HRA to be updated to consider the newly proposed mitigation because the deletion of the QEB allocation can be justified.

Conclusion

23. For reasons given above, the Secretary of State has a wide power under the SCA to make byelaws which would prohibit certain activities as a means of mitigating against recreational pressures upon Strensall Common.
24. I have nothing to add as presently instructed, but remain happy to advise further if required.

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Tuesday, 09 July 2019

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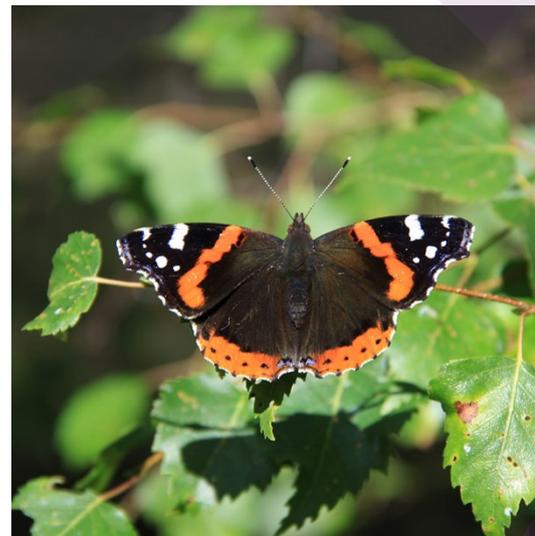
Appendix II
Shadow HRA



Defence Infrastructure Organisation

DIO York Sites: Queen Elizabeth Barracks

Information to Support a
Habitats Regulations
Assessment



Report for

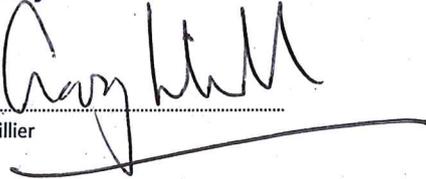
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Document revisions

No.	Details	Date
1	Report issue	November 2019

Executive summary

Proposals

The Defence Infrastructure Organisation (DIO) is promoting the allocation of Queen Elizabeth Barracks (QEB) for development through City of York Council's (CYC's) emerging Local Plan.

QEB, which comprises two proposed allocations (ST35 and H59) in the Submission York Local Plan (CD001), lies immediately adjacent to an internationally-designated nature conservation site (Strensall Common Special Area of Conservation (SAC), hereafter referred to as 'the SAC'). As a result, the proposed allocations must be assessed against the requirements of Regulation 63 of the *Conservation of Habitats and Species Regulations, 2017*, through a process referred to as a Habitats Regulations Assessment (HRA). This is the only European site which the proposed development could affect.

Strensall Common SAC has been classified for the following interest features:

- H4010. Northern Atlantic wet heaths with *Erica tetralix*; Wet heathland with cross-leaved heath; and
- H4030. European dry heaths.

Stage 1 screening

Based on the sensitivities of the qualifying features of the SAC, it is considered that Likely Significant Effects on the SAC interest features could arise as a result of the proposed development of QEB. The proposed development of QEB has therefore been 'screened in' for Stage 2 'appropriate assessment' in relation to:

- Likely significant effects from change to the local hydrological regime; and potential effects to the aquatic environment via localised changes to hydrology, hydrogeology and water chemistry, arising through surface/groundwater changes (i.e. run-off, sedimentation, erosion etc.) as a result of development immediately adjacent to the SAC (i.e. QEB alone).
- Likely significant effects from air pollution arising from increased road traffic from QEB alone, and other proposed allocations in combination, albeit that the assessment is presented as an in combination assessment due to the modelling approach.
- Likely significant effects from recreational pressure, alone from QEB (ST35 and H59). However, additionally, and contrary to the 2019 Waterman HRA, it is considered that an assessment of the contributions of QEB and other proposed allocations is also required due to the potential visitor contributions from other sites in the emerging York Local Plan.

Appropriate Assessment

The Appropriate Assessment provides a more detailed assessment of the effects of the proposed development on those interest features that could not be screened out, identifying any additional mitigation measures that may be appropriate. Following this assessment, and the screening assessment, the following conclusions for the proposed allocation can be made:

- **Air quality:** Subject to the suggested mitigation measures being implemented during the construction and operational phases, the proposed development of QEB is not predicted to have an adverse effect on the integrity of the SAC, alone or in combination with other proposed allocations;

- **Hydrology:** Whilst it is recognised that there are uncertainties in the baseline knowledge, in particular in respect of the proportion of surface water drainage from QEB that goes to off-site ditches, it is known that there are discharges to the north, east and south of QEB (i.e. to the IDB network). Determination of an existing positive connection to the IDB drainage network and the location of the connection and rates of discharge still need to be undertaken by the developer at the outline planning stage, however, there is no reason to conclude that these do not exist, or that they will not be capable of conveying the drainage from QEB. As a result it is concluded that the necessary mitigation measures can be designed to ensure no changes to the hydrological condition of the SAC and therefore, with the proposed mitigation, it can be concluded that the proposed development at QEB would not result in an adverse effect on the water environment of the SAC.

The detailed proposals for the development Site would be subject to further assessment (e.g. detailed Flood Risk Assessment and HRA) and would confirm the design of Site-specific mitigation measures that would be incorporated into the proposed development at the Site.

- **Recreation and other urban edge effects:** Predictions of current and future use of the Common with proposed allocations in the Local Plan vary between the two visitor surveys undertaken. These differences illustrate that neither survey is definitive in absolute number terms, but the results do illustrate a likely range of effects of the plan allocations on visitor numbers and the assessment has been based on the results of both.

Following a Visitor Survey produced by PCP (October 2019) development of QEB (ST35 and H59) development of QEB (ST35 and H59) is predicted to result in an additional 14% in visitor numbers which equates to 17,265 visits per annum (an average of 47 per day) based on PCP data. The equivalent figures, based on Footprint Ecology data collected in 2018, are an 18% increase (22,320 per annum / 61 per day). However, a package of measures has been detailed which includes measures that would apply to QEB and also measures applied on the Common. The measures proposed for Strensall Common comprise those applied and accepted as effective mitigation for increase in visitor pressure at other sites (many of which are subject to greater existing and proposed future visitor pressure than Strensall Common), but additionally includes measures that DIO is uniquely able to enact as the owner of both the SAC and also QEB. Given the proposed mitigation measures are feasible, achievable, deliverable and accepted as effective mitigation for increase in visitor pressure at other sites it can be concluded that the mitigation package proposed is sufficient to mitigate for the risks that would result from development of QEB and therefore that there would be no adverse effect, from QEB alone, on the integrity of the SAC features.

Development of QEB in combination with other allocations (ST8, ST9 and ST14 have specifically been considered but all allocations within 7.5 km of the site were included). Analysis has suggested that QEB (ST35 and H59), in combination with other residential allocations within 7.5km of Strensall Common are predicted, based on PCP data, to result in an additional 23.6% in visitor numbers which equates to 29,264 visits per annum, or approximately 80 visits per day. Based on Footprint Ecology data the equivalent figures would be 24% increase which equates to 29,760 visits per annum. Allocations other than QEB, within 7.5km of the site, based on PCP data, would contribute an additional 11,998 per annum (33 per day). The equivalent figures based on Footprint Ecology data would be an additional 7,440 per annum or 20 per day. However, for the reasons given above, it can be concluded that the mitigation package proposed is sufficient to mitigate for the risks that would result from development of QEB, and with other allocations (ST8, ST9 and ST14 have specifically been considered but all allocations within 7.5 km of the site) in combination, and therefore that there would be no adverse effect, from QEB in combination with other allocations, on the integrity of the SAC features.

If policy SS19 (removing ST35) is removed from the Local Plan, then the proposed mitigation measures will also not be implemented. This means that the predicted additional 11,998 visits per annum (33 per day, 9.6% increase in total numbers based on PCP data / additional 7,440 per annum or 20 per day or 6% increase based on Footprint Ecology data) will occur in the absence of any mitigation at the SAC, or any mitigation built into the policies that relate to ST8, ST9 or ST14 (as the nearest allocations) specifically directed at, or considering, minimising the number of additional visits to the Common. This would place an additional unmitigated risk on the SAC, and as a result it would not be sound to conclude that there would not be an adverse effect on site integrity without undertaking a full assessment.

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1. Introduction

1.1 Background

- 1.1.1 In November 2016, the Defence Infrastructure Organisation (DIO) announced its intention to vacate and dispose of three MoD sites in York: Queen Elizabeth Barracks (hereafter referred to as QEB or 'the Site'), Towthorpe Lines and Imphal Barracks. In February 2019, it was confirmed that QEB will be vacated by 2024.
- 1.1.2 DIO, supported by Avison Young and Wood, are promoting the allocation of these sites for development through City of York Council's (CYC's) emerging Local Plan¹.
- 1.1.3 The two sites lie immediately adjacent to an internationally-designated nature conservation site (Strensall Common Special Area of Conservation (SAC), hereafter referred to as 'the Common'). As a result, the proposed allocations must be assessed against the requirements of the *Conservation of Habitats and Species Regulations, 2017*, through a process referred to as a Habitats Regulations Assessment (HRA).
- 1.1.4 The locations of the two sites in relation to the SAC are shown on Figure 1.1 in Appendix A.
- 1.1.5 The Site was allocated in the CYC Regulation 19 Local Plan (Publication Draft, February 2018) (reference ST35), in Policy SS19, for 500 dwellings. Additionally, site reference H59, QEB – Howard Road Strensall, was allocated for 45 dwellings and Site E18, Towthorpe Lines for employment development at 4ha or 13,200sqm. The supporting HRA² concluded that the policies would not result in an adverse effect on site integrity of Strensall Common. However, following concerns raised by Natural England (NE), a Visitor Survey was undertaken at Strensall Common, by Footprint Ecology on behalf of CYC, and the HRA³ for the Plan updated informed by the findings of the Visitor Survey.
- 1.1.6 The 2019 Waterman HRA concluded that 'likely significant effects' on the SAC could not be ruled out in respect of Policies SS19/ST35, E18 and H59 because of anticipated increases in recreational pressure, changes to the hydrological regime and the effect of air pollution. As a result, an 'Appropriate Assessment' was undertaken, in accordance with the requirements of HRA. Subject to certain modifications being embedded within Policy E18; the HRA recommends that Towthorpe Lines could be retained in the Local Plan. The 2019 Waterman HRA however concluded that an adverse effect on integrity could not be ruled out in respect of a predicted increase in recreational pressure on the SAC posed by the proposed redevelopment of QEB for residential purposes. Recreational use of the Common (number of visits) was predicted, by Footprint Ecology, to increase by 24%, predominantly related to new residents of a redeveloped QEB (all but 6% of that increase). Additionally, it was noted that the number of dogs walked on the Common would also rise, and doubts were expressed in the HRA regarding the effectiveness of the framework of mitigation measures that were outlined in a precursor report to inform appropriate assessment that was prepared in 2017⁴.

¹ https://www.york.gov.uk/downloads/file/15869/cd001_-_city_of_york_local_plan_publication_draft_regulation_19_consultation_february_2018

² Waterman Infrastructure & Environment Limited (2017). *HRA of Plan Allocations. Habitats Regulations Assessment of the City of York Council Local Plan*

³ Waterman Infrastructure & Environment Limited (2019). *Habitats Regulations Assessment of the City of York Council Local Plan*

⁴ Amec Foster Wheeler (2017). *DIO York sites: Queen Elizabeth Barracks (QEB). Information to support a Habitats Regulations Assessment*

- 1.1.7 As a result, the CYC Local Plan Proposed Modification (June 2019)⁵, at PM14, proposes removal of Policy SS19 (which covers allocation ST35), following the outcome of an updated HRA, which had not been able to rule out adverse effects on the integrity of the SAC with this allocation. However, it is considered important to note that the 2019 Waterman HRA:
- Did not set the 24% increase in context of the likely visitor numbers to the SAC;
 - Concluded that the increase in visitors related to other allocations would be acceptable in the absence of policy SS19, even though it appears that no specific mitigation for Strensall Common aimed at minimising effects on the SAC is included in the policies covering other nearby allocations (e.g. ST8, ST9, ST14) or indeed within the York Local Plan.
- 1.1.8 Following further work through 2019 however, DIO is confident that it can put in place a range of measures that will not only mitigate any potential adverse effects that might be caused by the proposed development of QEB but will also result in current visitor numbers being better managed, and hence reducing existing recreational pressure. However, implementation of this mitigation relies on the inclusion of policy SS19.

1.2 Overview of the proposed development of QEB

- 1.2.1 An indicative concept masterplan to support the proposed allocation was prepared by Wood Environment and Infrastructure Solutions UK Ltd. ('Wood', previously Amec Foster Wheeler) on behalf of DIO (see Figure 1.2 in Appendix A), which included 651 properties. However QEB was included in the Local Plan as allocations ST35 (estimated to deliver 500 dwellings) and H59 (estimated to deliver 45 dwellings) i.e. a total of 545 properties. The total Site area is approximately 30ha and, based on 545 properties, would deliver approximately 15ha of residential development and approximately 15ha of open space. This is the scheme that has been considered in this document.
- 1.2.2 Further details of the scheme and over-arching design principles are provided in Section 2.

1.3 Habitats Regulations Assessment (HRA)

- 1.3.1 Regulation 63 of the Conservation of Habitats and Species Regulations 2017 (the 'Habitats Regulations') states that if a plan or project "(a) is likely to have a significant effect on a European site or a European offshore marine site (either alone or in combination with other plans or projects)"; and "(b) is not directly connected with or necessary to the management of the site" then the competent authority must "...make an appropriate assessment of the implications for the site in view of that site's conservation objectives" before giving consent, permission or other authorisation, or deciding to undertake the project. The process by which Regulation 63 is met is known as Habitats Regulations Assessment (HRA)⁶. An HRA determines whether there will be any 'likely significant effects' (LSEs) on any European site as a result of a plan's or project's implementation (either on its own or 'in combination' with other plans or projects) and, if so, whether these effects will result in any adverse effects on the site's integrity.
- 1.3.2 European Commission guidance⁷ proposes a four-stage process for HRA, although not all stages will necessarily be required (see Table 1.1). These stages will be undertaken by the relevant

⁵ https://www.york.gov.uk/downloads/file/18036/city_of_york_local_plan_proposed_modifications_june_2019

⁶ The term 'Appropriate Assessment' has been historically used to describe the process of assessment; however, the process is now more accurately termed 'Habitats Regulations Assessment' (HRA), with the term 'Appropriate Assessment' limited to the specific stage within the process; see also Box 1.

⁷ Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC (EC 2002).

competent authority, drawing upon information that is provided by the developer. For this reason, the developer only provides the competent authority with information in support of the Stage 1 screening and the Stage 2 Appropriate Assessment.

Table 1.1 Stages of Habitats Regulations Assessment

<p>Stage 1 – Screening: This stage identifies the likely impacts upon a European Site of a project or plan, either alone or ‘in combination’ with other projects or plans, and considers whether these impacts are likely to be significant.</p>
<p>Stage 2 – Appropriate Assessment: Where there are likely significant effects, or effects are uncertain, then ‘appropriate assessment’ is required. This stage considers the impacts of the Plan or project on the integrity of the relevant European Sites, either alone or ‘in combination’ with other projects or plans, with respect to the sites’ structure and function and their conservation objectives. Where there are adverse impacts, it also includes an assessment of the potential mitigation for those impacts.</p>
<p>Stage 3 – Assessment of Alternative Solutions: Where adverse impacts are predicted, this stage examines alternative ways of achieving the objectives of the project or Plan that avoid adverse impacts on the integrity of European Sites.</p>
<p>Stage 4 – Assessment Where No Alternative Solutions Exist and Where Adverse Impacts Remain: This stage assesses compensatory measures where it is deemed that the project or Plan should proceed for imperative reasons of overriding public interest (IROPI). The EC guidance does not deal with the assessment of IROPI.</p>

- 1.3.3 For Stage 1 screening, the project should be considered ‘likely’ to have a significant effect if the competent authority is unable (on the basis of objective information) to exclude the possibility that it could have significant effects on any European site, either alone or “in combination” with other plans or projects; an effect will be ‘significant’ if it could undermine the site’s conservation objectives. The ‘screening’ stage or ‘test of significance’ is therefore a relatively low bar: ‘significant effects’ can generally be interpreted as any effects that are not negligible or inconsequential. If a significant effect is likely, or if this is uncertain, then ‘Appropriate Assessment’ is required; the scale and scope of such an assessment is not defined and will depend on the type of development and the effects that require assessment.
- 1.3.4 It is also important to recognise the stage at which this updated ‘Report to Inform Appropriate Assessment’ is being undertaken, as this influences the level of assessment and evidence needed.
- 1.3.5 As was explained by the Court of Appeal on R. (Mynnyd y Gwynt Ltd) v Secretary of State for Business Energy and Industrial Strategy [2018] P.T.S.R. 1274 at para. 8:
- (5) Following assessment, the project in question may only be approved if the authority is convinced that it will not adversely affect the integrity of the site concerned. Where doubt remains, authorisation will have to be refused: see Waddenzee, at paras 56-57.
 - (6) Absolute certainty is not required. If no certainty can be established, having exhausted all scientific means and sources it will be necessary to work with probabilities and estimates, which must be identified and reasoned: see Waddenzee, points 107 and 97 of the Advocate General's opinion, endorsed in Champion's case, at para 41 and by Sales LJ in Smyth v Secretary of State for Communities and Local Government [2015] PTSR 1417, para 78.
 - (7) The decision-maker must consider secured mitigation and evidence about its effectiveness: European Commission v Federal Republic of Germany (Case C-142/16) EU:C:2017:301, para 38.

- 1.3.6 It should be recognised that it is essential to consider the available evidence relating to the effectiveness of mitigation and that absolute certainty as to lack of effects is not the legal test.
- 1.3.7 Additionally, the level of assessment required at the plan making stage is less than would be required for a planning application. Thus it was said by the Advocate-General in Case C-6/04 **Commission v UK** at para. 49 that "... an assessment of the implications of the preceding plans cannot take account of all the effects of a measure. Many details are regularly not settled until the time of the final permission. It would also hardly be proper to require a greater level of detail in preceding plans or the abolition of multi-stage planning and approval procedures so that the assessment of implications can be concentrated on one point in the procedure. Rather, adverse effects on areas of conservation must be assessed at every relevant stage of the procedure to the extent possible on the basis of the precision of the plan. This assessment is to be updated with increasing specificity in subsequent stages of the procedure."
- 1.3.8 Therefore the level of assessment required at the Local Plan making stage is less than that required at a planning application stage.

1.4 This Report

- 1.4.1 The proposed QEB development has the potential to affect Strensall Common SAC, and therefore the proposal requires assessment in accordance with the requirements of Regulation 63(1) of the Regulations. This report is intended as a 'shadow HRA' that can be referred to by the competent authority (i.e. CYC) and the statutory consultees, and it provides the information required for the appropriate assessment of the QEB scheme to allow its continued allocation within the emerging Local Plan. It includes:
- details of the scheme and identification of those aspects that could potentially affect European sites or interest features;
 - details of the European site considered at the screening and appropriate assessment stages, including information on conservation objectives and interest feature characteristics, distribution and sensitivities;
 - details of the 'screening' assessment, identifying those sites or features that will not be affected by the development, alone and in combination with other plans and projects; and
 - an assessment of the effects of the scheme on those European sites and interest features that are vulnerable (i.e. both exposed and sensitive) to the effects of the scheme, alone and in combination with other plans and projects, to determine whether the refurbishment will result in any adverse effects on the integrity of the European sites.
- 1.4.2 This document presents an update of the 'Information to support a Habitats Regulations Assessment produced in 2017⁸, and in addition to information available for the previous iteration, it has been informed by the following:
- Visitor Surveys and impacts of recreation at Strensall Common SAC⁹
 - Strensall Common Visitor Survey Report¹⁰;

⁸ Amec Foster Wheeler (2017). *DIO York sites: Queen Elizabeth Barracks (QEB). Information to support a Habitats Regulations Assessment*

⁹ Liley, D. and Lake, S. (2019). *Visitor surveys and impacts of recreation at Strensall Common SAC. An unpublished report by Footprint Ecology for City of York Council*

¹⁰ Pickersgill Consultancy and Planning Ltd. (2019). *Strensall Common Visitor Survey Report. An unpublished report for DIO*

- Queen Elizabeth Barracks, Strensall, York, Strensall Common Special Area of Conservation, Report on Mitigation Measures for the City of York Local Plan¹¹.

1.4.3 This report structure is detailed below:

- Section 2 – Provides brief details of the type of development the site is being considered for, and what environmental measures are likely to be included as standard environmental best-practice;
- Section 3 – Presents a baseline site summary, including ecological interest features additional to the qualifying habitats of the SAC, and the potential pathways by which adverse effects could arise as a result of the proposed allocation;
- Section 4 – Presents the Stage 1 screening decision;
- Section 5 – Presents the scope of the Stage 2 Appropriate Assessment, as defined by the screening;
- Section 6 – Presents the assessment of Effects: this section examines in detail the likely effects of the proposal on the interest features of the SAC, to determine whether the anticipated effects will occur, and whether they will result in adverse effects on integrity (alone or in combination); any additional mitigation measures considered necessary to avoid an adverse effect are also identified; and
- Section 7 – Provides a summary of the results of the assessment, and suggests a conclusion for the appropriate assessment of the scheme.

¹¹ Avison Young (2019). *Queen Elizabeth Barracks, Strensall, York, Strensall Common Special Area of Conservation, Report on Mitigation Measures for the City of York Local Plan. An unpublished report for DIO*

2. Scheme Proposals

2.1 The Site

- 2.1.1 QEB is located in a rural landscape, near the settlement of Strensall, approximately 6km north-west of the city of York. It covers approximately 30ha. QEB is an operational military training establishment, with numerous buildings and associated hardstanding. A large number of mature parkland trees are scattered throughout areas of managed amenity grassland.
- 2.1.2 There are also areas of semi-natural grassland and woodland towards the northern, eastern and southern boundaries where the boundary abuts on to the expansive, open mosaic of heath, marsh, acid grassland and scrub/woodland of the SAC.

2.2 Concept masterplan and planning principles

- 2.2.1 An illustrative concept plan for QEB has been prepared in relation to residential redevelopment. While this will be refined in due course, at detailed planning stage, the current land-use estimate (see Figure 1.2 in Appendix A) illustrates the potential for the following primary principles to be included:
- Capacity for approximately 15ha of residential-led development (c.545 dwellings – 500 on ST35 and 45 on H59), including:
 - ▶ some retained buildings; and
 - ▶ new-build housing, internal/residential roads and a new primary school.
 - Inclusion of approximately 15ha of green infrastructure (GI), to include semi-natural open space and parks/amenity/outdoor sports space which could, collectively:
 - ▶ be designed and managed to provide recreational opportunities (such as footpaths and play areas) for residents of the new and existing developments within a semi-natural environment;
 - ▶ connect to the GI network in the wider area (in line with CYC's Plan policies GI2 and GI3), while avoiding facilitating direct or increased public access on to the SAC, through the retention and maintenance of the existing MOD perimeter fence, or similar;
 - ▶ retention and enhancement of existing areas of semi-natural woodland and grassland where possible; and
 - ▶ retention and enhancement of existing trees and hedgerows where possible (in line with CYC's Plan policy GI4), with the extent of any unavoidable removal being kept to a minimum and be compensated through additional planting of native species.
 - Elements of a Sustainable Urban Drainage System (SuDS, see below), such as ponds and swales, to perform a dual function as 'blue infrastructure' in ecological connectivity and functioning with the on- and off-site green infrastructure, and off-site habitats;

- Design principles laid out by the Bat Conservation Trust^{12,13} with regard to urban/landscape design and artificial lighting would be adopted within a detailed scheme design, wherever possible;
- Any habitat creation could focus on the provision of areas of UK/York Priority Habitats, including such plant species and communities as are present on the SAC/SSSI, where possible; and
- Enhancements such as bird boxes, bat bricks/tiles, hedgehog access/houses and “bug hotels” could be incorporated in appropriate locations throughout the occupied development.

¹² <https://www.bats.org.uk/our-work/buildings-planning-and-development/lighting>

¹³ Gunnell, K., Grant, G. and Williams, C. (2012). *Landscape and urban design for bats and biodiversity*. BCT, London

3. Strensall Common SAC

3.1 Study Area

- 3.1.1 QEB is located adjacent to Strensall Common SAC. This is the only European site considered to be of relevance to the proposed development in the 2019 Waterman HRA.

3.2 European Interest Features

The SAC has been classified for the following interest features:

- H4010. Northern Atlantic wet heaths with *Erica tetralix*; Wet heathland with cross-leaved heath; and
- H4030. European dry heaths.

- 3.2.1 Strensall Common SAC supports one of the largest areas of lowland heath in northern England. Extensive areas of both wet and dry heath occur and form a complex habitat mosaic with grassland, woodlands and ponds.

- 3.2.2 Additionally, the site is noted for its population of marsh gentian (*Gentiana pneumonanthe*) and also for its invertebrates, being the only site in England for the dark bordered beauty moth (*Epione vespertaria*). These are not themselves qualifying species of the SAC, but Natural England lists them in the SAC Conservation Objectives¹⁴, as key structural, influential and/or distinctive species that should be maintained to be a viable component of the Annex 1 habitats.

- 3.2.3 The conservation objectives of the SAC are to:

- 3.2.4 *"Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;*

- *The extent and distribution of the qualifying natural habitats*
- *The structure and function (including typical species) of the qualifying natural habitats and,*
- *The supporting processes on which the qualifying natural habitats rely."*

Existing pressures and threats to the SAC

- 3.2.5 Natural England's last assessment of 'Feature Condition Status' of the SSSI units at Strensall Common, undertaken in September 2011, showed 32% (2 out of 6 units) of the SSSI to be in Favourable Condition and 68% (4 out of 6 units) to be in Unfavourable Recovering Condition¹⁵, with

¹⁴ Natural England (2019). *European Site Conservation Objectives: Supplementary advice on conserving and restoring site features Strensall Common Special Area of Conservation (SAC) Site Code: UK0030284*

¹⁵ [https://designatedsites.naturalengland.org.uk/ReportUnitCondition.aspx?SiteCode=S1004462&ReportTitle=Strensall Common SSSI](https://designatedsites.naturalengland.org.uk/ReportUnitCondition.aspx?SiteCode=S1004462&ReportTitle=Strensall%20Common%20SSSI)

no condition threats identified for any of the 6 units¹⁶. Current impacts on the SAC are summarised by NE¹⁷ as:

- High negative impacts from:
 - ▶ "Outdoor sports and leisure activities, recreational activities";
 - ▶ "Biocenotic evolution, succession"; and
 - ▶ "Air pollution, air-borne pollutants".
- High positive impacts from management/activity:
 - ▶ "Modification of cultivation practices"; and
 - ▶ High positive impact from management/activity: "Grazing".

3.2.6 The Site Improvement Plan (SIP¹⁸) for Strensall Common has prioritised the following issues:

- Public Pressure Access/Disturbance, with wardening being considered the best way to tackle irresponsible recreational use;
- Inappropriate scrub control, with on-going scrub clearance through agri-environment scheme (currently HLS) being the recommended measure; and
- Air Pollution (atmospheric nitrogen deposition), with a recommended Site Nitrogen Action Plan, which has not been prepared, to date.

3.2.7 NE has also recently published explanatory guidance notes¹⁹ for conserving/restoring various attributes for the qualifying features on Strensall Common. There are targets for maintaining:

- the total extent of the qualifying habitats;
- the spatial distribution of the qualifying habitats;
- vegetation community transitions/heathland-associated habitats;
- the component National Vegetation Classification communities, as referable to the qualifying habitats;
- overall cover of dwarf shrub species between 25-90%;
- a diverse age structure amongst the ericaceous shrubs;
- cover of common gorse is low (typically at <10%);
- the open character of the feature, with a typically scattered and low cover of trees and scrub (<20% cover);
- cover of dense bracken which is low, typically at <5%;

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<https://designatedsites.naturalengland.org.uk/SiteUnitList.aspx?SiteCode=s1004462&SiteName=&countyCode=&responsiblePerson=&unitId=&SeaArea=&IFCAArea=>

¹⁷ Natural England (2015) *Strensall Common SAC citation*

<http://publications.naturalengland.org.uk/publication/6310049894891520>

¹⁸ Natural England (2014). *Strensall Common. Site Improvement Plan*. [www.naturalengland.org.uk/ipens2000]

¹⁹ Natural England (2019). *European Site Conservation Objectives: Supplementary advice on conserving and restoring site features Strensall Common Special Area of Conservation (SAC) Site Code: UK0030284*

- the abundance of certain “typical” plant or animal species (or related groups of such species) make a particularly important contribution to the necessary structure, function and/or quality of a habitat feature at this particular site;
- control of the cover of undesirable non-woody and woody vascular plants species (e.g. rhododendron spp. and Himalyan balsam (*Impatiens glandulifera*);
- ecological connectivity of the site to its wider landscape;
- the feature's ability, and that of its supporting processes, to adapt or evolve to wider environmental change, either within or external to the site;
- the management measures (either within and/or outside the site boundary) needed to protect, maintain or restore the structure, functions and supporting processes associated with the feature (e.g. grazing management, scrub management);
- the properties of the underlying soil types;
- the concentrations and deposition of air pollutants below the critical values at or above which the feature is sensitive;
- maintain water quality and quantity to a standard which provides the necessary conditions to support the feature; and
- the natural hydrological regime to provide the conditions necessary to sustain the feature.

3.3 Current management of Strensall Common

- 3.3.1 MoD/DIO has stewardship obligations and is required to take reasonable steps to conserve and enhance the special features of the SAC (and SSSI) when carrying out its statutory duties. This involves the delivery of on-site adaptive management and habitat enhancement. If a problem is identified, the management regime is adapted to deal with the issue. The management of MoD sites takes place through the implementation of Integrated Rural Management Plans (IRMPs).
- 3.3.2 In accordance with its stewardship obligations, DIO (including in-house ecologists) works in partnership with a number of organisations to ensure that the Common is appropriately and effectively managed. DIO also liaises with a variety of organisations, including CYC and individuals. For example a Conservation Group meets twice yearly and coordinates activities and surveys carried out by voluntary bodies and academics including Freshwater Habitats Trust, Butterfly Conservation, Yorkshire Wildlife Trust (YWT), and NE.
- 3.3.3 The interest features of the site are protected from damage through the regulation of military activity by ‘range standing orders’. Positive management takes place through use of the MoD SSSI Programme and Conservation Stewardship Fund, which is managed by DIO. Works carried out in recent years have included scrub clearance, the installation of boardwalks and the provision of small enclosures to protect the food plant of the rare dark-bordered beauty moth. DIO has an agricultural tenant, who is responsible for grazing the Common at certain times during the course of the year (the Common is not grazed constantly). This is an important part of the management regime and, as a reflection of its importance, the Farmer has a Higher Level Environmental Stewardship (HLS) agreement with NE. The current HLS agreement includes the following management practices:

- **Avoidance of certain practices** that could affect the habitats, including application of lime, herbicides, fires, vehicles/storage, modification of drainage, recreational events (e.g. sports, camping) and metal detecting/archaeology;
- **Restoration of species-rich, semi-natural grassland** (purple moor-grass and rush pastures), through prescriptions for burning, grazing, topping, spot treatment of agricultural weeds (e.g. spear thistle (*Cirsium vulgare*), retention of deadwood and sympathetic management in the vicinity of great crested newt (GCN, *Triturus cristatus*) ponds;
- **Maintenance of lowland heathland**, through prescriptions for cutting, grazing (not in winter), scrub/tree removal and spot treatment of agricultural weeds; and
- **Restoration of forestry areas to lowland heathland**, through removal of (organic) litter, clear-felling of trees, seeding, fire control measures and exclusion of winter grazing until shrubs have established. Grazing and scrub control follow from successful establishment.

3.3.4 It has been noted that the burning plan was not fully implemented because a large accidental fire took place in the early part of the agreement, and grazing is undertaken by sheep, not cattle (as mentioned in the HLS documents).

3.3.5 On the YWT reserve, sheep are also used for (April-October) grazing, with some scrub, conifer and bracken removal being undertaken each year.

4. Stage 1 Screening

4.1 Approach

- 4.1.1 The screening assessment has two key stages: an initial screening stage designed to identify and exclude those sites and features that will self-evidently be unaffected by the proposals due to the interest features either being clearly not exposed to the likely effects, or (more commonly) not sensitive to them. In most instances, there will be 'no effect' on these sites and hence no possibility of 'in combination' effects. This allows the screening assessment to then focus on those features and sites that are most likely to be vulnerable (exposed and sensitive) to the effects of the scheme. The screening then explores the likely effects of the scheme on the remaining sites and interest features to determine whether significant effects are likely. Mitigation measures are not now considered at the screening stage, as explained below.

Treatment of mitigation measures within HRA

The recent *People Over Wind and Sweetman v Coillte Teoranta (C-323/17)* case, has altered how avoidance and mitigation measures are accounted for by an HRA. The 'People Over Wind' judgement states that "...it is not appropriate, at the screening stage, to take account of the measures intended to avoid or reduce the harmful effects [mitigation] of the plan or project on that site". This contrasts with established practice in this area (based on the "Dilly Lane" judgment) where avoidance and mitigation measures have typically been accounted for during screening.

- 4.1.2 The assessment takes into account readily available data on the European sites and their interest features, including their distribution (if known), condition assessments, and conservation objectives.
- 4.1.3 It should be noted that the formal screening assessment can only be undertaken by the competent authority (i.e. CYC), although the assessment reported here is intended to provide a robust guide to the likely effects of the scheme on receptors in the study area.

4.2 Screening

Identification of European sites at risk of adverse effects potentially arising from the Local Plan

- 4.2.1 Section 2.8 of the 2019 Waterman HRA identifies the following pathways by which adverse effects from the Local Plan could have adverse effects on the integrity of European sites:
- Effects on the aquatic environment: Strensall Common SAC.
 - Effects on mobile species: Humber Estuary SPA/SAC/ Ramsar, Lower Derwent Valley SPA/SAC/ Ramsar and River Derwent SAC.
 - Effects from recreational pressure: Humber Estuary SPA/ Ramsar, Lower Derwent Valley SPA/SAC/ Ramsar, River Derwent SAC, Strensall Common SAC and Skipwith Common SAC.
 - Effects from airborne pollution: Lower Derwent Valley SPA/SAC/ Ramsar, River Derwent SAC, Strensall Common SAC and Skipwith Common SAC.
- 4.2.2 All other European sites and potential effects were screened out.

Screening of policies in the Local Plan with regard to the potential effect pathways

4.2.3 Section 3 of the 2019 Waterman HRA goes on to clarify that:

- Strensall Common SAC is the only European site at risk of adverse effects to the **aquatic environment**, during construction and operation, from Policies SS19/ST35, E18 and H59 only, and these are therefore screened in for appropriate assessment. Para 3.10 of the HRA states that *"each policy is capable of resulting in a likely significant effect alone and, therefore, no residual effects are anticipated and there is no need for an in combination assessment at this stage."*
- Drawing on visitor survey work undertaken by CYC/Footprint Ecology in 2018, the HRA concludes that Strensall Common SAC is the only European site at risk of adverse effects from **recreational pressure** from Policies SS19/ST35, E18 and H59, and these are therefore screened in for appropriate assessment.
 - ▶ Para 3.68 of the HRA states that "Each policy is capable of a likely significant effect alone and given the distance of the European site from other residential allocations, it is considered that there would be no residual effects and no need for an in combination assessment."
 - ▶ All other policies and/or allocations were screened out of the HRA in terms of this potential effect.
- Strensall Common SAC is the only European site at risk of adverse effects from **air pollution** from emissions from road traffic associated with Policies SS19/ST35, E18 and H59, and therefore an appropriate assessment is required.
 - ▶ Para 3.113 states that *"Given the requirements of the Wealden decision, this opinion is expressed as alone and in combination as traffic from the entire plan has been considered in the air quality assessment. However, only these three allocation lie in close proximity to the Common (SS19/ST35, H59 and E18) with others far distant and the cause of any exceedance can be considered likely to originate from here. Therefore, the subsequent appropriate assessment considers it under these three policies."*

4.3 Conclusion – Stage 1 screening decision

4.3.1 Based on the sensitivities of the qualifying features of the SAC, it is considered that likely significant effects on the SAC interest features could arise as a result of the proposed development of QEB. The proposed development of QEB has therefore been 'screened in' for Stage 2 'appropriate assessment' in relation to:

- Likely significant effects from change to the local hydrological regime i.e. potential effects to the aquatic environment via localised changes to hydrology, hydrogeology and water chemistry, arising through surface/groundwater changes (i.e. run-off, sedimentation, erosion etc.) as a result of development immediately adjacent to the SAC (i.e. QEB alone).
- Likely significant effects from air pollution arising from increased road traffic from QEB alone, and other allocations in combination, albeit that the assessment is presented as an in combination assessment due to the modelling approach.
- Likely significant effects from recreational pressure, alone from QEB (ST35 and H59). However, additionally, and contrary to the 2019 Waterman HRA, it is considered that an assessment of the contributions of QEB and other allocations is also required due to the potential visitor contributions from other sites proposed for residential development.

5. Scope of Stage 2 'appropriate assessment'

5.1.1 Building on the screening decision presented in Section 4 the proposed scope of the assessment is detailed in respect of air quality, hydrology/water quality and recreation / urban edge effects are detailed below.

5.2 Air quality

5.2.1 An assessment has been undertaken (Appendix B), which:

- identifies the critical loads and critical levels, from the APIS web site, that apply to the habitats at Strensall Common SAC;
- considers the likely emissions to atmosphere during the construction phases of the developments, including dust and exhaust emissions from vehicles and construction plant and road traffic;
- considers the mitigation and control measures that will be required, consistent with the IAQM Guidance on the control and management of construction dust;
- identifies the likely road traffic trip generation from the completed developments at QEB and Towthorpe Lines, together with other allocations proposed for inclusion in the Plan, in terms of the potential for the cumulative traffic movements to generate emissions to atmosphere (especially of nitrogen oxides) that could adversely affect sensitive habitats within the SAC; and
- considers the implications of the 2017 Wealden District Council High Court Judgment in *Wealden District Council v Secretary of State for Communities and Local Government, Lewis District Council and the South Downs National Park Authority (Defendants) and Natural England (Interested party) [2017] EWHC 351 (Admin)*, which relates to the assessment of effects on a SAC caused by changes in air quality associated with increased traffic flows relating to new housing development.

5.3 Hydrology/Water quality

5.3.1 A high-level assessment of the potential effects of the proposed development on flood risk, water quality and water resources has been undertaken (Appendix C). This has considered potential changes in:

- flood risk – consideration of flood risk (fluvial, surface water, groundwater and artificial sources) with regard to potential impacts on downstream receptors (e.g. the SAC) – this would be based on publically available Environment Agency (EA) data (e.g. online flood risk maps) and other publically available third party documents;
- water resources – drawing upon EA data and relevant publically available third party data, we would identify local abstractions and assess potential effects on water resources that are likely to arise from the development;
- water quality – any effects on water quality during construction or operational phases of the project will be subject to high level assessment using EA data and any publically available third-party data; and
- a source-pathway-receptor methodology would be applied in order to identify any potentially significant effects arising from the construction and operational phases of the development – the assessment would identify any outline mitigation measures that are considered necessary to enable a conclusion to be reached that there will be no adverse effect on the integrity of the SAC.

5.4 Recreation and other urban edge effects

5.4.1 The scope of work undertaken has comprised undertaking a desk study, site visit and visitor surveys (one commissioned by CYC (Footprint Ecology, 2019) and one by DIO (Pickersgill Consultancy and Planning Ltd²⁰) that between them:

- Identify whether any damage to habitats that has already been caused by visitors to the site;
- Identify any measures that have already been put in place to reduce such damage;
- Undertake direct counts of visitors and visitor interviews to gain information on visitors' recreational activity and opinions;
- Review current and predicted future military usage of QEB and the SAC;
- Review examples of other sites where recreation/visitor management strategies have been designed and implemented for the mitigation of recreational impacts on designated sites supporting similar habitats to those present on Strensall Common; and
- any opportunities for implementing similar measures to manage recreational use of the SAC such that any additional use resulting from development of QEB will not result in an adverse effect on site integrity.

5.4.2 The methods and results of this work are provided in Appendix D and E.

5.4.3 As well as contributing to the Stage 2 assessment, the information gathered has informed the preparation of a Mitigation Strategy, as detailed in Section 6 of Appendix F), which includes sufficient information to inform the site allocation process, albeit it would be built upon at the application stage and implemented post development.

5.4.4 The strategy seeks a balance between considerations for the SAC and other ecological features, military training constraints, while permitting responsible public access to the natural resources. The strategy has looked at how recreational pressures are being dealt with at four major protected sites in other parts of the Country where significant housing growth is planned / being delivered and is expected to give rise to increased recreational pressure. These are: Dorset Heathlands SAC/SPA, Thames Basins Heath SPA (Hants/Surrey), Cannock Chase SAC (Staffs) and New Forest (includes several SAC and SPAs in Hants and Dorset).

5.4.5 Drawing on the examples cited, a number of mechanisms are proposed which are sufficient to not only prevent adverse effects from arising as a consequence of this development but also deliver better management of current users, such that there is likely to be a net gain more generally in ecological terms.

5.5 In combination effects

5.5.1 The air quality assessment (Appendix B) has, in part, been derived from transport assessments which consider the cumulative impact of further committed developments as part of the Local Plan allocation. The air quality assessment is therefore undertaken in combination.

5.5.2 The assessment of recreation pressure on the SAC has been undertaken for QEB alone, and in combination with other residential allocations.

²⁰ Pickersgill Consultancy and Planning Ltd. (2019). *Strensall Common Visitor Survey Report. An unpublished report for DIO*

6. Assessment of effects

6.1 Scope

- 6.1.1 The screening (Section 4) determined that the proposed residential development of QEB could directly or indirectly affect both the Strensall Common SAC designating features:
- H4010. Northern Atlantic wet heaths with *Erica tetralix*; Wet heathland with cross-leaved heath; and
 - H4030. European dry heaths.

6.2 Potential effect pathways

- 6.2.1 The qualifying habitats of the SAC, and other interest features, could be directly affected by the proposed development through:
- potential changes to hydrology, hydrogeology and water chemistry such that there is an increased risk to the maintenance of the wet heath habitat;
 - potential increased deposition of aerial pollution (e.g. dust during construction and/or nitrogen deposition from increased local traffic during operation); and
 - increased, uncontrolled, recreational pressure and other urban edge effects as a result of residential development, and an associated population increase, both adjacent to the boundary of the SAC and also in the area around the SAC.

6.3 Baseline, feature distribution and conservation objectives

- 6.3.1 The SAC (most of which is also designated as a SSSI) is 572ha in extent and comprises approximately 172ha of wet heath and 57ha of dry heath, with the remaining 343ha constituting a largely open mosaic of marshy grassland/mire, acid and neutral grassland, water bodies (ponds and ditches), swamp, bracken, gorse/bramble scrub, semi-natural birch and oak woodlands and some relatively small areas of conifer (Scot's pine) plantation²¹.
- 6.3.2 The majority of the SAC is managed, mainly through sheep grazing, by a tenant farmer under an HLS agreement.
- 6.3.3 NE has prioritised pressures/threats from public access/disturbance, inappropriate scrub control, and air pollution in its SIP¹⁹.

Conservation objectives

- 6.3.4 The conservation objectives for the qualifying features of the SAC are²²:

²¹ Wold Ecology (2009). *Strensall Common. National Vegetation Classification Survey.*

²² Natural England (2014). *European Site Conservation Objectives for Strensall Common Special Area of Conservation Site code: UK0030284*

- 6.3.5 "Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;
- The extent and distribution of the qualifying natural habitats;
 - The structure and function (including typical species) of the qualifying natural habitats; and
 - The supporting processes on which the qualifying natural habitats rely.

6.4 Assessment of effects

Potential increased deposition of aerial pollution

- 6.4.1 The interest features of the SAC have been identified as being sensitive to changes in air quality, and hence an air quality assessment has been undertaken. The assessment undertaken is reported in full in Appendix B and summarised below. Additionally, it is noted that the 2019 Waterman HRA included an assessment of air quality effects on Strensall Common and this is referred to below where appropriate.

Construction dust assessment

- 6.4.2 The IAQM guidance provides a method to assess the significance of construction impacts by considering the annoyance due to dust soiling as well as harm to ecological receptors and the risk of health effects due to any significant increases of PM₁₀ or PM_{2.5}. A detailed assessment is deemed to be required where there is:
- An 'ecological receptor' located within: 50 m of the boundary of the site; or 50 m of the route(s) used by construction vehicles on the public highway, up to 500 m from the site entrance.
- 6.4.3 At this stage, there are not sufficient details in order to carry out a construction assessment, however it is likely that due to the size of the site and the potential proposed development that there will be a high risk of dust emission. Nonetheless, potential dust emissions can be minimised by adopting appropriate mitigation measures (presented in Appendix B). Adoption of these measures will avoid emissions that could otherwise deposit on features in the site, and hence there will be no adverse effect on the integrity of the SAC resulting from construction dust.

Operational Phase Emissions

- 6.4.4 The operational air quality assessment has considered the potential for traffic emissions arising from the completed development to effect the SAC interest features.
- 6.4.5 The Air Pollution Information System²³ (APIS) provides information on deposition rates and critical loads for specific designated areas, as well as for individual species. The Strensall Common SAC has been designated for the following interest features:
- H4010. Northern Atlantic wet heaths with *Erica tetralix*; Wet heathland with cross-leaved heath; and
 - H4030. European dry heaths.
- 6.4.6 Both habitats are listed as being sensitive to nitrogen oxides and nitrogen deposition.

²³ <http://www.apis.ac.uk/src/select-a-feature?site=UK0030284&SiteType=SAC&submit=Next>

- The critical level for all vegetation types from the effects of NO_x has been set to 30 µg/m³²⁴ (annual mean), whilst the EAL is 75 µg/m³ (daily mean).
- The critical loads for N deposition for both the heathland features on the SAC are set at 10-20 kg N/ha/yr.

- 6.4.7 The average deposition rate at Strensall Common SAC is 22 kg N/ha/year (Maximum: 23.38 kg N/ha/year / Minimum: 20.16 kg N/ha/year). This is already in excess of the published critical load for these habitats of 10-20 kg N/ha/yr.
- 6.4.8 DMRB guidance states that background deposition rates are expected to decrease by 2% per year during the 2020s. However, due to disparity between predicted concentration decrease and actual concentration decrease, the baseline deposition rate is used to calculate future rates of nitrogen deposition. This is considered to be a conservative approach.
- 6.4.9 Dispersion modelling was undertaken and a comparison made of predicted concentrations against air quality standards (AQS) and environmental assessment levels (EAL). The predicted concentrations resulting from the additional traffic flow (i.e. the process contribution (PC)) are presented along with background concentrations and the percentage contribution that the predicted environmental concentrations (PEC) would make towards the relevant standard, objective or guideline value (see Appendix B).

Nitrogen Oxides

- 6.4.10 Oxides of nitrogen (NO_x) concentrations were predicted using ADMS-Roads to determine whether additional traffic movements associated with the proposed development would impact Strensall Common SAC along a transect of points up to 200 m from the road.
- 6.4.11 In respect of annual mean NO_x, as expected annual mean concentrations of NO_x are predicted to decrease with distance from the road. There is one exceedance of the 30 µg m⁻³ AQO at the kerbside of Towthorpe Moor Lane in the Baseline scenario (2a). However, in the 2031 scenarios, there are not expected to be any exceedances of the AQO.
- 6.4.12 With regard to the EPUK & IAQM significance criteria in Appendix B, the change in concentration between the 'without' and 'with' scenarios for 2031 at Flaxton Road is considered to be Negligible. However, at kerbside on Towthorpe Moor Lane, the predicted increase in concentration of NO_x is expected to have a Moderate Adverse impact on the air quality at Strensall Common SAC. The severity of impact decreases with distance from the road, with a Slight Adverse impact predicted at 25 m, which decreases to Negligible by 50 m.
- 6.4.13 Defra forecasts that NO_x concentrations will fall during the 2020s, and these trends are expected to continue in response to strong political pressure to reduce emissions from roads vehicles. Therefore, the additional NO_x deposition predicted to result from the presence of a redeveloped QEB and Towthorpe, is most likely to be off-set as time passes by reduced NO_x emissions generally. This will ensure that the development will not contribute to any undermining of achievement of the conservation objectives. By 2031, annual mean NO_x levels are well below the critical level for the heathland designating features for both 'with' and 'without' scenarios.
- 6.4.14 In respect of daily mean concentrations of NO_x, these exceed the 75 µg m⁻³ EAL at kerbside locations at both Flaxton Road and Towthorpe Moor Lane in the Baseline scenario (2017), which

²⁴ Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe. Transposed into UK law as the Air Quality Standards Regulations: Statutory Instrument 2010 No. 1001. Environmental Protection: The Air Quality Standards Regulations 2010.

includes the traffic associated with the current use of the proposed development sites. However, by 25 m the daily mean concentration is predicted to significantly decrease to well below the EAL.

- 6.4.15 When considering the future scenarios, there are not predicted to be any exceedances of the EAL at any point modelled on the transect. The highest predicted daily mean concentration of NO_x is in the future scenario with the proposed developments at Towthorpe Moor Lane at the kerbside, but this is still 3% below the EAL.

Nitrogen Deposition

- 6.4.16 The nitrogen deposition at the Strensall Common SAC is above the minimum critical load value at all points across the transect at both Flaxton Road and Towthorpe Moor Lane. However, it should be noted that the background deposition rate is 120% above the 10 kg N ha⁻¹ yr⁻¹ minimum critical load before the process contribution associated with the additional traffic flow is considered.
- 6.4.17 Environment Agency guidance suggests that if the increase in PC as a result of the Proposed Development is 1% or less than the critical load, the change in nitrogen deposition will be insignificant. The predicted nitrogen deposition rates in Table A5.3 (Appendix B) show that nitrogen deposition will be 2% higher at the roadside at Towthorpe Moor Lane (receptor point 2a), however at all other receptor points the increase was below 1%. Therefore, overall nitrogen deposition is expected to be insignificant.
- 6.4.18 This is reinforced by reference to NECR 210²⁵, as the 2019 Waterman HRA has done, where it is indicated that for species richness to decline by one (species) would require an increase in nitrogen deposition of 1.3 kg N/ha/yr. However, the maximum modelled difference with and without the developments in 2031 is 0.21 kg N/ha/yr, at the kerbside, which is significantly less than the 1.3kg figure. The impact away from the roadside would be smaller than this. This suggests that the increase in nitrogen deposition caused by the developments would not result in a decline in species richness.
- 6.4.19 Additionally, as indicated above, by 2031 a significant fraction of the vehicle fleet is expected to be zero-emission, given current behavioural trends, the Government's commitment to end sales of new petrol and diesel vehicles by 2040, and the increasing pressure to decarbonise the vehicle fleet as soon as possible. Therefore, the additional N deposition predicted to result from the presence of a redeveloped QEB and Towthorpe, is most likely to be off-set as time passes by reduced N emissions generally.

Acid Deposition

- 6.4.20 Using the Critical Load Function Tool²⁶ to consider the Process Contribution in relation to deposition of nitrogen and sulphur compounds, acid deposition rates at ecological receptors resulting from emissions from the proposed development are small, The impact of the proposed developments on acid deposition is small, a maximum PC of 3.5% of the critical load function, and not expected to have a significant impact on the integrity of the designated ecological features of the site.

²⁵ Caporn, S., Field, C., Payne, R., Dise, N., Britton, A., Emmett, B., Jones, L., Phoenix, G., Power, S., Sheppard, L., and Stevens, C. (2016). Assessing the effects of small increments in atmospheric nitrogen deposition (above the critical load) on semi-natural habitats of conservation importance. NECR 210.

²⁶ <http://www.apis.ac.uk/clf-guidance>

Conclusions – Air Quality

- 6.4.21 Based on the assessment summarised above, it is concluded that operation of both QEB and Towthorpe combined will not affect air quality parameters such that there could be an adverse effect on the integrity of the SAC features. It is also therefore possible to conclude that neither site individually could affect air quality parameters such that there could be an adverse effect on the integrity of the SAC features.

Potential changes to hydrology, hydrogeology and water chemistry

- 6.4.22 The potential for likely significant effects of the proposed development at QEB on the hydrological environment of the Strensall Common SAC has been assessed (see Appendix C).
- 6.4.23 The SAC interested features considered are:
- H4010. Northern Atlantic wet heaths with *Erica tetralix*; Wet heathland with cross-leaved heath; and
 - H4030. European dry heaths.
- 6.4.24 In broad terms, the dry heaths feature is typically a habitat of well drained, dry, substrates but would be sensitive to an increase in wetness. The wet heath feature would typically be found in damp/wet locations and would therefore be affected by changes that result in a reduced water table leading to drying, an increase in wetness leading to flooding and changes in the quality of the water supporting the habitat.
- 6.4.25 Based on the broad requirements above, the assessment considered the potential for the development to result in changes to flood risk, water resource availability and water quality. To provide a robust assessment on the receptors the scope of the assessment considered the potential effects on Water Framework Directive (WFD) water bodies, as well as the SAC, as hydrological effects on the SAC would also likely affect the WFD waterbodies. The WFD waterbodies considered included Tang Hall Beck/Old Foss Beck catchment, tributary of the River Foss (GB104027063500) and Foss from the Syke to the River Ouse (GB104027063520) WFD surface water bodies, and the SUNO Sherwood Sandstone (GB40401G702100) WFD groundwater body.
- 6.4.26 Potential likely significant effects were identified in respect of flood risk, water quantity and water quality. The assessment considered Site-specific effects arising from the development itself from construction, operational and decommissioning activities, as well as in-combination effects from other development within vicinity of the receptors. Specific potential impacts include:
- Increased flood risk due to increased surface water discharges from site (causing flooding WFD water bodies, or of wet heath or dry heath habitats in Strensall Common SAC);
 - Reduced water availability due to new surface water or groundwater abstractions; and
 - Reduced water quality due to increased sediment inputs.
- 6.4.27 Where a likely significant effect was identified, the potential for effective mitigation measures has been outlined. For the construction phase, this includes the incorporation of Sustainable Drainage Systems (SuDS) for the management of surface water, use of silt fencing (to trap sediment), and incorporation of best practice measures for pollution management, within a Construction Environment Management Plan (CEMP). For the operations phase mitigation measures included design of suitable SuDS drainage system over the lifetime of the development (and to account for drainage failure). Appropriate stages of water quality treatment (including sediment removal), before discharge of surface water from the Site.

Conclusions - hydrology, hydrogeology and water chemistry

- 6.4.28 Whilst it is recognised that there are uncertainties in the baseline knowledge, in particular in respect of the proportion of surface water drainage from QEB that goes to off-site ditches, it is known that there are discharges to the north, east and south of QEB (i.e. to the IDB network). Determination of an existing positive connection to the IDB drainage network and the location of the connection and rates of discharge still need to be undertaken by the developer at the outline planning stage, however, there is no reason to conclude that these do not exist, or that they will not be capable of conveying the drainage from QEB. As a result it is concluded that the necessary mitigation measures can be designed to ensure no changes to the hydrological condition of the SAC and therefore, with the proposed mitigation, it can be concluded that the proposed development at QEB would not result in an adverse effect on the water environment of the SAC.
- 6.4.29 The detailed proposals for the development Site would be subject to further assessment (e.g. detailed Flood Risk Assessment and HRA) and would confirm the design of Site-specific mitigation measures that would be incorporated into the proposed development at the Site.

Potential increased, uncontrolled, recreational pressure and other urban edge effects

- 6.4.30 The most typical mechanisms for recreational effects are through direct damage of habitats, or disturbance of certain species (where relevant). Damage will most often be accidental or incidental, but many sites are particularly sensitive to soil or habitat erosion caused by recreational activities and require careful management to minimise any effects (for example, through provision and maintenance of 'hard paths' (boardwalks, stone slabs etc.) and signage to minimise soil erosion along path margins).
- 6.4.31 Most recreational activities with the potential to affect European sites are 'casual' and pursued opportunistically (e.g. walking, walking dogs, riding) rather than structured (e.g. organised group activities or trips to specific discrete attractions), which means that it can be difficult to quantify or predict either the uptake or the impacts of these activities on European sites and (ultimately) harder to control or manage effects. It also means that it is difficult to explore in detail all of the potential aspects of visitor pressure on multi-compartment European sites for example.
- 6.4.32 With regard to the Strensall Common, as reported below, NE is concerned about recreational pressure and the potential for damage to occur. In the case of this SAC this is most likely to manifest itself through damage to the habitats rather than disturbance of species.

Baseline Condition – Study Rationale and Approach

- 6.4.33 Strensall Common SAC is open for public access, except when restricted by military activities.
- 6.4.34 The recently published explanatory guidance notes²⁷ for conserving/restoring various attributes for the qualifying features on Strensall Common includes specifications for the management measures needed to protect, maintain or restore the structure, functions and supporting processes associated with the feature, and indicates that grazing management can be influenced by recreational pressure. However, the site condition assessment does not indicate that recreational pressure is a threat to the site, or is actually causing adverse effects on the SAC currently. Nonetheless, Natural England had raised concerns about the potential increase in recreational pressure if the QEB development were to proceed. Therefore a Visitor Survey was commissioned by CYC and the report ('Visitor surveys and impacts of recreation at Strensall Common SAC'²⁸) was issued in February 2019,

²⁷ Natural England (2019). *European Site Conservation Objectives: Supplementary advice on conserving and restoring site features Strensall Common Special Area of Conservation (SAC) Site Code: UK0030284*

²⁸ Liley, D. and Lake, S. (2019). *Visitor surveys and impacts of recreation at Strensall Common SAC. An unpublished report by Footprint Ecology for City of York Council*

alongside an updated Habitats Regulations Assessment²⁹ of the CYC Local Plan. Following a review of the Footprint Ecology report, DIO raised concerns with regard to some details of the approach to the work and some of the extrapolations and conclusions that were drawn from the data collected.

- 6.4.35 To add to the evidence-base initiated by the Footprint Ecology work, and address a number of concerns that were identified regarding the robustness of the methodologies employed; further visitor survey work was commissioned by DIO and undertaken by Pickersgill Consultancy and Planning Ltd. (PCP) during late summer/autumn 2019. The report is provided in Appendix E.
- 6.4.36 The methods used to collect data comprised five main elements:
- Face-to-face interviews, to gain information on visitors' recreational activity and opinion;
 - Direct counts of visitors, dogs, horses, bicycles and vehicles;
 - Counts of vehicles in carparks and laybys;
 - Automated cameras to capture 'everything that moves' at two selected locations³⁰;
 - Counts made across all entry points to the Common, using a mixture of cameras and fieldworkers, with the objective of counting people, dogs and cars at all entry points to the Common in a 48hour period, encompassing a firing and non-firing day.
- 6.4.37 The first four of the methods listed above were the same as those used by Footprint Ecology, however additionally PCP made counts across all entry points to enable derivation of an estimate of annual visitor numbers to the Common.
- 6.4.38 Direct counts and interviews were conducted at the main permissive car parks around the SAC boundary, on three days which had different circumstances:
- A weekday when there was firing;
 - A weekday when there was no firing;
 - A weekend day when there was no firing.
- 6.4.39 This suite of three survey days was also repeated in both school term time and during school holidays, in order to consider the effect of this variable on numbers of visitors, and visitor behaviour.
- 6.4.40 Further information has been obtained through completion of a desk study and site visit, as detailed in Appendix D.

Baseline Condition – Visitor Use

- 6.4.41 A number many of the Visitor Survey results are very similar as detailed in Appendix E. Key conclusions from the surveys, and supporting analyses are summarised below:
- The majority (just under 70%) of visitors interviewed arrive at the common by car. On average around 32% of people visit daily, although it is a greater proportion of dog walkers.
 - The majority of visitors interviewed (around 70%) visit the common to walk dogs.

²⁹ Waterman Environment & Infrastructure Ltd. (2019). *Habitats Regulations Assessment of the City of York Council Local Plan*

³⁰ Bushnell Trail Cameras were used. They were attached to trees and angled low to the ground alongside the paths enabling them to record feet or wheels and the direction of travel, without capturing any personal information. Images were reviewed in time order and then counts made of the number of separate groups passing in each direction.

- Footprint Ecology found that the median walk distance by interviewed visitors was 2.5km, whilst the PCP data suggested it is 3.0km.
- A much greater proportion of the PCP interviewees have travelled more than 5km to the common (40.6%) compared to the Footprint Ecology dataset (15%).
- 124,000 people will visit the common in 2019. This is further broken down to c.340 people, 200 dogs and 30 cars on the site per day on average, and whilst there is little predicted seasonal variation, there is considerable variation by day (e.g. term time weekend non-firing relative to term time weekend firing).
- Based on the interview data, 3% of interviewees (7 individuals) were military staff using the common for recreational purposes. 2% of the people observed during the counts across all entry points to the common were clearly military personnel, however a number of others could have been present off-duty (out of uniform).
- The Footprint Ecology survey appears to take no account of use by military staff using the common for recreational purposes, or of existing residents of QEB.

Potential Effects – Increase in Recreational Use of the Common, QEB alone and in combination contributions

- Based on the PCP data the predicted percentage increase in number of visits that might be expected with the QEB and other developments within 7.5km of the Common, is very similar to the Footprint Ecology estimate (23.6% based on the data and 21.6% based on the equation from the PCP survey, and 24% from the Footprint Ecology data). However, if the number of Single Living Accommodation is included in the residential properties data then the predicted additional interviewee contribution from residential properties within 500m of QEB reduces to 23.32, from 25.83, and also reduces the predicted increase in visitor use by 1.3% overall (based on the data relationship). Nonetheless, the higher % figure (23.6%) has been used in further calculations as it is considered worst case as represented by the PCP data.
- Footprint Ecology also tested the overall access to Strensall Common as a result of different sites being excluded from the CYC Local Plan, concluding that other allocations would result in a 6% increase in visitor numbers, with QEB (ST35 and H59) resulting in a 18% increase. A similar process using PCP data suggests that other allocations would result in a 9.6% increase in visitor numbers, with QEB (ST35 and H59) contributing 14%.
- A predicted increase of 23.6% in visit numbers, based on PCP data, would add, conservatively (as it takes no account of the presence of existing residents on QEB) c.29,264 visits per annum, or c.80 visits per day (c29,760 visits per annum, or c81.5 visits per day based on Footprint Ecology). Based on PCP data, and omitting consideration of the 95 SLA at QEB, the QEB development is predicted to contribute around 59% (17,265 per annum / 47 per day). However all the other allocations within 7.5km of the site would also contribute around 41% (11,998 per annum / 33 per day). In contrast the Footprint Ecology analysis suggests the balance would be approximately 75% (22,320 per annum / 61 per day) from QEB and 25% (7,440 per annum or 20 per day) from all the other allocations within 7.5km. As is evident above, predictions of current and future use of the Common with proposed allocations in the Local Plan vary between the two visitor surveys undertaken. These differences illustrate that neither survey is definitive in absolute number terms, but the results do illustrate a likely range of effects of the plan allocations on visitor numbers.
- The resulting conservative totals of 153,264 (PCP data) or 153,760 (Footprint Ecology data), are still fewer visitors than other sites of a similar size receive annually. For example

Saltfleetby – Theddlethorpe Dunes National Nature Reserve (NNR) is 600ha in extent and is reported to receive 290,000 visitors per annum, whilst Derbyshire Dales NNR is 385ha in area and receives 180,000 visitors per year³¹.

Potential Effects – Damage to the SAC

6.4.42 Effects of damage caused by recreational use of the Common was review by Footprint Ecology (2019). The recreational effects / pressures identified in the Footprint Ecology Report are listed below, together with a brief summary of the extent to which Footprint Ecology considers they have the potential to adversely affect the integrity of the SAC:

- **trampling leading to vegetation wear:** Footprint Ecology noted some trampling during its surveys but concluded that this is not likely to impact on integrity of the SAC. Indeed, Footprint Ecology notes that moderate amounts of tramping may help maintain the open habitat. Footprint Ecology noted that there has been some problems with unauthorised access by motor bikes in the past and that if this were to recur it may cause wear and damage;
- **increased risk of fire:** Footprint Ecology states that it found evidence of a fire in the northern (central) part of the Common, in an area of even-aged sward. The Footprint Ecology Report does not record the extent or effect of the fire but notes that the Dark Bordered Beauty Moth is potentially vulnerable to fire due to its distribution over a number of small hotspots. However, the Moth is not a qualifying feature of the SAC and, for HRA purposes, is not a relevant consideration. DIO also understands that NE has previously approved a burning plan promoted by the tenant farmer although this has since expired;
- **disturbance to grazing livestock:** Footprint Ecology notes that grazing is an essential part to the on-going ecological management of the Common and refers, in its Report, to assertions made by the tenant farmer about incidents of livestock worrying by dogs off leads. The Report states that the Farmer has encountered such issues in most years and that the number of visitors and uncontrolled dogs have caused problems for stock management. Unfortunately, and unhelpfully, the Farmer has not catalogued these incidents or reported them to the Police, CYC or DIO. As a consequence, there is no formal record or evidence the scale of the issue and the extent to which it has impacted, or has the potential to impact, on the integrity of the SAC. We understand that there has been only one instance of sheep worrying this year [2019] and this was in a field beyond the Common;
- **nutrient enrichment from dog fouling:** Footprint Ecology has noted signs of nutrient enrichment in close proximity to the Galtres and Scott Moncrieff car parks, and around some of the laybys close to the more heavily used paths in the vicinity of the car parks. It concludes that this is likely to be linked to a dog walking culture, where picking up dog faeces is not prevalent. Whilst this is a matter that DIO should and will continue to tackle as part of its stewardship / management regime, Footprint Ecology does not identify it as an issue for the integrity of the SAC;
- **contamination of ponds:** at the time of Footprint Ecology's surveys, most of the ponds and small water bodies within the Common were dry. However, it went on to note that many are unlikely to be attractive to dog walkers as a consequence of them being surrounded by unstable wetland vegetation. Footprint Ecology did though note a risk in respect of the pond at SE6501 5942 which is close to a main track running north / south through the southern part of the Common. Here, Footprint Ecology noted the potential for excessive use by dogs

³¹ Natural England (2013). The economic impact of Natural England's National Nature Reserves. Natural England Commissioned Report NECR131.

to impact adversely on the Pillwort vegetation population. However, it did not identify any evidence of excessive use and did not say that if excessive use were to be noted in the future, it could not be addressed / mitigated;

- **contamination from fly tipping and littering:** Footprint Ecology noted that fly tipping is not a significant issue and although, during its surveys, there was some evidence of littering, this was usually confined to the car parks. Footprint Ecology has not asserted that either fly tipping or littering is having or could have any adverse impact on the integrity of the SAC;
- **damage to infrastructure and vandalism:** Footprint Ecology noted some graffiti damage to signs and graffiti sprayed on trees around the Scott Moncrieff and Galtres car parks. Whilst, plainly, such incidents are undesirable and are matters that DIO will need to continue to address as landowner, they have clearly been confined to the car parks and there is no risk of them having an adverse impact on the integrity of the SAC.

6.4.43 Separately DIO staff have indicated that:

- despite the installation of the Range Danger Area fence and the proliferation of signage around the site warning of the dangers associated with military training, issues with cyclists/walkers/dog walkers straying into training areas/ranges while live firing or other training is taking place are on-going. However, this is an issue of safety and recreational management, rather than activity that would be an issue for the integrity of the SAC.
- there had been one recorded instance of serious vandalism/arson in the 18 months prior to December 2017.
- there have been occurrences of illegal night-time/weekend incursions with quad bikes towards the northern extent of the site, with direct damage to gates and bollards to access the site from the road, and damage to flora and fauna through the creation of illegal off-road trails.
- there have been occasional instances of fly-tipping occurs along boundary roads and material has also been dumped some way into the Strensall Training Area that could only be accessed by off-road vehicles. However, these incursions have since been rectified with new fencing and gates.

6.4.44 Additionally YWT (pers. comm, 2017) have also indicated that on their reserve they have recorded:

- issues with dogs off the lead chasing wildlife and/or sheep, with occasional reports of unaccompanied dogs on the reserve, which is a major concern when there are livestock on-site;
- development of informal paths ('desire lines'), away from their network of fixed, permissive paths, which causes wider disturbance;
- a recurring problem with fly-tipping on one of the tracks on their reserve and pick up 3-4 trailer loads of fly-tipping in a typical year, in addition to regular litter picks undertaken by volunteers;
- tree houses and dens being built in woodlands (along with associated litter), along with some historic occurrences of fly-grazing and illegal camping on or close to the reserve.

6.4.45 Whilst it is accepted that the issues highlighted by Footprint Ecology, and reported by DIO and YWT above, have the potential to impact adversely on the integrity of the SAC, the key issues, appear to be: a) livestock worrying by dogs off leads and the knock on effect that this might have on the grazing regime; b) a risk of fire; and c) dog fouling.

- 6.4.46 However, there does not appear to be any reports or assessments that indicate that these issues have given rise to adverse impacts on site integrity, in spite of it being a well-used space that draws visitors from across York and beyond. However, the risk of these effects occurring on the Common if the recreational use of it increases and / or the behaviours of the users of the common change, resulting in more livestock worrying, more fires and more dog fouling, remains.
- 6.4.47 Whilst it is not a certainty that the development of QEB with housing will necessarily result in a material increase in number of undesirable incidents, it is likely that additional housing here (and elsewhere within the 7.5km isochrones referred to by Footprint Ecology) is likely to give rise to an uplift in the use of the Common for recreational purposes. Appropriate mitigation measures are therefore necessary to control future risks.
- 6.4.48 The risks identified by Footprint Ecology are not unique to Strensall Common. Recreational use presents the same or similar risks to SACs and SPAs all over the UK and in other locations, schemes of mitigation have been agreed that allow recreational uses to continue (and increase), whilst safeguarding the special environments that the areas hold.

Mitigation Measures - Background

- 6.4.49 Numerous sites supporting nationally and internationally important habitats and species, and designated as SACs, SPAs and Ramsar sites, are accessible to the public. The pressures associated with recreational use of accessible sites are well known and, as a consequence, there are numerous examples of where management and mitigation strategies have been designed and implemented to address harmful effects already occurring, and minimise the risks of adverse effects arising in the future. The management of recreational pressures at four major protected sites in other parts of the Country where significant housing growth is planned / being delivered and is expected to give rise to increased recreational pressure has been reviewed. These sites are: Dorset Heathlands SAC/SPA, Thames Basins Heath SPA (Hants/Surrey), Cannock Chase SAC (Staffs) and New Forest (includes several SAC and SPAs in Hants and Dorset). The summary of the case studies, from the Mitigation Measures Report³², is presented in Appendix F. A number of key points are highlighted by the cases that have been examined. These are that:
- it is not uncommon for members of the public to have access to SACs, SPAs and other designated sites. As a consequence, many local [planning authorities are having to grapple with (and have grappled with) the pressures that come with such freedoms;
 - many of the UKs designated sites extend over far larger areas than Strensall Common and have much more challenging and complex relationships with adjacent / nearby urban areas;
 - the SACs / SPAs that we have examined draw visitors from very wide areas and have zones of influence that range from 5km to 15km and even extend across entire Districts;
 - each of the designated areas referred to above is under significant additional pressure from planned housing growth (in most cases at levels far exceeding that envisaged in York) and in all cases the sensitivity of the designated area is such that the local planning authorities have concluded that mitigation measures must be required in all cases where development is proposed within the defined zone of influence (in other words, they cannot allow a single additional new home without also securing mitigation measures - this is not the approach being taken in York). Notwithstanding this heightened level of sensitivity to change, each of the local planning authorities with responsibilities in respect of designated sites has concluded that it is possible to mitigate against adverse impacts by designing simple

³² Avison Young (2019). Queen Elizabeth Barracks, Strensall, York. Strensall Common Special Area of Conservation, Report on the Mitigation Measures for the City of York Local Plan.

mitigation measure and securing the delivery of these through design, planning conditions and Planning Agreements;

- there are two cases above where buffer zones have been defined (400m zones within which most types of housing are resisted) but these are distinguishable from Strensall Common - in these instances the qualifying species include ground nesting birds that it is necessary to protect from the threats posed by pet (and particularly cat) predation. In addition, the New Forest SAC/SPA/RAMSAR includes ground nesting birds but no such buffer has been recommended. The qualifying features of the Common do not include species at risk from cat predation and so a buffer zone is not required;
- in most of the cases that we have examined, the local planning authorities have adopted generally worded, over-arching development plan policies and then added detailed requirements through the adoption of supplementary guidance. Notwithstanding the sensitivity and complexity of the SACs / SPAs that they are dealing with, none of these local planning authorities has found it necessary, at the plan-making stage, to make detailed provisions in respect either of the types of mitigations measures that will be required or when / how they will be delivered;
- each of the local planning authorities examined favours the use of a range of mitigation measures (rather than relying on one measure or a small number of measures) and, in most cases, these are paid for by developers but then delivered by either a local authority or other responsible body;
- in the cases that have been examined, all of the local authorities reference the same or similar mitigation measures – there is a high degree of consistency of approach and a relatively limited range of techniques used to mitigate against the effects of recreational pressure. These include: monitoring (of use and impacts); wardening; the delivery of SANGs (within developments and off-site); the enhancement of existing public open spaces elsewhere; enhanced signage and visitor information; and physical works (such as scrub clearance, the treatment of invasive species, the construction or improvement of footpaths, waymarking, the provision of bins, and habitat restoration); and
- Footprint Ecology has advised a number of the local planning authorities referred to above and has worked with them to define appropriate packages of mitigation measures (measures such as those described later in this Report). At Cannock Chase (where urban areas almost completely enclose the AONB), Footprint Ecology noted the difficulties associated with setting levels of mitigation relative to planned housing growth, and highlighted the importance of having confidence, nonetheless, that the proposed mitigation measures will address forecast increases in pressure, but went on to provide very clear and simple advice on how such confidence is gained and concluded that the SAMM designed for the Chase is fit for purpose. As will be seen, DIO is proposing to go further in terms of both specifying and delivering mitigation measures than the authorities have that surround Cannock Chase.

Mitigation Measures – Proposed at Strensall Common

6.4.50 Careful consideration has been given to how the recreational risks and threats associated with the proposed development of the QEB sites may be mitigated. A package of measures has been identified that are widely adopted on other sensitive SAC and SPA sites and which DIO is satisfied are sufficient to not only prevent adverse effects from arising as a consequence of this development but deliver better management of current users also. The proposals presented go beyond that normally required or expected at the Plan-making stage.

- 6.4.51 The mitigation measures are capable of being deployed on the back of, or in association with, the development of the QEB sites; in accordance with national planning policy and guidance, these are measures designed to prevent adverse effects from occurring, rather than compensate for such effects.
- 6.4.52 Below is a summary of the work that is already being undertaken by DIO and others to maintain the Common and the integrity of the SAC. This provides important context.

Existing / On-going Management Activities

- 6.4.53 Strensall Common is owned by the Secretary of State for Defence and forms part of the MoD's training estate. It contains six small arms firing ranges for live firing, a no danger area range, and a bivouac site. It is used for dry training (no use of live ammunition) such as drills, patrolling and team building. Under the Strensall Common Act, the Common is made available to the public for recreational use when military training is not taking place.
- 6.4.54 As a Government Department, MoD/DIO has stewardship obligations and is required to take reasonable steps to conserve and enhance the special features of Sites of Special Scientific Interest when carrying out its statutory duties. This involves the delivery of onsite adaptive management and habitat enhancement. If a problem is identified, the management regime is adapted to deal with the issue. The management of MOD sites takes place through the implementation of Integrated Rural Management Plans (IRMPs).
- 6.4.55 The nature conservation interest of Strensall Common is recognised by its designation as a Special Area of Conservation (SAC) and SSSI. This interest is protected from damage through the regulation of military activity by range standing orders and positive management takes place through use of the MOD SSSI Programme and Conservation Stewardship Fund, which is managed by DIO Technical Services. Works carried out in recent years have included scrub clearance, the installation of boardwalks and the provision of small enclosures to protect the food plant of the rare dark bordered beauty moth.
- 6.4.56 In accordance with its stewardship obligations, DIO (including in-house ecologists) works in partnership with a number of organisations to ensure that the Common is appropriately and effectively managed. DIO also liaises with a variety of organisations, including CYC and individuals. For example a Conservation Group meets twice yearly which coordinates activities and surveys carried out by voluntary bodies and academics including Freshwater Habitats Trust, Butterfly Conservation, Yorkshire Wildlife Trust, as well as Natural England.
- 6.4.57 The MOD/DIO has an agricultural tenant, who is responsible for grazing the Common at certain times during the course of the year (the Common is not grazed constantly). This is an important part of the management regime and, as a reflection of its importance, the Farmer has a Higher Level Environmental Stewardship agreement with Natural England. Amongst other things, this ensures that the grazing regime is subject to regular reviews.

Additional Mitigation Measures Available

- 6.4.58 Insofar as additional mitigation measures are concerned, DIO considers that the following could be deployed:
- **Enhanced signage/information:** an assessment of existing signage and visitor information, identification of gaps / issues / opportunities for delivering improvements, and the design / implementation of a scheme of enhanced provision. Amongst other things, the assessment will determine whether it might be possible to provide live information on the location of grazing animals to assist dog owners. Ultimately, the objective will be to ensure all main and secondary points of access to the Common have appropriate visitor information. This will help educate

visitors on the special qualities of the Common, appropriate behaviours, the importance of grazing and the avoidance of worrying, the dangers associated with the firing ranges, and the laws and bylaws operating as a means of controlling activities. Insofar as the latter is concerned, it will be important to improve awareness of the fact that it is already an offence to wilfully disturb any animal or allow dogs to foul the Common. Enhanced signage will also provide information in respect of additional mitigation measures implemented from the list below;

- **provision of additional car park barriers:** the carrying out of an assessment of the existing car park barriers with a view to determining whether these need improving or adding; the undertaking of a review of when they are used and whether they should be used more regularly or over extended periods to deter / prevent inappropriate behaviour; and the implementation of any works that the assessment and review recommends;
- **wardening:** the appointment of 1 Warden at a cost of £40,000 per annum, funded through S106 Obligations or CIL. The Warden would:
 - ▶ act as **information / education provider:** a warden would provide an on-site presence delivering information and helping educate visitors. This would include information in relation to site designation, its sensitivity, the grazing regime, how recreational use impacts on the Common's special qualities, what constitutes appropriate and inappropriate behaviour and works being carried out by DIO or others to enhance the area. Wardens could also be actively involved in the design / placement of signage, the development of promotional literature, communication via social media, and the arrangement of educational / community visits and activities;
 - ▶ act as **law enforcement agents and encouraging desired behaviours:** Bylaws made in 1972 prohibit certain acts including: *behaving in a way that offends against public decency, wilfully obstructs or interferes with others, pollutes any water, climbing or damaging fences or structures, wilfully disturbs, injures or takes any animal.* It also requires visitors to obtain the permission of the Secretary of State for Defence before carrying out certain activities including, inter alia: *carrying out trade and selling goods, exhibiting notices, making a display/ performance including a parade or procession, making public speeches, encamping on the common or sleeping out during darkness, causing or lighting a fire, driving or riding, grazing any animal; damaging vegetation or interfering with land.* In addition, the Common is subject to the provisions of the Dogs (Fouling of Land Act) 1996. Wardens would monitor for breaches of the Act and Bylaws, act as a visible deterrent and encourage appropriate behaviours;
 - ▶ be responsible for **general maintenance and upkeep:** wardens would patrol the Common and would (a) note features that require attention e.g. habitat, gates, bins, fences, signage, livestock and then (b) implement schemes of repair, management, enhancement or bring matters to the attention of DIO or other bodies / individuals as necessary;
 - ▶ **liaise with key stakeholders:** acting as a point of contact and liaising with a range of stakeholders including the MoD; CYC; NE; the tenant farmer; neighbours; the Parish Council; local interest or volunteer groups; and blue light services, dealing with questions, concerns and communicating changes in use / management regimes and the details of any planned works;
 - ▶ **monitor and report:** recording and reporting of incidents and monitoring how the Common is used so that if additional mitigation measures are required, these can be designed and deployed in a targeted manner. The Wardens will also be required to report on the effectiveness of mitigation, progress in respect of works / liaison and budgets;

- ▶ **Have a tailored presence throughout the year:** presence of warden would be most important during the grazing season. This should complement the role of the Training Area Marshall whose remit is primarily military but nonetheless provides a useful on-site presence year round;

It is noted that in 2014, in its Site Improvement Plan, NE highlighted wardening as being the 'best way to tackle' irresponsible recreational use of the Common.

- **managed access:** the creation within the Common of grazing zones defined by appropriately designed but dog proof fences and information provided to visitors at any given point of the zones that are being grazed and must therefore be avoided;
- **information packs for new residents:** each new home constructed at QEB (and on others sites as to be specified in the Local Plan) would be provided with a pack of information on the Common which describes: its ownership and use by the MoD as a military training facility, its special ecological qualities and how these are safeguarded; how it should and should not be used; the existence of the above mentioned Act and Bylaws; the role of the Wardens; the importance of adhering to the rules in respect of entry during live firing events; the grazing regime and the operation of the above mentioned zoning (if that is pursued); and details of other open spaces available nearby;
- **public open space within QEB:** there is an opportunity within the main QEB site to provide an extensive area of open space. The masterplan as currently drawn incorporates open areas extending to 10.44ha in total. This includes semi-natural green space, amenity spaces, and more formally laid out play / sports areas. The less formal green spaces on site would be extensive (certainly larger than the 1ha minimum for effective SANGs referred to in the New Forest SPD) and would provide attractive and convenient areas for dog walking. Importantly, dogs could be walked off their leads on-site with no fear of there being a risk of livestock worrying;
- **residential layout and boundary treatment:** to discourage casual use of the Common (and encourage the use of the on-site open space) CYC could require by Local Plan Policy, and insist at the planning application stage, that any housing development promoted on the QEB sites is designed so as to secure the north, eastern and southern boundaries of the site (for example by backing housing on to these boundaries, providing appropriate but secure fencing and having the warden monitor the condition of this, and not providing links from the development into the Common). Without direct routes into the Common, residents of the development wanting to access it would be required travel between 1,300m and 1,920m to get to the Common via Strensall Road and Ox Carr Lane. For those wanting to make a short / casual visit to the Common, this would likely be unattractive and therefore limit the use of it. The Public Open Space within QEB (f) would be accessible, subject to greater natural surveillance and within convenient walking distance;
- **additional fencing:** the carrying out of an assessment of the condition of existing fencing along existing routes into the Common and the replacement / reinforcement of this in appropriate locations to discourage indiscriminate access and encourage visitors to access the Common via points containing signage / information; and
- **making of new byelaws (if required):** the Secretary of State for Defence has byelaw making powers under the Strensall Common Act. If improved monitoring and recording (e.g. by the Warden) indicates that, in spite of (a) – (h) above, inappropriate behaviours occur, the Secretary of State would make new byelaws thereby introducing additional controls. These could include, for example, rules that make it an offence to allow dogs off leads, either across the Common as

a whole are in certain parts of it. Legal opinion has been provided on this matter in the Mitigation Measures Report³³.

- 6.4.59 In addition to the above, the Secretary of State is in the process of considering whether, in the event that monitoring indicates that inappropriate behaviours are occurring in spite of the points above, he could make land available for the creation of alternative greens pace (AGS). The Secretary of State owns large tracts of land adjacent to QEB, but which lies outside the SSSI/SAC, and it may be that a part or parts of this could be made available if required.
- 6.4.60 The parcels of land that may be most suitable for use as AGS are shown edged green on the aerial image below. These comprise: a 16.4ha parcel to the immediate south of QEB (AGS1); and a 5.18ha parcel to the immediate north (AGS2). Part of the southern parcel is currently used by the tenant Farmer and so, in addition to considering whether he can make the land available at all, the Secretary of State is also considering how doing so might affect the Farmer. This includes exploring whether the Farmer could continue to use part of the southern parcel whilst the remainder is made available to members of the public. The parcel to the north is unconstrained.
- 6.4.61 One or both of these parcels could provide an extensive additional 'green' resource and either of them could be laid out so as to provide a semi-natural environment with multiple paths, tracks, habitat and associated infrastructure.



- 6.4.62 It is noted that Footprint Ecology appears to doubt the efficacy of AGS when this is provided close to the main receptor (in this case the Common). However, this appears to be at odds with its assertions in respect of the percentage of visitors that live within 0 - 500m and 500m – 1000m of the Common and at odds with the conclusions reached by local planning authorities elsewhere who have taken the view that even on-site open space of an appropriate size and form can function as

³³ Avison Young (2019). Queen Elizabeth Barracks, Strensall, York. Strensall Common Special Area of Conservation, Report on the Mitigation Measures for the City of York Local Plan.

AGS. If a significant percentage of visitors do indeed have homes close to the Common, and these visitors are responsible for a substantial amount of the dog related pressure that the Common is subjected to, it must be the case that there is a better chance of persuading these users (and the residents of any new development at QEB) to visit an AGS if this is as conveniently located as the Common.

- 6.4.63 Open space will also be provided within the QEB development. Based on a residential provision of 545 dwellings (500 on ST35 and 45 on H59) there would remain approximately 15ha of open space within the development that would accommodate formal and informal recreational activities. In the context of open space required to off-set recreational pressure on designated sites elsewhere, one of the standards that is typically applied (e.g. in relation to Suitable Alternative Green Space (SANG) for the Thames Basin Heaths SPA) is:
- A minimum of 8 hectares of SANG land (after discounting for current access and capacity) should be provided per 1000 new occupants.
- 6.4.64 If it is assumed that around 1350 residents were present on a developed QEB, adopting the ratio above would require approximately 10.5ha of SANG. With careful design an appropriate quantum of attractive green space can be accommodated in the scheme which would significantly off-set the potential for new residents of QEB to need to routinely use Strensall Common.
- 6.4.65 All of the above measures (save AGS which the SoS is still considering) are feasible, achievable and deliverable.

Control Framework, Triggers and Delivery

- 6.4.66 At the planning application stage, it would be expected that the Local Planning Authority use a combination of design control, planning conditions and Planning Agreements to define exactly the package of mitigation measures that is to be implemented, when measures need to be delivered and how they are to be delivered. It is likely that a number of the measures listed above will need to be secured by Planning Agreement and, as owner of the Common and adjacent land, the Secretary of State would be a signatory to any such Agreement. In the unlikely event that the Secretary of State disposed of the Common or other land, the Obligations entered into would run with the land and would, therefore, be assumed by any successors in title.
- 6.4.67 Most of the mitigation measures listed above would either be delivered on site, as part of the development itself, or up front, prior to either first occupation or a certain number of occupations. DIO itself may take direct responsibility for implementing a number of the measures. However, the making of new byelaws would not, it is suggested, need to be delivered up front, but could be called upon in the event that the other measures specified fail to prevent inappropriate behaviours. It will be necessary, at the planning application stage, to design a monitoring regime that enables behaviours to be recorded, and to agree thresholds (triggers) beyond which it would be unacceptable to proceed without further mitigation measures being deployed. In the light of the conclusions reached by Footprint Ecology, we would expect such triggers to be linked to matters such as incidents of livestock worrying.

Conclusion of assessment of QEB development on recreational pressure alone and in combination with other allocations

- 6.4.68 Predictions of current and future use of the Common with proposed allocations in the Local Plan vary between the two visitor surveys undertaken. These differences illustrate that neither survey is definitive in absolute number terms, but the results do illustrate a likely range of effects of the plan allocations on visitor numbers and the assessment has been based on the results of both.

- 6.4.69 Strensall Common is open to the public, although access to the range areas is restricted during military activities. Taking account of recorded variations in access during military activities, school holiday and weekdays/weekends it has been predicted that Strensall Common will receive approximately 124,000 visits in 2019 (an average of 340 per day).
- 6.4.70 QEB (ST35 and H59) are predicted, based on PCP data, to result in an additional 14% in visitor numbers which equates to 17,265 visits per annum (an average of 47 per day) (these figures are an 18% increase (22,320 per annum / 61 per day) based on Footprint Ecology data). These differences illustrate that neither survey is definitive in absolute number terms, but the results do illustrate a likely range of effects of the plan allocations on visitor numbers.
- 6.4.71 Evidence has been presented of occasions when recreational pressures on the Common already manifest in incidents (such as animal worrying or fires), although these have not resulted in changes in the condition of the site; nor have they been highlighted as a major problem by Nature England. It is concluded therefore that, under the current levels of use, the Common experiences occasional incidents resulting from recreational use but that it is not at significant risk of a change in condition resulting from these sporadic incidents.
- 6.4.72 This position exists in the absence of any active visitor management activities. However, it is recognised that whilst it is not a certainty that the development of QEB with housing will necessarily result in a material increase in number of undesirable incidents, it is likely that additional housing here is likely to give rise to an uplift in the use of the Common for recreational purposes (as detailed above) and that appropriate mitigation measures are therefore necessary to control future risks. Therefore a package of measures has been detailed which includes measures that would apply to QEB and also measures applied on site. The risks to Strensall Common are not unique and recreational use presents the same or similar risks to SACs and SPAs all over the UK and in other locations. In these locations schemes of mitigation have been agreed that allow recreational uses to continue (and increase), whilst safeguarding the special environments that the areas hold. The mitigation package proposed for Strensall comprises measures applied and accepted as effective mitigation for increase in visitor pressure at other sites (many of which are subject to greater existing and proposed future visitor pressure than Strensall Common), but additionally includes measures that DIO is uniquely able to enact as the owner of both the SAC and also QEB. It is of particular note that Thanet District Council's Local Plan now includes allocations that are likely to increase the population of Thanet (and hence potential visitors to the Thanet Coast and Sandwich Bay SPA / Thanet Coast and Sandwich Bay Ramsar) by over 26%³⁴ and yet wardening is considered suitable as the primary mitigation mechanism for safeguarding the interest features (wintering birds) against disturbance by dogs.
- 6.4.73 Given that all of the measures (save AGS which the SoS is still considering) are feasible, achievable, and accepted as effective mitigation for increase in visitor pressure at other sites it can be concluded that the mitigation package proposed is sufficient to mitigate for the risks that would result from development of QEB and therefore that there would be no adverse effect, from QEB alone, on the integrity of the SAC features.

Conclusion of assessment of QEB development on recreational pressure in combination

- 6.4.74 Analysis has suggested that QEB (ST35 and H59), in combination with other residential allocations within 7.5km of Strensall Common are predicted, based on PCP data, to result in an additional 23.6% in visitor numbers which equates to 29,264 visits per annum, or approximately 80 visits per day (c29,760 visits per annum, or c81.5 visits per day based on Footprint Ecology data). As indicated above, QEB is predicted, based on PCP data, to contribute around 17,265 per annum (an average of 47 per day) and the other allocations within 7.5km of the site would contribute an

³⁴ Essentially, a population equivalent increase of over 37 000

additional 11,998 per annum (33 per day). Based on Footprint Ecology data the balance would be approximately 75% (22,320 per annum / 61 per day) from QEB and 25% (7,440 per annum or 20 per day) from all the other allocations within 7.5km.

- 6.4.75 However the resulting conservative total of 153,264, is still fewer visitors than other sites of a similar size receive annually. For example, Saltfleetby-Theddlethorpe Dunes NNR covers 600ha and receives around 290k visitors per year³⁵ (Strensall is 572ha), whilst Derbyshire Dales NNR is 385ha in area and receives around 180k visitors per year. The current use of the Common is less than 50% of the number reported for the Saltfleetby-Theddlethorpe Dunes NNR, and would be only just over 50% with QEB in combination with other allocations, whilst it would also be below the number received by Derbyshire Dales.
- 6.4.76 As detailed for the alone assessment above, a package of measures has been detailed which includes measures that would apply to QEB and also measures applied on site. Whilst ideally policies that relate to allocations ST8, ST9 or ST14 (as the nearest allocations) should include mitigation specifically directed at, or considering, minimising the number of additional visits to the Common, this does not appear to be the case. Nonetheless, as detailed above, the risks to Strensall Common are not unique and recreational use presents the same or similar risks to SACs and SPAs all over the UK and in other locations. In these locations schemes of mitigation have been agreed that allow recreational uses to continue (and increase), whilst safeguarding the special environments that the areas hold. The mitigation package proposed for Strensall comprises measures applied and accepted as effective mitigation for increase in visitor pressure at other sites (many of which are subject to greater existing and proposed future visitor pressure than Strensall Common), but additionally includes measures that DIO is uniquely able to enact as the owner of both the SAC and also QEB. Given that all of the measures (save AGS which the SoS is still considering) are feasible, achievable, and accepted as effective mitigation for increase in visitor pressure at other sites it can be concluded that the mitigation package proposed is sufficient to mitigate for the risks that would result from development of QEB, and the additional allocations, and therefore that there would be no adverse effect, from QEB in combination with other allocations, on the integrity of the SAC features.

Implications of the Removal of Policy SS19

- 6.4.77 If policy SS19 (removing ST35) is removed from the Local Plan, then the proposed mitigation will also not be implemented. This means that the predicted additional 11,904 visits per annum (32 per day, 9.6% increase in total numbers based on PCP data / additional 7,440 per annum or 20 per day or 6% increase based on Footprint Ecology data) will occur in the absence of any mitigation at the SAC, or any mitigation built into the policies that relate to ST8, ST9 or ST14 (as the nearest allocations) specifically directed at, or considering, minimising the number of additional visits to the Common. This would place an additional unmitigated risk on the SAC, and as a result it would not be sound to conclude that there would not be an adverse effect on site integrity without undertaking a full assessment.

³⁵ Natural England (2013). The economic impact of Natural England's National Nature Reserves. Natural England Commissioned Report NECR 131.

7. Conclusion

7.1 Proposals

7.1.1 DIO is promoting the allocation of QEB for development through City of York Council's (CYC's) emerging Local Plan³⁶. QEB, which comprises two allocations (ST35 and H59) lies immediately adjacent to an internationally-designated nature conservation site (Strensall Common Special Area of Conservation (SAC), hereafter referred to as 'the SAC'). As a result, the proposed allocations must be assessed against the requirements of Regulation 63 of the *Conservation of Habitats and Species Regulations, 2017*, through a process referred to as a Habitats Regulations Assessment (HRA). This is the only European site which the proposed development could affect.

7.2 Stage 1 screening

7.2.1 Based on the sensitivities of the qualifying features of the SAC, it is considered that likely significant effects on the SAC interest features could arise as a result of the proposed development of QEB. The proposed development of QEB has therefore been 'screened in' for Stage 2 'appropriate assessment' in relation to:

- Likely significant effects from change to the local hydrological regime; and potential effects to the aquatic environment via localised changes to hydrology, hydrogeology and water chemistry, arising through surface/groundwater changes (i.e. run-off, sedimentation, erosion etc.) as a result of development immediately adjacent to the SAC (i.e. QEB alone).
- Likely significant effects from air pollution arising from increased road traffic from QEB alone, and other allocations in combination, albeit that the assessment is presented as an in combination assessment due to the modelling approach.
- Likely significant effects from recreational pressure, alone from QEB (ST35 and H59). However, additionally, and contrary to the 2019 Waterman HRA, it is considered that an assessment of the contributions of QEB and other allocations is also required due to the potential visitor contributions from other sites.

7.3 Appropriate Assessment

7.3.1 The Appropriate Assessment provides a more detailed assessment of the effects of the proposed development on those interest features that could not be screened out, identifying any additional mitigation measures that may be appropriate. Following this assessment, and the screening assessment, the following conclusions for the proposed allocation can be made:

- **Air quality:** Subject to the suggested mitigation measures being implemented during the construction and operational phases, the proposed development of QEB is not predicted to have an adverse effect on the integrity of the SAC, alone or in combination with other proposed allocations;
- **Hydrology:** Whilst it is recognised that there are uncertainties in the baseline knowledge, in particular in respect of the proportion of surface water drainage from QEB that goes to

³⁶ https://www.york.gov.uk/downloads/file/15869/cd001_-_city_of_york_local_plan_publication_draft_regulation_19_consultation_february_2018

off-site ditches, it is known that there are discharges to the north, east and south of QEB (i.e. to the IDB network). Determination of an existing positive connection to the IDB drainage network and the location of the connection and rates of discharge still need to be undertaken by the developer at the outline planning stage, however, there is no reason to conclude that these do not exist, or that they will not be capable of conveying the drainage from QEB. As a result it is concluded that the necessary mitigation measures can be designed to ensure no changes to the hydrological condition of the SAC and therefore, with the proposed mitigation, it can be concluded that the proposed development at QEB would not result in an adverse effect on the water environment of the SAC.

The detailed proposals for the development Site would be subject to further assessment (e.g. detailed Flood Risk Assessment and HRA) and would confirm the design of Site-specific mitigation measures that would be incorporated into the proposed development at the Site.

- **Recreation and other urban edge effects:** Predictions of current and future use of the Common with proposed allocations in the Local Plan vary between the two visitor surveys undertaken. These differences illustrate that neither survey is definitive in absolute number terms, but the results do illustrate a likely range of effects of the plan allocations on visitor numbers and the assessment has been based on the results of both.

Following a Visitor Survey produced by PCP (October 2019) development of QEB (ST35 and H59) development of QEB (ST35 and H59) is predicted to result in an additional 14% in visitor numbers which equates to 17,265 visits per annum (an average of 47 per day) based on PCP data. The equivalent figures, based on Footprint Ecology data collected in 2018, are an 18% increase (22,320 per annum / 61 per day). However, a package of measures has been detailed which includes measures that would apply to QEB and also measures applied on the Common. The measures proposed for Strensall Common comprise those applied and accepted as effective mitigation for increase in visitor pressure at other sites (many of which are subject to greater existing and proposed future visitor pressure than Strensall Common), but additionally includes measures that DIO is uniquely able to enact as the owner of both the SAC and also QEB. Given the proposed mitigation measures are feasible, achievable, deliverable and accepted as effective mitigation for increase in visitor pressure at other sites it can be concluded that the mitigation package proposed is sufficient to mitigate for the risks that would result from development of QEB and therefore that there would be no adverse effect, from QEB alone, on the integrity of the SAC features.

Development of QEB in combination with other allocations (ST8, ST9 and ST14 have specifically been considered but all allocations within 7.5 km of the site were included). Analysis has suggested that QEB (ST35 and H59), in combination with other residential allocations within 7.5km of Strensall Common are predicted, based on PCP data, to result in an additional 23.6% in visitor numbers which equates to 29,264 visits per annum, or approximately 80 visits per day. Based on Footprint Ecology data the equivalent figures would be 24% increase which equates to 29,760 visits per annum. Allocations other than QEB, within 7.5km of the site, based on PCP data, would contribute an additional 11,998 per annum (38 per day). The equivalent figures based on Footprint Ecology data would be an additional 7,440 per annum or 20 per day. However, for the reasons given above, it can be concluded that the mitigation package proposed is sufficient to mitigate for the risks that would result from development of QEB, and with other allocations (ST8, ST9 and ST14 have specifically been considered but all allocations within 7.5 km of the site) in combination, and therefore that there would be no adverse effect, from QEB in combination with other allocations, on the integrity of the SAC features.

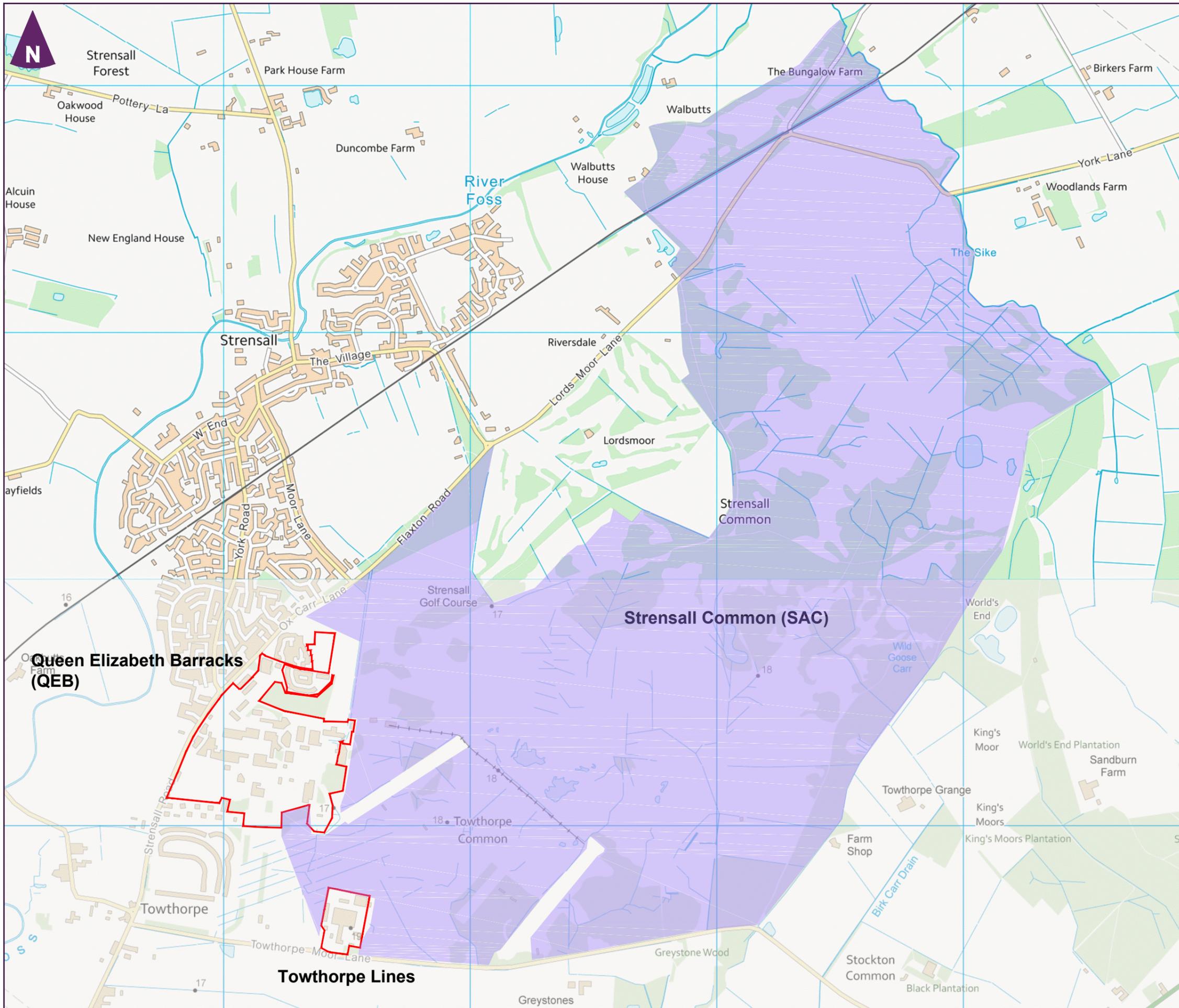
If policy SS19 (removing ST35) is removed from the Local Plan, then the proposed mitigation measures will also not be implemented. This means that the predicted additional 11,998 visits per annum (33 per day, 9.6% increase in total numbers based on PCP data / additional 7,440 per annum or 20 per day or 6% increase based on Footprint Ecology data) will occur in the absence of any mitigation at the SAC, or any mitigation built into the policies that relate to ST8, ST9 or ST14 (as the nearest allocations) specifically directed at, or considering, minimising the number of additional visits to the Common. This would place an additional unmitigated risk on the SAC, and as a result it would not be sound to conclude that there would not be an adverse effect on site integrity without undertaking a full assessment.



Appendix A

Figures





Key

- Site boundary
- Special Area of Conservation (SAC)

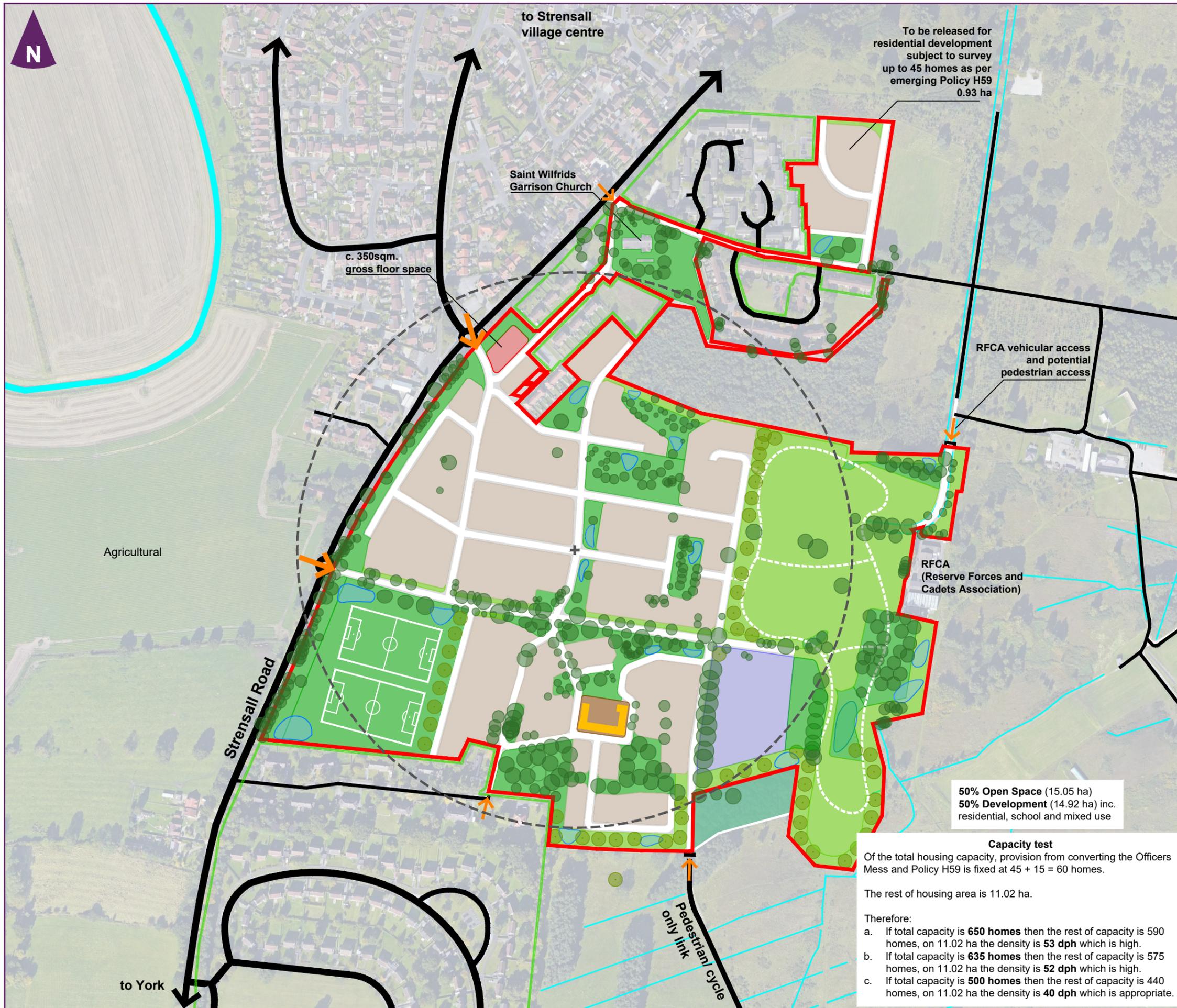


Client

GVA
An **APLEONA** company

DIO York Sites: Queen Elizabeth Barracks (QEB)
Information to support the Habitat Regulations Assessment

Figure 1.1
Site location plan



Key

- Site boundary (29.97 ha)
- POS (8.30 ha)
- Landscape buffer (6.75 ha)
- Released back to SAC (Special Conservation Area)
- Retained trees New trees
- SUDS ponds (0.6 ha) Gates (2)
- Mixed use (0.12 ha)
- Primary school (1.09 ha)
- Retained site (0.20 ha)
- Officers Mess potential to be retained or converted
 - convertible GFA for houses = 1380 m² to accommodate **15 homes**
- Residential area inc. roads (11.95 ha)
 - of which Policy H59 = 0.93 ha and max. homes = 45 dwellings
- + Development centre (with 300 m radius catchment)
- SFA sites
- Internal roads
- External roads
- ➔ Existing/proposed access points
- Existing other access points
- Waterbody/watercourse

0 m 100 m 200 m
Scale 1:4000 @ A3

Client

GVA

DIO York sites:
Queen Elizabeth Barracks (QEB),
Information to support the
Habitat Regulations
Assessment
Figure 1.2
Indicative concept plan
50/50 Options a, b, c

50% Open Space (15.05 ha)
50% Development (14.92 ha) inc. residential, school and mixed use

Capacity test
Of the total housing capacity, provision from converting the Officers Mess and Policy H59 is fixed at 45 + 15 = 60 homes.
The rest of housing area is 11.02 ha.

Therefore:

- a. If total capacity is **650 homes** then the rest of capacity is 590 homes, on 11.02 ha the density is **53 dph** which is high.
- b. If total capacity is **635 homes** then the rest of capacity is 575 homes, on 11.02 ha the density is **52 dph** which is high.
- c. If total capacity is **500 homes** then the rest of capacity is 440 homes, on 11.02 ha the density is **40 dph** which is appropriate.



Appendix B

Air Quality





1. Introduction

1.1 Purpose of this report

This chapter considers the impact on air quality as a result of the proposed construction of approximately 635 dwellings at Queen Elizabeth Barracks (QEB). Emissions of dust associated with construction activities will be considered, as well as the potential for nitrogen oxides and nitrogen deposition to impact on the Strensall Common SSSI/SAC. The location of the site in relation to the Strensall Common SSSI/SAC can be seen in Figure 1.1 in Appendix A in the main report.

2. Policy and Legislative Context

2.1 Relevant policy

Table B2.1 below sets out the relevant policies that have been considered throughout this assessment.

Table B2.1 Policies considered by this assessment

Policy Reference	Policy Issues
National Policy	
National Planning Policy Framework (NPPF)¹	The National Planning Policy Framework (NPPF) sets out the Government's reform of the planning system. The NPPF states: <i>"Planning policies should sustain compliance with and contribute towards EU limits values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and the cumulative impacts on air quality from individual sites in local areas. Planning decisions should ensure that any new development in Air Quality Management Areas is consistent with the local air quality action plan."</i>
National Planning Practice Guidance (NPPG)²	The Government's online National Planning Practice Guidance (NPPG) states that air quality concerns are more likely to arise where development is proposed within an area of existing poor air quality, or where it would adversely impact upon the implementation of air quality strategies and / or action plans. It is stated in the NPPG that air quality is relevant to planning applications when the Development could: <i>"Expose people to existing sources of air pollutants. This could be by building new homes, workplaces or other development in places with poor air quality."</i>
Local Policy	
City of York Local Plan³	The Local Plan sets out the vision for future development across the City of York and provides guidelines as to the measures that will be considered when assessing a planning application. With regard to air quality, 'Policy GP4b: Air Quality' states that air quality impacts on recreational areas such as parks, gardens, play areas and open spaces should be taken into account.

2.2 Relevant Legislation

The legislative framework for air quality consists of legally enforceable EU Limit Values that are transposed into UK legislation as Air Quality Standards (AQS) that must be at least as challenging as the EU Limit Values. Action in the UK is then driven by the UK's Air Quality Strategy⁴ that sets the Air Quality Objectives (AQOs).

The EU Limit Values are set by the European directive on air quality and cleaner air for Europe (2008/50/EC)⁵ and the European directive relating to arsenic, cadmium, mercury, nickel, and polycyclic aromatic hydrocarbons in ambient air (2004/107/EC)⁶ as the principal instruments governing outdoor

¹ Department for Communities and local Government (DCLG), 2012. National Planning Policy Framework.

² Department for Communities and Local Government (DCLG), 2014. National Planning Practice guidance – Air Quality.

³ City of York (2005) Local Plan.

⁴ Defra in partnership with the Scottish Executive, Welsh Assembly Government and Department of the Environment Northern Ireland (2007) The Air Quality Strategy for England, Scotland, Wales and Northern Ireland.

⁵ Official Journal of the European Union, (2008) Directive 2008/50/EC of the European Parliament and of The Council of 21 May 2008 on ambient air quality and cleaner air in Europe.

⁶ Official Journal of the European Union, (2004) Directive 2004/107/EC of the European Parliament and of The Council of 15 December 2004 relating to arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air.

ambient air quality policy in the EU. The Limit Values are legally binding levels for concentrations of pollutants for outdoor air quality.

The two European directives, as well as the Council's decision on exchange of information were transposed into UK Law via the Air Quality Standards Regulations 2010⁷, which came into force in the UK on 11 June 2010, replacing the Air Quality Standards Regulations 2007⁸. Air Quality Standards are concentrations recorded over a given time period, which are considered to be acceptable in terms of what is scientifically known about the effects of each pollutant on health and on the environment. The Air Quality Strategy sets the AQOs, which give target dates and some interim target dates to help the UK move towards achievement of the EU Limit Values. The AQOs are a statement of policy intentions or policy targets and as such, there is no legal requirement to meet these objectives except in as far as they mirror any equivalent legally binding Limit Values in EU legislation. The most recent UK Air Quality Strategy for England, Scotland, Wales and Northern Ireland was published in July 2007.

Since Part IV of the Environment Act 1995⁹ came into force, local authorities have been required to periodically review concentrations of the UK Air Quality Strategy pollutants within their areas and to identify areas where the AQOs may not be achieved by their relevant target dates. This process of Local Air Quality Management (LAQM) is an integral part of delivering the Government's AQOs detailed in the Strategy. When areas are identified where some or all of the AQOs might potentially be exceeded and where there is relevant public exposure, i.e. where members of the public would regularly be exposed over the appropriate averaging period, the local authority has a duty to declare an AQMA and to implement an Air Quality Action Plan (AQAP) to reduce air pollution levels towards the AQOs. The latest guidance on the LAQM process is given in Defra's 2016 Local Air Quality Management Technical Guidance (LAQM TG (16))¹⁰.

Oxides of nitrogen (NO_x) associated with traffic emissions are considered in this assessment in relation to their impact on the Strensall Common SSSI and SAC.

Also, for the construction phase assessment, the concentration of PM₁₀ is considered, but not modelled. Table B2.2 below sets out the AQOs that are relevant to this assessment, and the dates by which they are to be achieved.

2.3 Relevant Guidance

Institute of Air Quality Management (IAQM) – Guidance on the assessment of dust from demolition and construction

The Institute of Air Quality Management (IAQM)¹¹ has developed guidance regarding the assessment of the impacts of construction on air quality and the determination of their significance.

The IAQM guidance defines ecological receptors as any sensitive habitat affected by dust soiling, which includes direct dust deposition onto vegetation or aquatic ecosystems affecting ecological processes (e.g. photosynthesis).

Factors affecting dust emission from demolition and construction activities include:

- ▶ Activities being undertaken;
- ▶ Duration of activities;
- ▶ Size of the site;
- ▶ Meteorological conditions;

⁷ The Stationery Office Limited (2010) Statutory Instrument 2010 No. 1001 Environmental Protection – The Air Quality Standards Regulation 2010.

⁸ The Stationery Office Limited (2007) Statutory Instrument 2010 No. 64 Environmental Protection – The Air Quality Standards Regulation 2007.

⁹ HMSO (1995) Environment Act 1995.

¹⁰ Defra (2016) Local Air Quality Management Technical Guidance LAQM.TG (16).

¹¹ Institute of Air Quality Management (IAQM) (2014) – Guidance on the Assessment of Dust from Demolition and Construction.

- ▶ Proximity of receptors;
- ▶ Mitigation measures undertaken during works; and
- ▶ Sensitivity of the receptors to dust.

It is suggested that the impact of dust deposition on ecological receptors should be considered when the ecological receptor is within 50 m of the site boundary or within 50 m of routes used by construction vehicles up to 500 m from the site entrance (for a large site).

It is noted that emissions of dust relating to demolition and construction activities are temporary, therefore impacts will be temporary and will often be reversible once the works are completed.

H1 Assessment Guidance

The Environment Agency's Horizontal Guidance Note H1¹² provides methods for quantifying the environmental impacts of emissions to all media. It should be noted that this methodology was withdrawn in February 2016, however is still widely used alongside other resources. Environment Agency webpages contain long and short-term Environmental Assessment Levels (EALs) and Environmental Quality Standards (EQS) for releases to air derived from a number of published UK and international sources. For the pollutants considered in this study, these EALs and EQS are equivalent to the AQS and AQOs set in force by the Air Quality Strategy for England, Scotland Wales and Northern Ireland.

Design Manual for Roads and Bridges (DMRB)

The DMRB guidance¹³ states that internationally designated biodiversity sites (Special Protection Areas, Special Areas of Conservation and Ramsar sites) and Sites of Special Scientific Interest (SSSIs) within 200m of an affected route or corridor, where there is expected to be an increase in >1000 daily vehicle movements, need to be considered within an assessment (Highways Agency 2007b). It should be noted that critical loads are not statutory standards which are to be achieved, but are an indicator of when harmful effects can occur for different habitat types.

In addition to the objectives for human health, a national objective relating to the protection of vegetation and ecosystems is prescribed for NO_x. This is not a threshold in the sense that damage to vegetation is likely to occur when this concentration is exceeded but that, above this concentration, there is an increased risk of damage.

Furthermore, DMRB guidance states with regard to dust deposition that the most sensitive species of plant appear to be affected by dust levels above 1000 mg/m² per day, which is five times greater than the level at which dust deposition would cause nuisance to human receptors. However, the majority of species are not affected until levels are considerably higher than this threshold.

Environmental Protection UK (EPUK) & Institute of Air Quality Management (IAQM) – Guidance on land-use planning and development control: Planning for air quality¹⁴

The guidance regarding the assessment of air quality issues within planning applications, which includes a summary of relevant legislation and the assessment of significance. Using this guidance, the magnitude of change due to an increase/decrease in the annual mean concentration of pollutants due to a development is described using specified criteria. The overall significance of the development is then determined using professional judgement. Significance criteria can be seen in Appendix C.

Wealden District Council High Court Judgement¹⁵

The case concerned the importance of taking into consideration the in-combination effect of proposed developments when assessing the air quality impacts on ecologically sensitive areas, specifically designated

¹² Environment Agency (2011) Horizontal Guidance Note H1.

¹³ Highways England (2007) Design manual for Roads and Bridges (Volume 11, Section 3).

¹⁴ EPUK & IAQM (2017) Guidance on land-use planning and development control: Planning for air quality.

¹⁵ The Planning Inspectorate (2015) Appeal decision

sites. Prior to the high court judgement, the DMRB threshold of an increase in more than 1000 AADT was used to scope out air quality assessments. This case concerned the cumulative impact of Local Plans produced by multiple councils impacting Ashdown Forest SAC. The Joint Core Strategy (JCS) prepared by Lewes District Council and South Downs National Park Authority, scoped out an air quality assessment as the AADT for the JCS was below 1000. However, the Judge decided that whilst the DMRB threshold was relevant to determine potential air quality impacts, the land allocations included in the JCS would impact the Ashdown Forest SAC and when considered in combination with the allocations in the Wealden District Council (WDC) Core Strategy the threshold would be breached.

This case set a precedent whereby the cumulative impact of proposed development should be assessed when there is the possibility of affecting ecologically sensitive sites, which has been demonstrated through subsequent court cases whereby planning permission has not been granted or allowed by appeal. Consequently, in March 2017, a judge quashed Policies SP1 and SP2 in the JCS due to the potential for increased nitrogen deposition adversely impacting Ashdown Forest SAC. This reduced the number of proposed residences in the JCS by 1,177 homes¹⁶.

As a consequence of this decision, it is important that local authorities thoroughly consider the cumulative effect of traffic associated with multiple developments. This is an on-going situation, so there are currently no guidelines as to the catchment for inclusion into the air quality assessment.

Assessment Criteria

Table B2.2 shows the air quality standards, objectives and environmental assessment levels relevant to this assessment.

Table B2.2 Summary of relevant air quality standards and objectives

Pollutant	AQS/ AQO/ EAL	Objective (UK)	Averaging Period
NO _x	AQS	30 µgm ⁻³	Annual Mean
	EAL	75 µgm ⁻³	Daily Mean

¹⁶ <http://www.bailii.org/ew/cases/EWHC/Admin/2017/351.html>

3. Assessment Methodology

3.1 Construction dust assessment methodology

The IAQM guidance¹¹ provides a method to assess the significance of construction impacts by considering the annoyance due to dust soiling as well as harm to ecological receptors and the risk of health effects due to any significant increases of PM₁₀ or PM_{2.5}. Site activities are divided into four types to reflect their different potential impacts:

- ▶ Demolition – an activity involved with the removal of an existing structure or structures;
- ▶ Earthworks – the processes of soil-stripping, ground-levelling, excavation and landscaping;
- ▶ Construction – an activity involved in the provision of a new structure; and
- ▶ Trackout – the transport of dust and dirt from the site onto the public road network. This arises when lorries leave site with dusty materials or transfer dust and dirt onto the road having travelled over muddy ground on-site.

A detailed assessment is deemed to be required where there is:

- ▶ An 'ecological receptor' located within: 50 m of the boundary of the site; or 50 m of the route(s) used by construction vehicles on the public highway, up to 500 m from the site entrance.

At this stage, there are not sufficient details in order to carry out a construction assessment, however it is likely that due to the size of the site and the potential proposed development that there will be a high risk of dust emission. Therefore, appropriate mitigation measures are included in Section 5.3.

3.2 Operational Phase assessment methodology

Dispersion Modelling

The ADMS-Roads dispersion model, developed by CERC⁶, is a tool for investigating air pollution problems due to small networks of roads that may be in combination with industrial sites, for instance small towns or rural road networks. It calculates pollutant concentrations over specified domains at high spatial resolution (street scale) and in a format suitable for direct comparison with a wide variety of air quality standards for the UK and other countries. The latest version of the model, version 4.1, was used in this study.

ADMS-Roads is referred to as an advanced Gaussian or, new generation, dispersion model as it incorporates the latest understanding of the boundary layer structure. It differs from old generation models such as ISC, R91 and CALINE in two main respects:

- ▶ It characterises the boundary layer structure and stability using the boundary layer depth and Monin-Obukhov length to calculate height-dependent wind speed and turbulence, rather than using the simpler Pasquill-Gifford stability category approach; and
- ▶ It uses a skewed-Gaussian vertical concentration profile in convective meteorological conditions to represent the effect of thermally generated turbulence.

The Road Network

Annual average daily traffic (AADT) flows were provided by Amec Foster Wheeler transport consultants, based on traffic counts carried out by the team. The cumulative AADT flows impact of QEB and TL were provided in order to predict a worst-case scenario. The following scenarios were modelled based on the traffic provided:

- ▶ Baseline 2017 scenario, which includes traffic from the site's current use;

- ▶ Future 2031 ‘without development’ scenario, which does not include any traffic flows associated with the current or proposed future use; and
- ▶ Future 2031 ‘with development’ scenario.

Flows can be seen in Appendix A. Emissions were calculated using the latest emission factors from Defra, Emissions Factor Toolkit v8.0¹⁷, which is used to predict emissions that are imported into ADMS-Roads. For the future scenarios, the year 2030 was used as this is the most distant year available.

It should be noted that traffic flows include the cumulative impact of committed developments as part of the Local Plan allocation. Further information can be found in the Transport Assessment^{18,19}.

Receptors

The focus of this air quality assessment is the potential impact of air quality on the Strensall Common SSSI/ SAC. As the guidance states that ecological receptors may be affected by traffic emissions up to a distance of 200 m from the road, a transect has been used to model concentrations across this area. This has been carried out on Flaxton Road and Towthorpe Moor Lane at kerbside, 25 m, 50 m, 100 m, 150 m and 200 m from the road centreline. Receptor locations are shown in Table B3.1 and on Figure B.1.

Table B3.1 Transect Locations

Receptor	Road	Distance from the road (m)	X (m)	Y (m)
1a	Flaxton Road South	kerbside	463629	460070
1b	Flaxton Road South	25	463646	460055
1c	Flaxton Road South	50	463663	460037
1d	Flaxton Road South	100	463698	460001
1e	Flaxton Road South	150	463733	459965
1f	Flaxton Road South	200	463768	459930
1g	Flaxton Road North	kerbside	463625	460074
1h	Flaxton Road North	25	463608	460088
1i	Flaxton Road North	50	463592	460107
2a	Towthorpe Moor Lane North	kerbside	463704	458456
2b	Towthorpe Moor Lane North	25	463707	458478
2c	Towthorpe Moor Lane North	50	463709	458503
2d	Towthorpe Moor Lane North	100	463713	458552
2e	Towthorpe Moor Lane North	150	463717	458602
2f	Towthorpe Moor Lane North	200	463722	458652

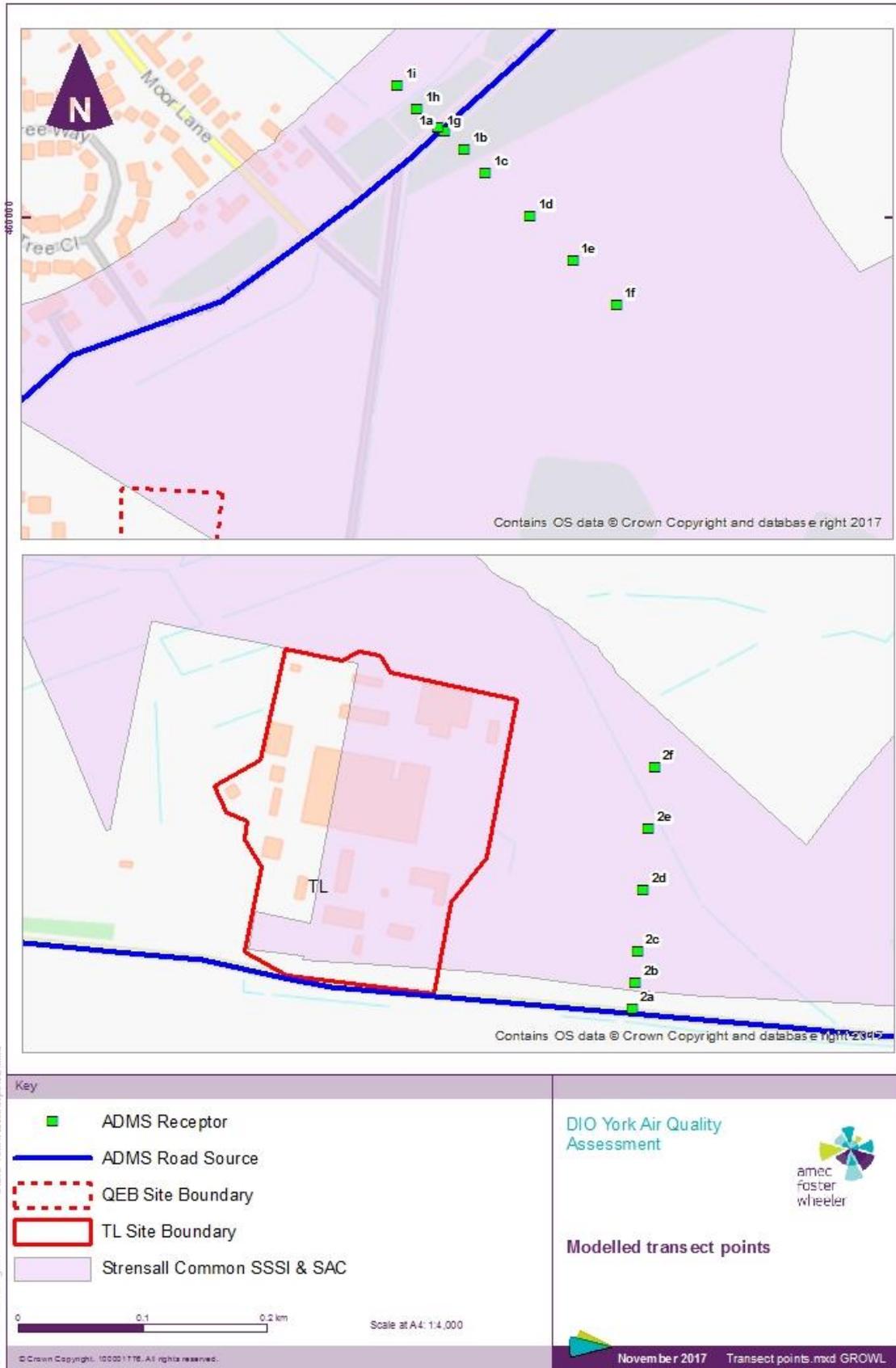
Note: Flaxton Road north (1 g – i) was modelled to 50 m only and Towthorpe Moor Lane south due to the boundary of the SSSI/SAC.

¹⁷ Defra (2017) Emissions Factor Toolkit v8.0.

¹⁸ Amec Foster Wheeler (2017) York DIO Queen Elizabeth Barracks Transport Appraisal.

¹⁹ Amec Foster Wheeler (2017) York DIO Towthorpe Lines Transport Appraisal.

Figure B.1 Modelled Transect Points

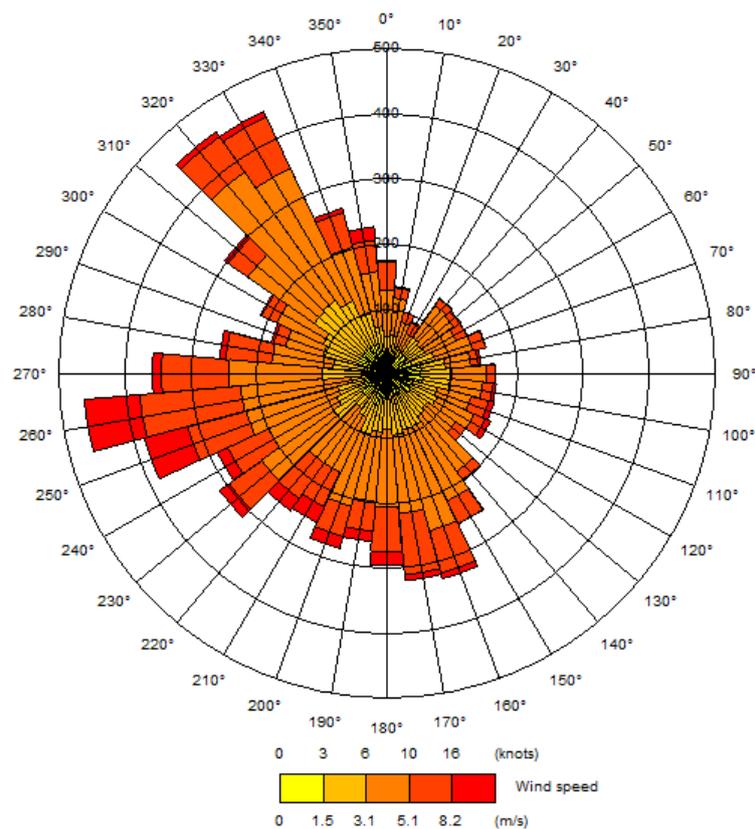


Meteorology

Hourly sequential meteorological data from a nearby, representative observing station is required for dispersion modelling. For this assessment, five years of meteorological data was obtained from the Linton-on-Ouse weather station as this is considered to be most representative of conditions at the application site.

Figure B.2 shows the wind rose for Linton-on-Ouse for the period 2016 showing the frequency and distribution of wind directions and wind speeds.

Figure B.2 Linton on Ouse wind rose for 2016



Surface Characteristics

The surface roughness is a model parameter related to the height of features, such as buildings and trees. The value of 0.5 m was used within the model to represent the area surrounding the Proposed Development as ADMS guidance states that this value would be appropriate for 'open suburbia'.

The concentrations of an emitted pollutant found in elevated, complex terrain differ from those found in simple level terrain. However, these effects are most pronounced when the terrain gradients exceed 1 in 10 i.e., a 100 m change in elevation per 1 km step in the horizontal plane. As there are no areas surrounding the site that meet this criterion, it was decided not to include terrain effects in the dispersion modelling. This is in line with the approach recommended in the LAQM.TG(16) Guidance.

Model verification

Model verification enables an estimation of uncertainty and systematic errors associated with the dispersion modelling components of the air quality assessment to be considered. There are many explanations for these errors, which may stem from uncertainty in the modelled number of vehicles, speeds and vehicle fleet composition. Defra has provided guidance in terms of preferred methods for undertaking dispersion model

verification⁹. Model verification involves the comparison of modelled concentrations and local monitoring data.

Full details of the model verification procedure are provided in Appendix B. Model verification was carried out for the year 2016 as appropriate monitoring data, AADT flow and background concentrations were available. Due to the fact that the majority of monitoring stations are located in the centre of York, where congestion and traffic flows are likely to be far higher than at the proposed development, it was only possible to carry out model verification using one diffusion tube (B38). The verification process led to the use of a modelled Road-NO_x adjustment factor of 2.27 as a conservative approach.

Assessment Methodology

The assessment of nitrogen deposition from car emissions is set out as follows:

- ▶ Calculation of process contributions (PC);
- ▶ Estimation of predicted environmental concentrations (PEC); and
- ▶ Conclusions of impact assessment for emissions to air.

Process Contribution

The Process Contribution (PC) is the ground level concentration of a substance released to air from the release points at any of the specific receptors with the value for the highest year at the receptor being quoted.

Predicted Environmental Concentration

The Predicted Environmental Concentration (PEC) is calculated as the sum of the background of the substance in air and the process contribution:

$$\text{PEC}_{\text{air}} = \text{PC}_{\text{air}} + \text{background concentration}_{\text{air}}$$

Critical Loads

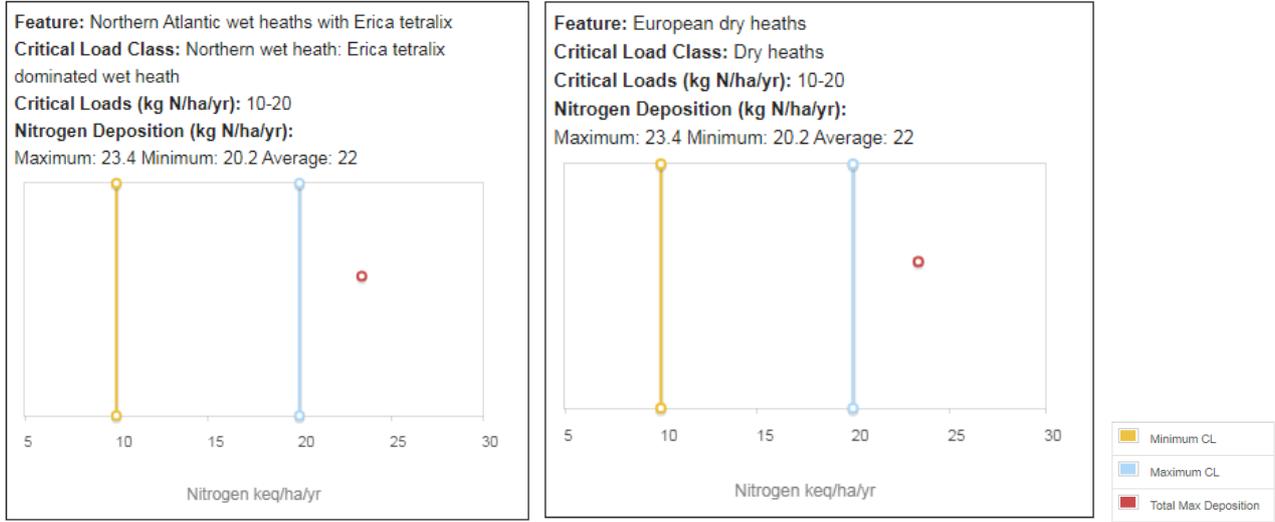
The Air Pollution Information System²⁰ (APIS) provides information on critical loads for specific designated areas, as well as for individual species. The Strensall Common SAC has been designated for the following interest features:

- ▶ H4010. Northern Atlantic wet heaths with *Erica tetralix*; Wet heathland with cross-leaved heath
- ▶ H4030. European dry heaths.

The critical loads for both habitats are shown in Figure B.3 below. Critical loads are a tool for assessing the risk of air pollution affecting different ecosystems. An increment of 1% or less of the critical load is generally considered insignificant, based on Environment Agency permitting.

²⁰ <http://www.apis.ac.uk/src/select-a-feature?site=UK0030284&SiteType=SAC&submit=Next>

Figure B.3 Critical load for Northern Atlantic wet heath and European dry heath habitats at Strensall Common



4. Baseline Air Quality

4.1 Local authority review and assessment

Local air quality management (LAQM) review and assessment by CYC led to the declaration of a number of air quality management areas (AQMA) for the exceedance of annual mean concentrations of NO₂. All of these AQMAs are located in the centre of York City and were designated for an AQO that affects human receptors. Therefore, AQMAs are not assessed further as they are not relevant to this assessment.

4.2 Background deposition rates

Dust deposition

Dust deposition rates are not monitored extensively in the UK. Monitoring that is undertaken, is usually connected with specific activities such as mining and mineral extraction operations and major infrastructure projects. Dust monitoring may also be undertaken to investigate specific complaints received by local authorities, who are then empowered to investigate dust nuisance under the Environmental Protection Act (1990). No dust measurement data are available for the area surrounding the Development Site.

Nitrogen deposition

The Air Pollution Information System²¹ (APIS) provides information on deposition rates and critical loads for specific designated areas, as well as for individual species. The Strensall Common SAC has been designated for the following interest features:

- ▶ H4010. Northern Atlantic wet heaths with *Erica tetralix*; Wet heathland with cross-leaved heath
- ▶ H4030. European dry heaths.

Both habitats are listed as being sensitive to nitrogen. The average deposition rate at Strensall Common SAC is 22 kg N/ha/year (Maximum: 23.38 kg N/ha/year / Minimum: 20.16 kg N/ha/year).

DMRB guidance states that background deposition rates are expected to decrease by 2% per year. However, due to disparity between predicted concentration decrease and actual concentration decrease, the baseline deposition rate is used to calculate future rates of nitrogen deposition. This is considered to be a conservative approach.

4.3 Estimated background concentrations

Defra has made estimates of background pollution concentrations on a 1km² grid for the UK for seven of the main pollutants, including NO_x. Base data from 2015 was used to make projections for the years 2011 to 2030²². Table B4.1 below shows the predicted concentration for 2015 to 2017 at the two areas of the SAC that may be affected by traffic associated by the proposed development.

Table B4.1 Defra 2015 to 2017 predicted annual mean background concentrations (µgm⁻³)

Pollutant	2015	2016	2017
465500, 461500			
NO _x	10.16	9.82	9.48

²¹ <http://www.apis.ac.uk/src/select-a-feature?site=UK0030284&SiteType=SAC&submit=Next>

²² <http://uk-air.defra.gov.uk/data/laqm-background-maps?year=2011a.gov.uk/review-and-assessment/tools/background-maps.html>



463500, 458500			
NO_x	11.50	11.13	10.76

All background concentrations and deposition rates used in this assessment to predict future concentrations are from 2017. This is considered to be a conservative estimate as it is expected that background levels will decrease year on year.

5. Assessment of Air Quality Effects

5.1 Construction phase assessment

As previously discussed, there is not sufficient information at this stage to carry out a construction phase assessment. However, it is likely due to the size of the development site, that the potential for dust emissions will be large. Therefore, possible mitigation measures have also been included.

5.2 Operational phase assessment

This section sets out the results of the dispersion modelling and compares predicted concentrations against air quality standards (AQS) and environmental assessment levels (EAL). The predicted concentrations resulting from the additional traffic flow (i.e. the process contribution (PC)) are presented along with background concentrations and the percentage contribution that the predicted environmental concentrations (PEC) would make towards the relevant standard, objective or guideline value.

Nitrogen Oxides (NO_x)

Annual NO_x

Table B5.1 shows the predicted annual mean concentration of NO_x at the two transect locations: Flaxton Road (Receptor points 1a – i) and Towthorpe Moor Lane (Receptor points 2a – f).

Table B5.1 Predicted annual mean NO_x concentration at transect points

Receptor	Distance from Road (m)	2017 Baseline (µgm ⁻³)	2031 Without (µgm ⁻³)	2031 With (µgm ⁻³)	Difference (µgm ⁻³)	Significance
1a	Kerbside	41.7	22.0	22.9	0.8	Negligible
1b	25	15.9	11.9	12.1	0.2	Negligible
1c	50	12.8	10.8	10.9	0.1	Negligible
1d	100	11.2	10.1	10.2	0.1	Negligible
1e	150	10.6	9.9	9.9	0.0	Negligible
1f	200	10.3	9.8	9.8	0.0	Negligible
1g	Kerbside	39.6	21.2	22.0	0.8	Negligible
1h	25	15.3	11.7	11.9	0.2	Negligible
1i	50	12.6	10.6	10.7	0.1	Negligible
2a	Kerbside	55.4	15.5	24.5	9.0	Moderate Adverse
2b	25	18.7	10.7	12.5	1.8	Slight Adverse
2c	50	14.4	10.1	11.1	0.9	Negligible
2d	100	12.0	9.8	10.3	0.5	Negligible
2e	150	11.1	9.7	10.0	0.3	Negligible
2f	200	10.7	9.7	9.9	0.2	Negligible

Note: **Bold** denotes exceedance of the assessment criteria.

As expected, annual mean concentrations of NO_x are predicted to decrease with distance from the road. There is one exceedance of the 30 µg m⁻³ AQO at the kerbside of Towthorpe Moor Lane in the Baseline scenario (2a). However, in the 2031 scenarios, there are not expected to be any exceedances of the AQO.

With regard to the EPUK & IAQM significance criteria in Appendix C, the change in concentration between the 'without' and 'with' scenarios for 2031 at Flaxton Road is considered to be Negligible. However, at kerbside on Towthorpe Moor Lane, the predicted increase in concentration of NO_x is expected to have a Moderate Adverse impact on Strensall Common SSSI/SAC. The severity of impact decreases with distance from the road, with a Slight Adverse impact predicted at 25 m, which decreases to Negligible by 50 m.

Daily NO_x

Table B5.2 shows the predicted daily mean concentrations of NO_x at points along the 200 m transect.

Table B5.2 Predicted daily mean NO_x concentration at transect points

Receptor	Distance from Road (m)	2017 Baseline (µgm ⁻³)	2031 Without (µgm ⁻³)	2031 With (µgm ⁻³)	Difference (µgm ⁻³)
1a	Kerbside	124.6	54.4	57.3	3.0
1b	25	32.7	18.5	19.1	0.6
1c	50	22.3	14.4	14.8	0.3
1d	100	16.3	12.1	12.3	0.2
1e	150	14.2	11.3	11.4	0.1
1f	200	13.1	10.9	11.0	0.1
1g	Kerbside	147.1	62.4	66.2	3.7
1h	25	34.8	19.0	19.8	0.8
1i	50	23.8	14.7	15.3	0.6
2a	Kerbside	192.0	35.1	72.4	37.4
2b	25	43.0	14.0	20.6	6.7
2c	50	28.2	12.0	15.6	3.7
2d	100	19.7	10.8	12.8	2.0
2e	150	16.6	10.4	11.8	1.4
2f	200	15.0	10.2	11.3	1.1

Note: **Bold** denotes exceedance of assessment criteria.

Predicted daily mean concentrations of NO_x exceeded the 75 µgm⁻³ EAL at kerbside locations at both Flaxton Road and Towthorpe Moor Lane in the Baseline scenario (2017), which includes the traffic associated with the current use of the proposed development sites. However, by 25 m the daily mean concentration is predicted to significantly decrease to well below the EAL.

When considering the future scenarios, there are not predicted to be any exceedances of the EAL at any point modelled on the transect. The highest predicted daily mean concentration of NO_x is in the future

scenario with the proposed developments at Towthorpe Moor Lane at the kerbside, but this is still 3% below the EAL.

Nitrogen Deposition

Nitrogen deposition has been calculated using the predicted annual mean concentration of NO_x and shown in Table B5.3.

Table B5.3 Critical load assessment of nitrogen deposition

Receptor	Distance from Road (m)	Minimum Critical load (MinCL) (kg N ha ⁻¹ yr ⁻¹)	PC without (kg N ha ⁻¹ yr ⁻¹)	PC with (kg N ha ⁻¹ yr ⁻¹)	PEC (kg N ha ⁻¹ yr ⁻¹)	increase in PC as a % of MinCL	% PEC of MinCL
1a	Kerbside	10	1.00	1.02	23.02	0%	228%
1b	25	10	0.77	0.77	22.77	0%	222%
1c	50	10	0.74	0.74	22.74	0%	221%
1d	100	10	0.72	0.72	22.72	0%	220%
1e	150	10	0.72	0.72	22.72	0%	220%
1f	200	10	0.72	0.72	22.72	0%	220%
1g	Kerbside	10	0.99	1.00	23.00	0%	228%
1h	25	10	0.76	0.77	22.77	0%	222%
1i	50	10	0.74	0.74	22.74	0%	221%
2a	Kerbside	10	0.92	1.13	23.13	2%	230%
2b	25	10	0.81	0.85	22.85	0%	222%
2c	50	10	0.79	0.82	22.82	0%	221%
2d	100	10	0.79	0.80	22.80	0%	221%
2e	150	10	0.78	0.79	22.79	0%	220%
2f	200	10	0.78	0.79	22.79	0%	220%

The nitrogen deposition at the Strensall Common SSSI/ SAC is above the minimum critical load value at all points across the transect at both Flaxton Road and Towthorpe Moor Lane. However, it should be noted that the background deposition rate is 120% above the 10 kg N ha⁻¹ yr⁻¹ minimum critical load before the process contribution associated with the additional traffic flow is considered.

Environment Agency guidance suggests that if the increase in PC as a result of the Proposed Development is 1% or less than the critical load, the change in nitrogen deposition will be insignificant. The predicted nitrogen deposition rates in Table B5.3 show that nitrogen deposition will be 2% higher at the roadside at Towthorpe Moor Lane (receptor point 2a), however at all other receptor points the increase was below 1%. Therefore, overall nitrogen deposition is expected to be insignificant.

It should be noted that this is considered to be a conservative estimate as the minimum critical load value was used.

Acid deposition

The impacts of the proposed development on acid deposition have been assessed with reference to data obtained from the APIS website. Table B5.4 shows the nitrogen deposition in keq ha⁻¹ y⁻¹ at the ecological receptors.

The impact for the PC acid deposition at the receptor was calculated using the APIS Critical Load Function tool (APIS tool). Table B5.4 shows the input values used for the receptors and Table B5.5 shows the outputs.

Table B5.4 Acidity critical load assessment, inputs to APIS critical load function tool

Receptor	CLmaxS (keq ha ⁻¹ y ⁻¹)	CLminN – CLmaxN (keq ha ⁻¹ y ⁻¹)	PC N deposition (keq ha ⁻¹ y ⁻¹)	S background (keq ha ⁻¹ y ⁻¹)	N background (keq ha ⁻¹ y ⁻¹)
1a	1.55	0.714 - 2.264	0.073	0.28	1.57
1b	1.55	0.714 - 2.264	0.055	0.28	1.57
1c	1.55	0.714 - 2.264	0.053	0.28	1.57
1d	1.55	0.714 - 2.264	0.052	0.28	1.57
1e	1.55	0.714 - 2.264	0.051	0.28	1.57
1f	1.55	0.714 - 2.264	0.051	0.28	1.57
1g	1.55	0.714 - 2.264	0.072	0.28	1.57
1h	1.55	0.714 - 2.264	0.055	0.28	1.57
1i	1.55	0.714 - 2.264	0.053	0.28	1.57
2a	1.55	0.714 - 2.264	0.081	0.28	1.57
2b	1.55	0.714 - 2.264	0.061	0.28	1.57
2c	1.55	0.714 - 2.264	0.058	0.28	1.57
2d	1.55	0.714 - 2.264	0.057	0.28	1.57
2e	1.55	0.714 - 2.264	0.056	0.28	1.57
2f	1.55	0.714 - 2.264	0.056	0.28	1.57

Table B5.5 Output of APIS critical load function tool

Receptor	Exceedance (keq ha ⁻¹ y ⁻¹)			% of critical load function*		
	PC	Background	PEC	PC	Background	PEC
1a	no exceedance of CL function	no exceedance of CL function	no exceedance of CL function	3.1	81.7	84.8
1b	no exceedance of CL function	no exceedance of CL function	no exceedance of CL function	2.7	81.7	84.4
1c	no exceedance of CL function	no exceedance of CL function	no exceedance of CL function	2.2	81.7	83.9
1d	no exceedance of CL function	no exceedance of CL function	no exceedance of CL function	2.2	81.7	83.9

Receptor	Exceedance ($\text{keq ha}^{-1} \text{y}^{-1}$)			% of critical load function*		
	PC	Background	PEC	PC	Background	PEC
1e	no exceedance of CL function	no exceedance of CL function	no exceedance of CL function	2.2	81.7	83.9
1f	no exceedance of CL function	no exceedance of CL function	no exceedance of CL function	2.2	81.7	83.9
1g	no exceedance of CL function	no exceedance of CL function	no exceedance of CL function	3.1	81.7	84.8
1h	no exceedance of CL function	no exceedance of CL function	no exceedance of CL function	2.7	81.7	84.4
1i	no exceedance of CL function	no exceedance of CL function	no exceedance of CL function	2.2	81.7	83.9
2a	no exceedance of CL function	no exceedance of CL function	no exceedance of CL function	3.5	81.7	85.2
2b	no exceedance of CL function	no exceedance of CL function	no exceedance of CL function	2.7	81.7	84.4
2c	no exceedance of CL function	no exceedance of CL function	no exceedance of CL function	2.7	81.7	84.4
2d	no exceedance of CL function	no exceedance of CL function	no exceedance of CL function	2.7	81.7	84.4
2e	no exceedance of CL function	no exceedance of CL function	no exceedance of CL function	2.7	81.7	84.4
2f	no exceedance of CL function	no exceedance of CL function	no exceedance of CL function	2.7	81.7	84.4

* % of CL function is calculated after the value of PEC relative to CLminN is taken into account. See detailed explanation for further information and justification.

Table B5.5 shows that the impact of the proposed facility on acid deposition is small, a maximum PC of 3.5% of the critical load function.

Overall, acid deposition rates at ecological receptors resulting from emissions from the proposed development are not expected to have a significant impact on the integrity of the designated ecological features of the sites.

5.3 Mitigation measures

Construction Phase

As it is not possible at this stage to carry out a construction assessment, mitigation methods suggested in the IAQM guidance are listed in Table B5.6. It is expected that mitigation measures will be implemented through a Construction Environmental Management Plan (CEMP).

Table B5.6 Potential mitigation measures for the construction phase

Mitigation area	Mitigation measures that may be incorporated
Communications	<p>Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the Project Manager.</p> <p>Display the head or regional office contact information.</p> <p>Develop and implement a stakeholder communications plan that includes community engagement before work commences on-site.</p>
Dust Management	<p>Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority.</p>
Site management	<p>Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.</p> <p>Make the complaints log available to the local authority when asked.</p> <p>Record any exceptional incidents that cause dust and/or emissions, either on- or off-site and the action taken to resolve the situation in the log book.</p> <p>Hold regular liaison meetings with other high risk construction sites within 500 m of the site boundary, to ensure plans are coordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/ deliveries which might be using the same strategic road network routes.</p>
Monitoring	<p>Carry out regular site inspections to monitor compliance with the AQMP, record inspection results, and make an inspection log available to the local authority when asked.</p> <p>Increase the frequency of site inspections by the person accountable for air quality and dust issues on-site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.</p> <p>Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked.</p> <p>Agree dust deposition, dust flux, or real-time PM₁₀ continuous monitoring locations with the Local Authority. Where possible commence baseline monitoring at least three months before work commences on site or, if it a large site, before work on a phase commences. Further guidance is provided by IAQM on monitoring during demolition, earthworks and construction.</p>
Preparing and maintaining site	<p>Plan site layout so that machinery and dust causing activities are located away from receptors, as far as possible.</p> <p>Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.</p> <p>Avoid site runoff of water or mud.</p> <p>Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period.</p> <p>Keep site fencing, barriers and scaffolding clean using wet methods.</p> <p>Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site.</p> <p>Cover, seed or fence stockpiles to prevent wind whipping.</p>
Operating vehicle/machinery	<p>Ensure all Non-Road Mobile Machinery (NRMM) comply with the London NRMM Low Emission Zone standards.</p> <p>Ensure all vehicles switch off engines when stationary – no idling vehicles.</p> <p>Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.</p> <p>Produce a Construction Logistics Plan to manage sustainable delivery of goods and materials.</p>



Mitigation area	Mitigation measures that may be incorporated
	<p>Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on un-surfaced haul roads and work areas.</p> <p>Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking and car-sharing).</p>
Operations	<p>Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction e.g. suitable local exhaust ventilation systems.</p> <p>Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.</p> <p>Use enclosed chutes and conveyors, and covered skips.</p> <p>Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.</p> <p>Ensure equipment readily available on-site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event, using wet cleaning methods.</p>
Waste Management	<p>Avoid bonfires and burning of waste materials</p>
Demolition	<p>Ensure effective water suppression is used during demolition operations. Hand held sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground.</p> <p>Avoid explosive blasting, using appropriate manual or mechanical alternatives.</p> <p>Bag and remove any biological debris or damp down such material before demolition.</p> <p>Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust).</p>
Earthworks	<p>Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.</p> <p>Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.</p> <p>Only remove the cover in small areas during work and not all at once.</p>
Construction	<p>Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place</p> <p>Avoid scabbing if possible.</p> <p>Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent the escape of material and overflowing during delivery.</p> <p>For smaller supplies of fine powder materials, ensure bags are sealed after use and stored appropriately to prevent dust</p>
Trackout	<p>Access gates to be located at least 10m from receptors where possible.</p> <p>Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary any material tracked out of the site. This may require the sweeper being continuously in use.</p> <p>Avoid dry sweeping of large areas.</p> <p>Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.</p> <p>Record all inspections of haul routes and any subsequent action in a site log book.</p> <p>Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).</p> <p>Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.</p> <p>Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.</p>



Mitigation area	Mitigation measures that may be incorporated
	Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.

Operational phase

The EPUK & IAQM guidance states that developments may include the following mitigation measures as best practice:

- ▶ Residential;
 - ▶ All gas-fired boilers must meet a minimum standard of <math><40\text{mgNO}_x/\text{kWh}</math>;
 - ▶ One electric vehicle charging point per allocated parking space or one charging point per ten parking spaces if unallocated.
- ▶ Commercial/Retail/Industrial;
 - ▶ 10% of parking spaces should include electric vehicle charge points (may be phased to 5% initial provision, with an agreed trigger level for the remainder).

The inclusion of electric vehicle charging infrastructure should reduce the impact of the development as trips overall emissions would be lower with a higher proportion of electric vehicles than the average assumed in the emission calculations.

6. Conclusions

An assessment of the impact to air quality as a result of the proposed construction of circa. 635 dwellings at Queen Elizabeth barracks (QEB) has been conducted. Emissions of dust associated with construction activities have been considered as far as is possible, given that the development planning is at an early stage. Also, the potential for nitrogen oxides (NO_x) and nitrogen deposition to impact on the Strensall Common SSSI and SAC due to an increase in traffic flows associated with the redevelopment of QEB and TL has been assessed.

In terms of the construction phase, it is considered that, due to the size of the QEB proposed development, the potential for dust emission from the site will be large. Therefore, suitable mitigation measures that may be considered as part of a CEMP have been suggested.

Oxides of nitrogen (NO_x) concentrations were predicted using ADMS-Roads to determine whether additional traffic movements associated with the proposed development would impact Strensall Common SSSI/ SAC along a transect of points up to 200 m from the road. The cumulative impact of QEB and TL, as well as traffic associated with other committed development related to the Local Plan allocations, has been considered in light of the High Court Judgement concerning Ashdown Forest.

As expected, both the predicted annual and daily mean concentrations of NO_x decrease along the transect with distance from the road. For the 2017 Baseline scenario, which included traffic associated with the current use of the development site, there were exceedances of the assessment criteria for the annual and daily mean at kerbside locations. In the future scenarios (2031), both without and with the proposed development, the predicted concentrations were below the assessment criteria. This is likely to be due to assumptions around reduction in future vehicle emissions incorporated into the Emissions Factor Toolkit.

With regard to the significance of impact, based on the predicted annual mean concentration as recommended in the EPUK & IAQM guidance, the impact at Flaxton Road is expected to be Negligible. Whereas, at Towthorpe Moor Lane, there is predicted to be a Moderate Adverse impact at the kerbside, reducing to Slight Adverse impact at 25 m, with further reduction to Negligible by 50 m.

Nitrogen deposition as a result of additional traffic associated with the proposed development was calculated. The Predicted Environmental Concentration (PEC) was calculated to be between 227 – 231% of the minimum critical load (MinCL) at all points along the 200 m transect. However, the background deposition rate was shown to be 120% higher than the minimum critical load associated with the ecological features of the SSSI/SAC. According to the Environment Agency insignificance threshold of 1% or less for the Process Contribution (PC) in relation to the critical load, nitrogen deposition is predicted to be inconsequential at all distances from the road at the Flaxton Road transect, and all but the immediate kerbside at Towthorpe Moor Lane.

Additionally, acid deposition rates at ecological receptors resulting from emissions from the proposed development are small (maximum 3.5 % of critical load) and not expected to have a significant impact on the integrity of the designated ecological features of the sites.



Appendix A

Modelling Input



Traffic Data

Annual average daily traffic (AADT) flows were provided by AFW Transport Consultants and are shown in Table A.1 below.

Table A.1 Traffic Data

Link ID	2017 Baseline		2031 Without		2031 With	
	AADT	% HGV	AADT	% HGV	AADT	% HGV
Towthorpe Moor Lane	11,152	18	5,143	18	12,859	18
Flaxton Road	9,354	4	10,248	4	10,926	4

Note: The above data includes the cumulative flows of committed developments associated with the Local Plan allocations.



Appendix B

Model verification

The ADMS-Roads dispersion model has been widely validated for this type of assessment.

Model validation undertaken by the software developer (CERC) will not have included validation in the vicinity of the Proposed Development Site. It is therefore necessary to perform a comparison of modelled results with local monitoring data at relevant locations. This process of verification attempts to minimise modelling uncertainty and systematic error by correcting modelled results by an adjustment factor to gain greater confidence in the final results.

The predicted results from a dispersion model may differ from measured concentrations for a large number of reasons, including uncertainties associated with:

- ▶ Background concentration estimates;
- ▶ Meteorological data;
- ▶ Source activity data such as traffic flows and emissions factors;
- ▶ Model input parameters such as surface roughness length, minimum Monin-Obukhov length;
- ▶ Monitoring data, including locations; and
- ▶ Overall model limitations.

Model verification is the process by which these and other uncertainties are investigated and where possible minimised. In reality, the differences between modelled and monitored results are likely to be a combination of all of these aspects.

Model setup parameters and input data were checked prior to running the models in order to reduce these uncertainties. The following were checked to the extent possible to ensure accuracy:

- ▶ Traffic data;
- ▶ Road widths;
- ▶ Distance between sources and monitoring as represented in the model;
- ▶ Speed estimates on roads;
- ▶ Source types, such as elevated roads and street canyons;
- ▶ Selection of representative meteorological data;
- ▶ Background monitoring and background estimates; and
- ▶ Monitoring data.

NO_x/ NO₂

Suitable local monitoring data for the purpose of verification is available for annual mean NO_x/NO₂ concentrations as shown in Table B1 below. The diffusion tube B38 was used for verification purposes as it has associated traffic data available from the Department for Transport. It is recommended in TG (16) that a mixture of automatic monitoring and passive monitoring data are used for model verification purposes, however this was not possible as the majority of monitoring stations operated by CYC are located in the city centre, so would not be representative of the development site.

Table B1 Local monitoring data suitable for ADMS-roads model verification

Location	2016 Annual Mean NO ₂ (µgm ⁻³)	OS Grid Reference
B38	20	463757, 455155

Verification calculations

The verification of the modelling output was performed in accordance with the methodology provided in LAQM.TG (16) as far as possible. Table B2 shows that there was systematic under prediction of monitored concentrations at the diffusion tubes. It was therefore considered necessary to adjust modelled concentrations.

Table B2 Verification, modelled versus monitored

Site	2016 Modelled Annual Mean NO ₂ (µgm ⁻³)	2016 Monitored Annual Mean NO ₂ (µgm ⁻³)	% (Modelled-Monitored)/ Monitored
B38	20	17.4	-13%

Table B3 shows the comparison of modelled road-NO_x, a direct output from the ADMS-Roads modelling, with the monitored road-NO_x, determined from the LAQM NO_x to NO₂ conversion tool. An adjustment factor, determined through regression, of 4.5 was used to adjust modelled results.

Table B3 Comparison of modelled and monitored road NO_x to determine verification factor

Site	2016 Modelled Annual Mean Road NO _x (µgm ⁻³)	2016 Monitored Annual Mean Road NO _x (µgm ⁻³)	Ratio
B38	4.1	9.3	2.27

Therefore, an adjustment factor of 2.27 was applied to modelled concentrations of NO_x.



Appendix C

Significance Criteria

The significance criteria used to assess the predicted change in annual mean concentration of NO_x is shown in Table C1.

Table C.2 Impact descriptors for individual receptors

Long term average concentration at receptor in assessment year	% Change in concentration relative to Air Quality Assessment Level (AQAL)			
	< 1	2-5	6 - 10	>10
75 % or less of AQAL	Negligible	Negligible	Slight	Moderate
76-94 % of AQAL	Negligible	Slight	Moderate	Moderate
95 – 102% of AQAL	Slight	Moderate	Moderate	Substantial
103 – 109 % of AQAL	Moderate	Moderate	Substantial	Substantial
110% or more of AQAL	Moderate	Substantial	Substantial	Substantial

Table Notes: When defining the concentration as a percentage of the AQAL, the ‘without scheme’ concentration is used where there is a decrease in pollutant concentration, and the ‘with scheme;’ concentration for an increase. The total concentration categories reflect the degree of potential harm by reference to the AQAL value. At exposure less than 75% of this value, i.e. well below, the degree of harm is likely to be small. As the exposure approaches and exceeds the AQAL, the degree of harm increases. This change naturally becomes more important when the result is an exposure that is approximately equal to, or greater than the AQAL. It is unwise to ascribe too much accuracy to incremental changes or background concentrations, and this is especially important when total concentrations are close to the AQAL. For a given year in the future, it is impossible to define the new total concentration without recognising the inherent uncertainty, which is why there is a category that has a range around the AQAL, rather than being exactly equal to it





Appendix C

Hydrology



GVA / DIO

DIO York Sites: Queen Elizabeth Barracks (QEB)

Hydrology assessment to support the Habitats Regulations Assessment



December 2017

Amec Foster Wheeler Environment
& Infrastructure UK Limited

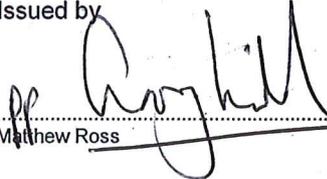


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Document revisions

No.	Details	Date
1	First draft (internal)	20/11/2017
2	Second draft (internal)	28/11/2017
3	Final draft for issue	04/12/2017
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Executive summary

Purpose of this report

This report has been prepared to support the allocation of a development site at Queen Elizabeth Barracks (QEB), Strensall, within the City of York Council Local Plan. The Habitats Regulations Assessment requires assessment of all European Sites (e.g. SACs) within 1 km of a proposed development. Strensall Common Special Area of Conservation (SAC), (UK0030284) is the only European Site within 1 km of QEB. Accordingly, the report has assessed the potential for likely significant effects of the proposed development at, on the hydrological environment of Strensall Common SAC, (UK0030284).

Findings

The assessment was based on identifying the potential changes in flood risk, water resource and water quality that could result in a likely significant effect on the conservation objectives of Strensall Common SAC. To provide a robust assessment on the receptors, the scope of the assessment considered the potential effects on Water Framework Directive (WFD) water bodies, as well as the SAC itself. This was due to the geographic overlap of the feature and the similar pressures they are under. Principally, this included Tang Hall Beck/Old Foss Beck catchment, tributary of the River Foss (GB104027063500) and Foss from the Syke to the River Ouse (GB104027063520) WFD surface water bodies, and the SUNO Sherwood Sandstone (GB40401G702100) WFD groundwater body. Based on the geographic overlaps and data availability, assessment of baseline conditions for the receptors was made based on Cycle 2 (2016) WFD status.

Baseline assessment showed that the hydrological characteristics of the receptors are varied. Under Cycle 2 (2016) of the WFD Tang Hall Beck/Old Foss Beck catchment, the surface water bodies tributary of the River Foss (GB104027063500) and Foss from the Syke to the River Ouse (GB104027063520) are both were classified as moderate ecological potential, failing on ecology. The SUNO Sherwood Sandstone (GB40401G702100) WFD groundwater body is of poor overall status due to failing Chemical Status. Strensall Common (SAC) is of good baseline status, with no immediate pressures on hydrology.

Potential likely significant effects were identified for flood risk, water quantity and water quality. The assessment considered Site-specific effects arising from the development itself from construction, operational and decommissioning activities, as well as in-combination effects from other development within vicinity of the receptors. Specific impacts that could impact on all three receptors included:

- ▶ Increased flood risk due to increased surface water discharges from site (causing flooding WFD water bodies, or of wet heath or dry heath habitats in Strensall Common SAC);
- ▶ Reduced water availability due to new surface water or groundwater abstractions; and
- ▶ Reduced water quality due to increased sediment inputs or pollution.

Where a likely significant effect was identified, potential mitigation measures were outlined. For the construction phase, these included the incorporation of Sustainable Drainage Systems (SuDS) for the management of surface water, use of silt fencing (to trap sediment), and incorporation of best practice measures for pollution management, within a Construction Environment Management Plan (CEMP). For the operational phase mitigation measures included design of a suitable SuDS drainage system over the lifetime of the development (to account for drainage failure) and appropriate stages of water quality treatment (including sediment removal), before discharge of surface water from the Site. For both the construction and decommissioning phases, and the operational phase, measures should be taken to reduce water demand. However, should new abstractions be required, then these would need to be agreed with the Environment Agency to mitigate against the reduction in water availability for receptors.



Conclusion

Based on the review of available baseline data and the potential mitigation, the assessment concluded that the proposed development at QEB would not result in adverse effects on the water environment. From a water environment perspective, this should allow for the allocation of the QEB within the City of York Council Local Plan. However, the final proposals for the development Site would still be subject to further Site-specific assessment (e.g. Flood Risk Assessment, Environmental Impact Assessment). These assessments would need to identify any site-specific mitigation measures to be incorporated into the proposed development at the Site, subject to attainment of planning approval.



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1. Introduction

1.1 Purpose and scope of this report

GVA/DIO are promoting the allocation of Queen Elizabeth Barracks (referred to hereafter as QEB, or the Site) for development through City of York Council's (CYC's) emerging Local Plan¹. This report has been produced to provide the evidence base for the hydrological environment² to support the Habitats Regulations Assessment (HRA). The HRA is required to demonstrate appropriate assessment of likely significant effects of the development on a European Site³. Specifically, this report only considers potential effects of the development on surface water features. The assessment considered likely significant effects arising from the proposed development on its own, and 'in combination' with other plans or projects.

1.2 Site description

The QEB is an active Ministry of Defence Site, located on the outskirts of Strensall, York. The QEB is located to the immediate east of Strensall Road and occupies an area of approximately 30 ha. Existing land use is mixed, including buildings used for training purposes, offices, storage, a medical training facility and recreational areas. There is also an area of hardstanding used for car parking, which is served by a network of roads. The landscaped parts of the Site incorporate open space in the form of playing fields, trees/woodland, and areas of open grassland. There are also several surface water features within the Site boundary, including ponds and drainage ditches.

A Site location plan is provided in Figure 1.1 in Appendix A of the main report. As the Site is already developed, QEB is classified as a brownfield Site from a planning perspective.

1.3 Hydrology context

Topography and catchment

The Site is located within the River Foss Catchment. Ordnance Survey mapping shows that the area surrounding QEB is predominantly flat, being located at or below 20 mAOD. Within this area the River Foss, and the wider surface water drainage network within the catchment, is managed by the Foss (2008) IDB.

Surface water features

There is an extensive network of surface water features and drainage ditches within the vicinity of QEB, some of which intersect the Site boundary (marked as surface water features on Figure B.1). The greatest concentration of ditches is found to the south east of the Site. This series of ditches drains Strensall and Towthorpe Common, to the east of QEB and ultimately discharges to the River Foss, via private drainage ditches, and then the wider IDB network, including Camp Dyke. A drainage ditch also runs adjacent to Scott Moncrieff Road, located both within and to the north of the QEB Site boundary. This ditch appears to outfall to

¹ https://www.york.gov.uk/downloads/download/4036/pre-publication_draft_local_plan_reg_18_consultation

² Defined here as freshwater environment, comprising terrestrial surface water and groundwater only.

³ Strictly, 'European Sites' are: any Special Area of Conservation (SAC) from the point at which the European Commission and the UK Government agree the Site as a 'Site of Community Importance' (SCI); any classified Special Protection Area (SPA); any candidate SAC (cSAC); and (exceptionally) any other Site or area that the Commission believes should be considered as an SAC but which has not been identified by the Government. However, the term is also commonly used when referring to potential SPAs (pSPAs), to which the provisions of Article 4(4) of Directive 2009/147/EC (the 'new wild birds directive') apply; and to possible SACs (pSACs) and listed Ramsar Sites, to which the provisions of the Habitats Regulations are applied a matter of Government policy (National Planning Policy Framework paragraph 118) when considering development proposals that may affect them. "European Site" is therefore used in its broadest sense, as an umbrella term for all of the above designated Sites.



Strensall Drain, approximately 800 m north of QEB. The CYC Surface Water Management Plan⁴ notes that Strensall Drain is culverted for much of its length. Both Camp Dyke and Strensall Drain discharge to the River Foss, which is located 250 m to the north east of the Site boundary, at its closest point.

The CYC Surface Water Management Plan (SWMP, 2012)⁵ advises that the MoD has riparian responsibility for ditches and culverts for highway infrastructure within QEB, and Strensall Common.

Surface water drainage

Although the Site is located within the Yorkshire Water catchment area, existing on-site drainage serving QEB is managed by Severn Trent Water Service (STS). The on-site surface water network comprises several private surface water sewers, which discharge to the network of surface water ditches to the north, east, and south of the Site. The proportion of surface water drainage that goes to the off-site ditches is unknown, but there are discharges to the north, east and south of the Site (i.e. to the IDB network). Confirmation of a positive, existing connection to the IDB drainage network, the location of these connections and rates of discharge, would need to be undertaken by the developer at the outline planning stage.

Geology and hydrogeology

As shown on the British geological Survey (BGS) Geology of Britain Viewer⁶ bedrock at QEB, and much of the wider surrounding area, comprises sandstone of the Sherwood Sandstone Group. This is confined by Mercia Mudstone Group (mudstone), located approximately 1 km north of QEB. Superficial geology is composed of Sutton Sand formation (Quaternary deposits), which is punctuated by Alne Glaciolactustrine Formation clay and silt deposits, along Towthorpe Moor Lane (in the south east) and toward the River Foss (in the north and west). The current course of the Foss is flanked by alluvial sands and gravels.

Environment Agency Groundwater Vulnerability maps defines that the Sherwood Sandstone Group bedrock geology as Principal A Aquifer and the Mercia Mudstone Group is Secondary B Aquifer. Principal A Aquifers are defined as permeable rocks capable of providing a high level of water storage, and may support water supply and/or river base flow on a strategic scale. Secondary B Aquifers have lower permeability, and accordingly, have limited potential for groundwater storage.

The Site does not overly a Groundwater Source Protection Zone, associated with abstraction for public water supply.

Flood risk

The Environment Agency flood Map centred on QEB (see Appendix B) identifies that the whole of the Site, and the wider surrounding area is within Flood Zone 1 (the low flood risk area). However, there are discrete areas of surface water flood risk associated with drainage ditches within QEB and the surrounding drainage network (see surface water flood map in Appendix B).

1.4 Proposed development

Description of proposed development

Proposals for the Site entail approximately 18 ha of residential-led development to include the retention of some existing buildings, new-build housing and a primary school. The remaining 12 ha will be used for public open space and soft landscaping. A concept plan for the proposed development is shown on Figure 1.2 in the main report.

⁴ City of York Council Surface Water Management Plan, (December 2012).

⁵ CYC Surface Water Management Plan, (December 2012).

⁶ British Geological Survey Geology of Britain Viewer. Available at: <http://www.bgs.ac.uk/data/mapViewers/home.html>. Accessed 30/11/2017.

Likely significant effects from the proposed development

The main potential for changes to the water environment are as follows:

- ▶ Ground disturbance during the construction phase (e.g. generation of sediment);
- ▶ Changes to Site drainage (during construction, operational and decommissioning phases);
- ▶ Input of pollutants (spillage of contaminants during the construction phase); and
- ▶ Changes in water quantity due to additional inputs into ditches (e.g. dewatering) or new abstractions required for construction and/or decommissioning⁷.

Likely significant effects on the hydrology from the proposed development on downstream receptors have been grouped into three categories: flood risk, water quantity and water quality (full description of these categories is provided in the Methodology section). Table 1.1 lists the likely significant effects with regards to the proposed development.

Table 1.1 Likely significant effects arising from the development

Development phase and potential effect		
Effect type	Construction and decommissioning*	Operations
Flood risk (Increase in flood risk to downstream receptors)	Increases in discharges (volume and rate) into local watercourses due to construction or decommissioning activities (e.g. from temporary compounds and laydown areas, or due to dewatering). This could result in an increase in flood risk to downstream receptors.	Increased discharge (volume and/or rate) from the Site surface water drainage system, presenting a flood risk to downstream receptor. Residual risk from failure of the Site surface water drainage system. This could result in increased flood risk to downstream receptors.
Water quantity (Reduction in water resource availability)	Should water abstractions be required to facilitate the proposed development, then this could result in reduced water availability in downstream receptors.	Should abstractions be required for operations, this could lead to reduction in water quantity due to, resulting in reduced water availability in downstream receptors.
Water quality (Degradation of water quality in receptors)	Mobilisation of sediment during land clearance and enabling works (e.g. establishing new underground service). This could lead to a reduction in water quality in downstream receptors. Spillage of hazardous materials and contaminants (e.g. oil/chemicals), This could lead to a reduction in water quality in downstream receptors. Mobilisation of sediment due to soil stockpiling. This could lead to a reduction in water quality in downstream receptors.	Pollution of off-Site water features (e.g. drainage ditches), resulting in degradation of water quality in downstream receptors.

*For the purposes of this assessment, construction and decommissioning phases have been assumed to be similar in scope and potential for likely significant effects. Generally, for most developments, the decommissioning phase is smaller in magnitude than construction.

⁷ At the time of writing, it has not been established whether additional surface water or groundwater abstractions will be required as part of the constructions or operations phase. Applying a precautionary principle, these likely significant effects have been assessed. Should not abstractions be required, then this would not constitute a likely significant effect

2. Methodology

2.1 Overview and scope

This report considered the potential significant effects of the development at the Site, on the water environment, as well as in-combination with other plans/projects within the immediate surrounding area. This was done by providing an appropriate assessment of the potential effects of the proposed development on downstream receptors. Specifically, for the receptors it considered changes in:

- ▶ Flood risk from all sources including fluvial, surface water, groundwater and artificial sources (e.g. reservoirs and canals);
- ▶ Water resources (e.g. abstractions and discharges to watercourse); and
- ▶ Water quality (through WFD classifications).

A receptor was defined as any water feature or water body, habitat, designated Site, or third party which could be adversely effected by the development. Receptors were classified based on the three categories above (flood risk receptors, water resource receptors, and water quality receptors). Additionally, a single receptor could fall into several of the above categories.

For the purposes of this report, the Water Framework Directive (WFD) provides the main framework for managing the water environment within Europe. Under the WFD, a River Basin Management Plan (RBMP) must be developed for each river basin district. As well as information on classifications, pressures and mitigation measures, these plans are required to include a summary of measures needed for water dependent Natura 2000 Sites to meet their conservation objectives. As summarised in the Defra River Basin Management Plan Policy Paper⁸:

“Under WFD the objectives for Natura 2000 protected areas are to protect or improve the status of the water environment to the extent necessary to contribute to the maintenance of, or restoration to, favourable conservation status of the water dependent interest features. Where a Natura 2000 protected area coincides with one or more water body, WFD ecological status objectives apply in addition to the requirement to achieve favourable conservation status of the water dependent interest features. Where objectives can be aligned, the most stringent objective applies. For example, if a certain concentration of phosphorus is needed to achieve good ecological status and a more stringent value is needed to achieve a Site’s conservation objectives, then the latter applies. Where Natura 2000 protected areas and water bodies coincide, the objectives will be complementary, so that good ecological status will support achievement of conservation objectives and vice versa. It is possible for a water body to meet the objectives for good status but fail the Natura 2000 protected area objective where that objective may be more stringent. It is also possible to meet the Natura 2000 protected area conservation objectives (for example, for a Special Protection Area (SPA) for wetland birds) but fail to achieve good status in a coincident water body because the WFD may require action to protect and restore a wider range of ecological elements”.

Due to the lack of detailed site-specific data available, assessment of baseline conditions was made based on Cycle 2 (2016) WFD status.

2.2 Assessment criteria

With regards to hydrology, the condition of water dependent Natura 2000 Sites are intrinsically linked with WFD water body status. For this report, the identification of receptors, and assessment of changes in the baseline status of said receptors, was informed heavily by WFD water bodies. For SACs, consideration was also given to relevant Natura 2000 objectives.

⁸ Defra, 2016. River Basin Management Plan Policy Paper. Available at: <https://www.gov.uk/government/publications/part-2-river-basin-management-planning-overview-and-additional-information>. Accessed 20/11/2017.

For each receptor, the assessment identified the baseline hydrology in terms of flood risk, water resource, and water quality. Consideration was made of the potential significant effects during the construction, operation and decommissioning phases of the proposed development. A source-pathway-receptor methodology was applied for the assessment to screen in those receptors which could be affected. Using this approach, all three elements (i.e. a source, a pathway and a receptor) had to be present for the receptor to be screened in. For instance, events during the construction phase of the project could include:

- ▶ Source – land use changes exposing soil;
- ▶ Pathway – storm events leading to sediment laden surface water drainage;
- ▶ Receptor – water bodies or surface water features receiving the sediment laden water;

In the above example, the potentially significant effect would be the deterioration in water quality status of the water body due to the increased sediment inputs.

2.3 Study area

As identified in the CYC Habitats Regulations Assessment of the Local Plan⁹ the spatial scope of a HRA should be defined based on the likely environmental outcomes and the zone of influence of a specific development. The buffers applied around the Site to screen receptors into this assessment were commensurate with the scale of the receptor, and the relative hydrologic connectivity to the Site. The following buffers were applied:

- ▶ For surface water features a buffer of 500 m was applied;
- ▶ For WFD water bodies a buffer of 1 km was applied;
- ▶ For statutory designated biodiversity Sites of international importance (e.g. SACs), a buffer area of 1 km was applied.

2.4 Identification of Receptors

Statutory designated biodiversity Sites of international importance

The only statutory designated Site of international importance within 1 km of the Site is Strensall Common SAC. This SAC is located to the immediate east of QEB (see Figure 1.1 in the main report) and covers an area of 572 ha. It has been designated based on two habitats: H4010 Northern Atlantic wet heaths with *Erica tetralix*, and H4030 European dry heaths. As noted there is habitat reliant on water inputs and as such the local hydrology is an important component supporting the natural habitat.

Although not directly assessed in this report the Strensall Common Site of Special Scientific Interest (SSSI) is a component of the Strensall Common SAC near the Site. It should be noted that whilst HRA assessment does not require explicit assessment of SSSIs, there will be significant overlap through assessment of likely effects on Strensall Common SAC. To this end, assessment of potential effects on the SAC can be deemed to assess potential effects on the SSSI, also.

Other designations including the Nitrates Directive, Urban Waste Water Treatment Directive, and Chemical Drinking Water Protected Area, have been scoped out of further assessment. These designations are not relevant to inform the HRA.

⁹ City of York Council/ Amec Foster Wheeler (2014). Habitats Regulations Assessment of the Local Plan.

WFD water bodies

Surface water bodies

Under the WFD, QEB falls within the Humber River Basin District and is within the Swale, Ure, Nidd and Ouse (upper)¹⁰ management catchment, and the Foss operational catchment. As established in section 1.3 of this report, QEB is in hydraulic connectivity with the wider surface water drainage network (see Figure B.1).

As identified by the Natural England Site Improvement Plan (Strensall Common)¹¹, pertinent WFD water bodies are Tang Hall Beck/Old Foss Beck catchment, tributary of River Foss (GB104027063500), and The Syke from Source to the River Foss (GB104027063530). However, a review for this study indicates that the network of off-site water features falls within only two WFD surface water bodies: Tang Hall Beck/Old Foss Beck catchment, tributary of River Foss (GB104027063500), and Foss from the Syke to the River Ouse (GB104027063520). The next closest downstream water body is the Ouse from River Nidd to Stillingfleet Beck (GB104027069593), which is located 3.6 km downstream of QEB.

Groundwater bodies

For groundwater, QEB is within the Humber Groundwater management catchment, and the SUNO Sherwood Sandstone operational catchment which is the same as the WFD groundwater body (GB40401G702100). The SUNO Sherwood Sandstone WFD groundwater body (GB40401G702100) covers the Site red line boundary and much of the wider surrounding area.

2.5 Receptors scoped in to assessment

Of the potential receptors noted above, four were identified that could be impacted by development at QEB due to their hydraulic connectivity. This included three WFD water bodies as well as the SAC itself. Table 2.1 and Figure B.2 show the receptors. It should be noted that there is significant physical cross-over between the WFD water bodies, and the SAC. For this reason, any likely significant effects that would impact on the WFD water bodies would therefore have potential to have a significant affect ON the SAC.

Table 2.1 Receptors scoped into assessment

Receptor type	Receptor name	Receptor ID	Approximate NGR	Size (km ² or ha)
WFD surface water body	Tang Hall Beck/Old Foss Beck catchment, tributary of the River Foss	GB104027063500	SE6805757845	50.5 km ²
WFD surface water body	Foss from the Syke to the River Ouse	GB104027063520	SE6184658881	31.1 km ²
WFD ground water body	SUNO Sherwood Sandstone	GB40401G702100	SE4696759944	80303.1 ha groundwater area 803.0 km ² surface water area
SAC	Strensall Common SAC	UK0030284	Content	572.0 ha

¹⁰ Swale, Ure Nidd and Ouse (upper)

¹¹ Natural England, 2014. Improvement Programme for England's Natura 2000 Sites (IPENS), Planning for Future: Site Improvement Plan, Strensall Common. Available at: <http://publications.naturalengland.org.uk/publication/6435201697710080>. Accessed 20/11/2017.

Those WFD water bodies which fall within the SAC but beyond the 1 km buffer from QEB, have been scoped out from further assessment. It should be noted that this includes:

- ▶ Syke from Source to the River Foss (GB104027063530), which is 1.7 km to the north east of QEB, and is upstream of the Site; and
- ▶ Ouse from River Nidd to Stillingfleet Beck (GB104027069593) was scoped out of further assessment because of its distance from QEB. Any negative impacts on the upstream WFD water bodies would be highly unlikely to propagate 3.6 km downstream.

Whilst the SUNO Sherwood Sandstone (GB40401G702100) WFD groundwater body is not identified within the Natural England Site Improvement Plan (Strensall Common), based on the permeable geology (described in section 3.1), there is hydrologic continuity between this WFD groundwater body and Strensall Common SAC. The Natura 2000 Technical Report on the management of Northern Atlantic Wet heaths with *Erixa tetralix* (4010)¹² identifies that wet heathland typically has a water table that is at or above ground level for at least part of the year. The SUNO Sherwood Sandstone (GB40401G702100) WFD groundwater body has therefore been scoped into this assessment.

2.6 Identification of likely significant effects on receptors

The identification of likely significant effects was based on a worst-case scenario for each receptor and assumed that initially no mitigation would be in place. The assessments were recorded as:

- ✓ **Likely significant effect** – which indicated that the pressure could lead to an unacceptable impact on the receptor and would need mitigating; or
- ✗ **No likely significant effect** – which indicated that either the pressure was not significant.

Due to the close relationship between the SAC and hydraulically linked WFD surface water and groundwater bodies, any significant effects on flood risk, water quantity or water quality on the WFD water bodies, could affect baseline status of the SAC (which is assessed in Section 3). The Natura 2000 Technical Report on the management of Northern Atlantic Wet heaths with *Erixa tetralix* (4010) identifies the main threats to the wet heath. For hydrology, this includes the artificial drainage of wet heaths (due to lowering of the water table), and from groundwater extraction. Conversely, increases in surface water discharges could detrimentally affect European dry heath habitat. Both wet heath and dry heath habitats could be affected by changes the water quality of freshwater inputs; either due to one-off pollution incidents, or due to long-term pervasive pollution.

2.7 Identification of likely significant in-combination effects

At the time of writing this report the closest proposed major development (>1 ha), within a 1 km radius of QEB, is for Towthorpe Lines. Towthorpe Lines is an existing MoD Site, covering an area of approximately 4 ha and being located 240 m south east of QEB. Like QEB, Towthorpe Lines is also identified for disposal by MoD by 2021. It is anticipated that development at Towthorpe Lines will comprise employment use, through the retention of existing facilities. Further likely significant effects in-combination can therefore be scoped out from further assessment at this stage¹³.

¹² Natura 2000, 2008. Management of Natura 2000 habitats, Northern Atlantic wet heaths with *Erixa tetralix*, 4010. Directive 92/42/EEC on the conservation of natural habitats and of wild fauna and flora. Technical report 2008 08/24. http://ec.europa.eu/environment/nature/natura2000/management/habitats/pdf/4010_Atlantic_wet_heaths.pdf. Accessed 20/11/2017.

¹³ Potential for any additional cumulative effects should be assessed within an Environmental Impact Assessment (EIA), as part of the final planning application for the proposed development at QEB. This should account for any new developments, which may be proposed in the intervening period between publication of this report, and submission of the final planning application.

2.8 Data sources

This high-level, desk-based assessment has been made based on publicly available data. It is acknowledged that not all potential data (i.e. observed field data, or long-term monitoring records) were used. In lieu of observed field data, or extensive records pertaining to the study area, a precautionary approach has been applied, assuming the worst-case impacts. Therefore, the assessment has been made based on the best available evidence, and is commensurate to the level of assessment required to support site allocation in the Local Plan. Detailed assessment of potential effects of the proposed development, on receptors should be made as part of a formal Environmental Impact Assessment (EIA), as part of any planning application.

Table 2.2 summarises the data used to inform this assessment, and their sources.

Table 2.2 Data sources used to inform this assessment

Data	Description	Organisation	Source
Flood risk mapping	Flood Risk maps including: fluvial and tidal flooding, and surface water	Environment Agency	https://flood-map-for-planning.service.gov.uk/
Geology mapping	British Geological Survey Geology of Britain Viewer	British Geological Survey	http://www.bgs.ac.uk/data/mapViewers/home.html
Water quality	Water Framework Directive classifications	Environment Agency	http://environment.data.gov.uk/catchment-planning/
MAGIC web site	Interactive online map of the UK natural environment and designations.	Defra UK	http://www.natureonthemap.naturalengland.org.uk/About_MAGIC.htm

3. Baseline assessment

3.1 WFD water bodies

Baseline assessment of WFD surface water bodies and ground water bodies has been informed by the Environment Agency’s Catchment Data Explorer and the Cycle 2 (2016) River Basin Management Plan.

For surface water bodies, the WFD classifies the ‘Ecological Status’ or ‘Ecological Potential’ of all water bodies. Ecological status is assigned to those waterbodies for which achieving a near natural state is possible. Ecological Potential is assigned to those water bodies that have been designated as artificial or heavily modified. A heavily modified water body is defined where human modification has substantially altered its natural conditions, such that a different baseline is required. Both the Tang Hall Beck/Old Foss Beck catchment, tributary of the River Foss, (GB104027063500) and Foss from the Syke to the River Ouse, (GB104027063520) are designated as Heavily Modified Water Bodies (HMWB) as such need to achieve good ecological potential by no later than 2027.

For groundwater bodies, the WFD classifies ‘Quantitative Status’ and ‘Chemical Status’. Common status elements for include assessment of groundwater dependent terrestrial ecosystems, dependent surface water body status, and saline intrusion. For ‘Quantitative Status’ water balance is also considered. Analysis of water chemistry is used to inform the ‘Chemical Status’ of the groundwater body.

WFD Surface water bodies

Table 3.1 summarises WFD status for the Tang Hall Beck/Old Foss Beck catchment, tributary of the River Foss, (GB104027063500) and Foss from the Syke to the River Ouse, (GB104027063520) for Cycle 2 (2016). This indicates that both water bodies achieved an overall status of moderate, due to their ecological potential. The identified reasons for not achieving good potential are water quality and physical modifications to the watercourses (reflected in the failing elements identified in Table 3.1). Specific pressures within the catchments are noted to come from agricultural land use (diffuse pollution), as well as from a mixture of private and water company sewage discharges (none of which are known to be related to QEB).

Table 3.1 Cycle 2 (2016) WFD Status: surface water bodies

Water body name and ID	Overall status (or potential)	Ecological status	Chemical Status	Reasons for not achieving good status	Protected area designation
Tang Hall Beck/Old Foss Beck catchment, tributary of the River Foss, (GB104027063500)	Moderate	Moderate	Good	Poor Invertebrates; Poor Ammonia (Phys-Chem); High pH; High Temperature	Strensall Common SAC (UK0030284) Nitrates Directive
Foss from the Syke to the River Ouse, (GB104027063520)	Moderate	Moderate	Good	High Ammonia (Phys-Chem); High pH; High Temperature High specific pollutants (Arsenic, Copper, Iron, Triclosan and Zinc)	Strensall Common SAC (UK0030284) Nitrates Directive Urban Waste Water Treatment Directive (River Foss)

WFD Groundwater bodies

Table 3.2 shows the Cycle 2 (2016) WFD status for the SUNO Sherwood Sandstone (GB40401G702100) groundwater body. The ‘Overall Status’ was assessed to be ‘Poor’, due to failed assessment of its Chemical Status.

Table 3.2 Cycle 2 (2016) WFD Status: groundwater bodies

Water body name and ID	Overall status (or potential)	Quantitative Status	Chemical Status	Reasons for not achieving good status	Protected area designation	Overall water body objective (2027)	Considerations
SUNO Sherwood Sandstone, (GB40401G702100)	Poor	Good	Poor	Chemical Drinking Water Protected Area	Chemical Drinking Water Protected Area Nitrates Directive	Good	Disproportionately expensive

3.2 Strensall Common SAC

Baseline assessment of Strensall Common SAC (UK0030284) has been informed by its European Site Conservation Objectives, and Site Improvement Plan (SIP)¹⁴. The plan provides a high-level overview of issues affecting the SAC now, and a prediction of pressures expected to threaten its status into the future. The SIP identifies that:

“Strensall Common SASC supports one of the largest areas of lowland heath in northern England. Extensive areas of both wet and dry heath occur and form a complex habitat mosaic with grassland, woodlands and ponds. The site has a diverse bird population with breeding curlew and woodlark. The site is noted for its population of marsh gentians. The site is renowned for its invertebrates and is the only site in England for the dark bordered beauty moth.”

The SIP identifies three main pressures and threats that could impact the baseline status of Strensall Common SAC (Table 3.3). It should be noted that none of the identified pressures and threats directly relates to the water environment. However, the CYC Local Plan Working Group note that Strensall Common is sensitive to changes in hydrology¹⁵. Applying a conservative approach for the purposes of this assessment, the baseline hydrology conditions of Strensall Common SAC have been deemed as good.

Table 3.3 Main pressures and threats to Strensall Common SAC

Priority and issue	Pressure or threat	Features affected
Public access/ disturbance	Pressure	H4010 wet heathland with cross-leaved heath; H4030 European dry heaths
Inappropriate scrub control	Threat	H4010 wet heathland with cross-leaved heath; H4030 European dry heaths
Air pollution (atmospheric nitrogenic deposition)	Pressure	H4010 wet heathland with cross-leaved heath; H4030 European dry heaths

¹⁴ Site Improvement Plan Strensall Common. Improvement Programme for England's Natura 2000 Sites (IPENS) Planning for the Future. Published 18/12/2014.

¹⁵ City of York Council, Local Plan Working Group, City of York Local Plan – Update Report (January 2017). Available at <http://democracy.york.gov.uk/documents/s112080/Final%20LPWG%20report%20January%202017.pdf>. Accessed 25/11/2017.

4. Assessment of likely significant effects

Assessment has been made of the likely significant effects of the development on the WFD water bodies and the SAC. In accordance with the People Over Wind case, a precautionary approach has been applied, to assume that no mitigation measures are in place.

4.1 WFD water bodies

Flood risk

Flood risk to all identified WFD receptors (both surface water and groundwater) could be increased from the present-day baseline, due to increased discharge of surface water run-off, or dewatered groundwater volumes. This could result in temporary or long-term change to the baseline freshwater environment, and potential physical degradation of ecology these habitats support. The magnitude of the effect would be dependent on the scale of the flooding. For instance, the WFD water body would potentially be more resilient to an isolated flood event (from the construction phase), than it would to a long-term increase in flood risk due to sustained higher rates and/or volumes of discharge (during operations).

Water resources

Reduction in water quantity during constructions could arise due to the need for temporary surface water or groundwater abstractions. This could undermine the baseline status and sustainability of WFD surface water and groundwater bodies (e.g. the SUNO Sherwood Sandstone aquifer). Lower water availability could result in the detriment of ecology supported by the WFD water body.

Water quality

Reduction in water quality could arise due to the mobilisation of sediment in surface water run-off (subsequently effecting the dissolved and suspended solid concentrations in surface water and groundwater bodies). Similarly, spillage of pollutants and contaminants (e.g. oil or chemicals) could damage the receiving WFD water body. Reduction in water quantities could also result in a change in the baseline water chemistry. For example, an increase in concentration of pollutants due to less dilution or decreases in dissolved oxygen due to lower flows and mixing.

4.2 Strensall Common SAC

Flood risk

An increase in flood risk could result in the physical degradation of wet heath or the dry heath environment. As with the potential effects on WFD water bodies (above), the scale of the effect would be dependent on the temporal scale and magnitude of associated flooding.

Water quantity

Short-term changes in water quantity could pose a risk to the baseline status of the SAC. Reduced availability of water (e.g. due to abstraction) could result in wet heath drying out.

Water quality

As with WFD water bodies, additional sediment inputs or changes in chemistry could either temporarily or permanently result in a change in the qualifying characteristics of the wet and dry heath habitats.



Results

If unmitigated, detrimental changes to any of the above elements (flood risk, water quantity and water quality), would degrade the status of the identified receptors, when compared with their baseline conditions. Results of the assessment are provided in Table 4.1.

Table 4.1 Assessment of likely significant effects on receptors

Receptor	Development Phase*	Flood Risk	Water Resources	Water Quality
Tang Hall Beck/Old Foss Beck catchment, tributary of the River Foss, (GB104027063500)	C & D	✓ Likely significant effect - increased discharges of surface water run-off/ dewatered volumes, resulting in flooding of water body	✓ Likely significant effect - additional abstractions reduce water availability within water body during low flows	✓ Likely significant effect - due to increased sediment inputs into the water body ✓ Likely significant effect - due to spillage of pollutants or contaminants
	O	✓ Likely significant effect - increased flood risk due to discharges from proposed site drainage system to this water body ✓ Likely significant effect - residual flood risk due to failure of the proposed site drainage system, leading to flooding of water body	✓ Likely significant effect - additional abstractions reduce water availability within water body during low flows	✓ Likely significant effect - due to increased sediment inputs into the water body
Foss from the Syke to the River Ouse, (GB104027063520)	C & D	✓ Likely significant effect - increased discharges of surface water run-off/ dewatered volumes, resulting in flooding of water body	✓ Likely significant effect - additional abstractions reduce water availability within water body during low flows	✓ Likely significant effect - due to increased sediment inputs into the water body ✓ Likely significant effect - due to spillage of pollutants or contaminants
	O	✓ Likely significant effect - increased flood risk due to discharges from proposed site drainage system to this water body ✓ Likely significant effect - residual flood risk due to failure of the proposed site drainage system, leading to flooding of water body	✓ Likely significant effect - additional abstractions reduce water availability within water body during low flows	✓ Likely significant effect - due to increased sediment inputs into the water body
SUNO Sherwood Sandstone, (GB40401G702100)	C & D	✓ Likely significant effect - increased discharges of surface water run-off/ dewatered volumes, resulting in flooding of water body	✓ Likely significant effect - additional abstractions reduce water availability within water body during low flows	✓ Likely significant effect - due to increased sediment inputs into the water body ✓ Likely significant effect - due to spillage of pollutants or contaminants
	O	✓ Likely significant effect - increased flood risk due to discharges from proposed site drainage system to this water body ✓ Likely significant effect - residual flood risk due to failure of the proposed site drainage system, leading to flooding of water body	✓ Likely significant effect - additional abstractions reduce water availability within water body during low flows	✓ Likely significant effect - due to increased sediment inputs into the water body
Strensall Common SAC, (UK0030284)	C & D	✓ Likely significant effect - increased discharges of surface water run-off/ dewatered volumes, resulting in flooding of wet heath/dry heath	✓ Likely significant effect - additional abstractions reduce water availability within wet heath during dry periods	✓ Likely significant effect - due to increased sediment inputs into SAC ✓ Likely significant effect - due to spillage of pollutants or contaminants into SAC
	O	✓ Likely significant effect - increased flood risk due to discharges from proposed site drainage system, leading to flooding of wet heath/dry heath ✓ Likely significant effect - residual flood risk due to failure of the proposed site drainage system, resulting in flooding of wet heath/dry heath	✓ Likely significant effect - additional abstractions reduce water availability within wet heath during dry periods	✓ Likely significant effect - due to increased sediment inputs into SAC

*Development phases have been abbreviated as follows: C (Construction), O (Operational), and D (Decommissioning) ✓ = likely significant effect (cannot be excluded from further assessment)

✗ = likely significant effect (can be excluded from further assessment)

5. Stage 2 Assessment

Where a likely significant effect has been identified then appropriate mitigation measures, that are compliant with standard best practice, have been identified.

5.1 Mitigation measures

Likely significant effects for the construction and decommissioning phases, and operational phase of the proposed development were identified in Section 4. These are the same for all receptors (WFD water bodies, and Strensall Common SAC), due to the significant physical overlap, and similar potential effects. Where a likely significant effect has been identified in Table 4.1, mitigation measures will be required. As the same likely significant effects have been identified for all four receptors, potential mitigation measures are outlined by the type of effect (e.g. flood risk, water resource, and water quality). These mitigation measures apply to all identified receptors. Table 5.1 identifies potential mitigation measures that could be incorporated to the proposed development and would be expected to minimise potential for any hydrological effects to occur.

Table 5.1 Potential mitigation measures

Effect type	Development Phase	Likely significant effect	Mitigation
Flood Risk	C & D	Increased discharges of surface water run-off/ dewatered volumes	Use of Sustainable Urban Drainage Systems (SuDS) Agreement of rates/volumes of discharge with the Foss (2008) IDB Secure best practice measures in Construction Environment Management Plan (CEMP)
	O	Increased flood risk due to discharges from proposed site drainage system	Use of Sustainable Urban Drainage Systems (SuDS) Agreement of rates/volumes of discharge with the Foss (2008) IDB
		Residual flood risk due to failure of the proposed site drainage system	Design drainage system for failure (as part of Flood Risk Assessment)
Water resources	C & D	Additional surface water/groundwater abstractions	Minimise need for additional abstractions Where required, agree abstractions with the Environment Agency Secure best practice measures in Construction Environment Management Plan (CEMP)
	O	Additional surface water/groundwater abstractions	Minimise need for additional abstractions Where required, agree abstractions with the Environment Agency
Water Quality	C & D	Mobilisation of sediment during land clearance and enabling works and soil stockpiling	Use of Sustainable Urban Drainage Systems (SuDS) and silt fences to remove sediment from run-off (secured through use of a CEMP)
		Spillage of pollutants or contaminants	Incorporate best-practice measures (e.g. drip trays) Secure best practice measures in Construction Environment Management Plan (CEMP)
	O	Increased sediment and pollutants from surface runoff into the water body	Use of Sustainable Urban Drainage Systems (SuDS) to remove sediment

*Development phases have been abbreviated as follows: C (Construction), O (Operational), and D (Decommissioning)

The potential mitigation measures outlined in Table 5.1 are examples mitigation measures that could be applied to the proposed development but is not an exhaustive list. They are provided here to demonstrate how likely significant effects could be successfully mitigated, to allow QEB to be allocated within the Local Plan. Site-specific mitigations should be identified for the Site, and secured through the planning application process (for example, flood risk and drainage measures should be identified as part as a site-specific Flood Risk Assessment).

Flood Risk

Table 5.1 has identified potential flood risk mitigation measures for the construction and decommissioning phases. These would comprise the incorporation of SuDS for the sustainable management of surface water. This would control the rates and volume of surface water run-off, and reduce the risk of increased discharges downstream (i.e. to third party receptors). Efforts to capture and re-use run-off, on-site (for example the re-use of washdown water) should also be explored. The rates and volume, and location of discharge points to be made from the Site should be agreed with the Foss (2008) IDB, prior to commencement of construction works. The proposed best practice measures, including SuDs drainage arrangement for the construction (and decommissioning) phase should be secured through a Construction Environment Management Plan (CEMP).

The operational phase should incorporate SuDs drainage measures, to manage surface water run-off over the full life-cycle of the proposed development. Design should be made in accordance with the requirements of the Environment Agency, Foss (2008) IDB, and Lead Local Flood Authority (LLFA). Outline design of the proposed drainage system should be specified in a Flood Risk Assessment, accounting for the residual risk in the event of drainage system failure. This would minimise the risk of increased flooding to receptors for the operational phase.

Water Resources

As far as possible the developer should seek to minimise the requirements for any new or increased surface water or groundwater abstractions (for either the construction and decommissioning, or operational phases). For the construction and decommissioning phase, it may be possible to minimise the demand for water, through the re-use of greywater on site. If any abstractions are required for either construction, decommissioning or operational phases, these must be agreed with the Environment Agency beforehand. Relevant water resource mitigation measures should be identified within the CEMP.

Water Quality

The principal likely significant effects on water quality during the construction and decommissioning phases are the mobilisation of sediment in surface water run-off, and the potential for pollution from hazardous materials or contaminants (e.g. oil spills from construction vehicles). Sediment mobilisation could be mitigated by placing silt-fences adjacent to surface water features (to capture and remove sediment), and through use of SuDS for the management of surface water before discharge from the Site. Best practice measures could be incorporated to reduce the risk of pollution incidents (e.g. through oil/petrol spillages). Examples include the use of drip trays/plant nappies below heavy plant, or specifying designated areas for vehicle/plant refuelling. Any such measures should be identified and secured within the CEMP.

For the operational phase, a SuDs drainage system should allow for an appropriate level of water quality treatment. The precise number of stages of treatment would need to be agreed with the Environment Agency, Foss (2008) IDB, and the LLFA.

5.2 Assessment of adverse effect

Table 5.2he results in Table 5.2 show the assessment of likely significant effects, when accounting for the use of potential mitigation measures and represent the remaining residual risk to the identified receptors. The results show that, provided suitable mitigation measures are incorporated into the final site design, then all likely significant effects could be managed.

Table 5.2 Assessment of adverse effects on receptors

Receptor	Development Phase*	Flood Risk	Water Resources	Water Quality
Tang Hall Beck/Old Foss Beck catchment, tributary of the River Foss, (GB104027063500)	C & D	<p>✘ No adverse effect - from discharges of surface water run-off/dewatered volumes, through use of SuDs and agreement of rates/volume discharge with Foss (2008) IDB</p>	<p>✘ No adverse effect - if additional abstractions need to agreed with the Environment Agency</p>	<p>✘ No adverse effect – if silt fencing/SuDs used and remove risk of additional sediment inputs</p> <p>✘ No adverse effect - from spillage of pollutants or contaminants due to use of best practice measures</p>
	O	<p>✘ No adverse effect - from discharges from proposed site drainage system, through use of SuDs and agreement of rates/volume discharge with Foss (2008) IDB</p> <p>✘ No adverse effect - from failure of the proposed site drainage system, due to appropriate design</p>	<p>✘ No adverse effect - if additional abstractions need to agreed with the Environment Agency</p>	<p>✘ No adverse effect – if SuDs used and removes risk of additional sediment inputs</p>
Foss from the Syke to the River Ouse, (GB104027063520)	C & D	<p>✘ No adverse effect - from discharges of surface water run-off/dewatered volumes, through use of SuDs and agreement of rates/volume discharge with Foss (2008) IDB</p>	<p>✘ No adverse effect - if additional abstractions need to agreed with the Environment Agency</p>	<p>✘ No adverse effect – if silt fencing/SuDs used and remove risk of additional sediment inputs</p> <p>✘ No adverse effect - from spillage of pollutants or contaminants due to use of best practice measures</p>
	O	<p>✘ No adverse effect - from discharges from proposed site drainage system, through use of SuDs and agreement of rates/volume discharge with Foss (2008) IDB</p> <p>✘ No adverse effect - from failure of the proposed site drainage system, due to appropriate design</p>	<p>✘ No adverse effect - if additional abstractions need to agreed with the Environment Agency</p>	<p>✘ No adverse effect - if SuDs used and remove risk of additional sediment inputs</p>
SUNO Sherwood Sandstone, (GB40401G702100)	C & D	<p>✘ No adverse effect - from discharges of surface water run-off/dewatered volumes, through use of SuDs and agreement of rates/volume discharge with Foss (2008) IDB</p>	<p>✘ No adverse effect - if additional abstractions need to agreed with the Environment Agency</p>	<p>✘ No adverse effect - if silt fencing/SuDs used and remove risk of additional sediment inputs</p> <p>✘ No adverse effect - from spillage of pollutants or contaminants due to use of best practice measures</p>
	O	<p>✘ No adverse effect - from discharges from proposed site drainage system, through use of SuDs and agreement of rates/volume discharge with Foss (2008) IDB</p> <p>✘ No adverse effect - from failure of the proposed site drainage system, due to appropriate design</p>	<p>✘ No adverse effect - if additional abstractions need to agreed with the Environment Agency</p>	<p>✘ No adverse effect - if SuDs used and removes risk of additional sediment inputs</p>
Strensall Common SAC, (UK0030284)	C & D	<p>✘ No adverse effect - from discharges of surface water run-off/dewatered volumes, through use of SuDs and agreement of rates/volume discharge with Foss (2008) IDB</p>	<p>✘ No adverse effect - if additional abstractions need to agreed with the Environment Agency</p>	<p>✘ No adverse effect - if silt fencing/SuDs used and remove risk of additional sediment inputs</p> <p>✘ No adverse effect - from spillage of pollutants or contaminants due to use of best practice measures</p>
	O	<p>✘ No adverse effect - from discharges from proposed site drainage system, through use of SuDs and agreement of rates/volume discharge with Foss (2008) IDB</p> <p>✘ No adverse effect - from failure of the proposed site drainage system, due to appropriate design</p>	<p>✘ No adverse effect - if additional abstractions need to agreed with the Environment Agency</p>	<p>✘ No adverse effect - if SuDs used and removes risk of additional sediment inputs</p>

*Development phases have been abbreviated as follows: C (Construction), O (Operations), and D (Decommissioning)

✓ = adverse effect on receptor integrity (cannot be excluded)

✘ = adverse effect on integrity (can be excluded)

6. Conclusions of assessment

This report has assessed the potential for likely significant effects of the proposed development at QEB, Strensall on the hydrological environment of the Strensall Common Special Area of Conservation (SAC), (UK0030284). Strensall Common SAC is the only European Site within 1 km of QEB, as required by the Habitats Regulations Assessment.

The assessment was based on identifying the potential flood risk, water resource and water quality impacts on receptors. To provide a robust assessment on the receptors the scope of the assessment considered the potential effects on Water Framework Directive (WFD) water bodies, as well as the SAC itself. This was due to the geographic overlap of the features and the similar pressures they are under. Principally, this included Tang Hall Beck/Old Foss Beck catchment, tributary of the River Foss (GB104027063500) and Foss from the Syke to the River Ouse (GB104027063520) WFD surface water bodies, and the SUNO Sherwood Sandstone (GB40401G702100) WFD groundwater body.

Baseline assessment indicated that the hydrological characteristics of these receptors are varied. Under Cycle 2 (2016) of the WFD Tang Hall Beck/Old Foss Beck catchment, tributary of the River Foss (GB104027063500) and Foss from the Syke to the River Ouse (GB104027063520) surface water bodies are both of moderate overall status, failing on ecological potential. SUNO Sherwood Sandstone (GB40401G702100) WFD groundwater body is of poor overall status due to failing Chemical Status. Strensall Common (SAC) is of good baseline status, with no immediate pressures on hydrology.

Potential likely significant effects were identified for flood risk, water quantity and water quality. The assessment considered Site-specific effects arising from the development itself from construction, operational and decommissioning activities, as well as in-combination effects from other development within vicinity of the receptors. Specific impacts that could impact on all three receptors included:

- ▶ Increased flood risk due to increased surface water discharges from site (causing flooding WFD water bodies, or of wet heath or dry heath habitats in Strensall Common SAC);
- ▶ Reduced water availability due to new surface water or groundwater abstractions; and
- ▶ Reduced water quality due to increased sediment inputs.

Where a likely significant effect was identified, the potential for mitigation measures has been outlined. For the construction phase, this includes the incorporation of Sustainable Drainage Systems (SuDS) for the management of surface water, use of silt fencing (to trap sediment), and incorporation of best practice measures for pollution management, within a Construction Environment Management Plan (CEMP). For the operations phase mitigation measures included design of suitable SuDS drainage system over the lifetime of the development (and to account for drainage failure). Appropriate stages of water quality treatment (including sediment removal), before discharge of surface water from the Site.

Whilst it is recognised that there are uncertainties in the baseline knowledge, in particular in respect of the proportion of surface water drainage from QEB that goes to off-site ditches, it is known that there are discharges to the north, east and south of QEB (i.e. to the IDB network). Determination of an existing positive connection to the IDB drainage network and the location of the connection and rates of discharge still need to be undertaken by the developer at the outline planning stage, however, there is no reason to conclude that these do not exist, or that they will not be capable of conveying the drainage from QEB. As a result it is concluded that the necessary mitigation measures can be designed to ensure no changes to the hydrological condition of the SAC and therefore, with the proposed mitigation, it can be concluded that the proposed development at QEB would not result in an adverse effect on the water environment of the SAC.

From a water environment perspective, this should allow for the allocation of QEB (i.e. allocations ST35 and H59) within the Local Plan. The final proposals for the development Site would be subject to further assessment (e.g. detailed Flood Risk Assessment and HRA). These assessments should confirm the design of Site-specific mitigation measures to be incorporated into the proposed development at the Site, subject to attainment of planning approval.



Appendix A

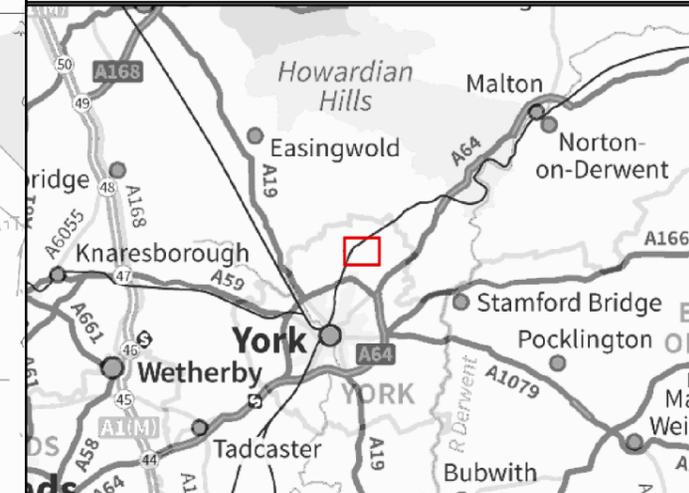
Environment Agency Flood Risk Data

RFI/2017/64321 Flood Map centred on Queen Elizabeth Barracks, Strensall. Date created: 02/11/17



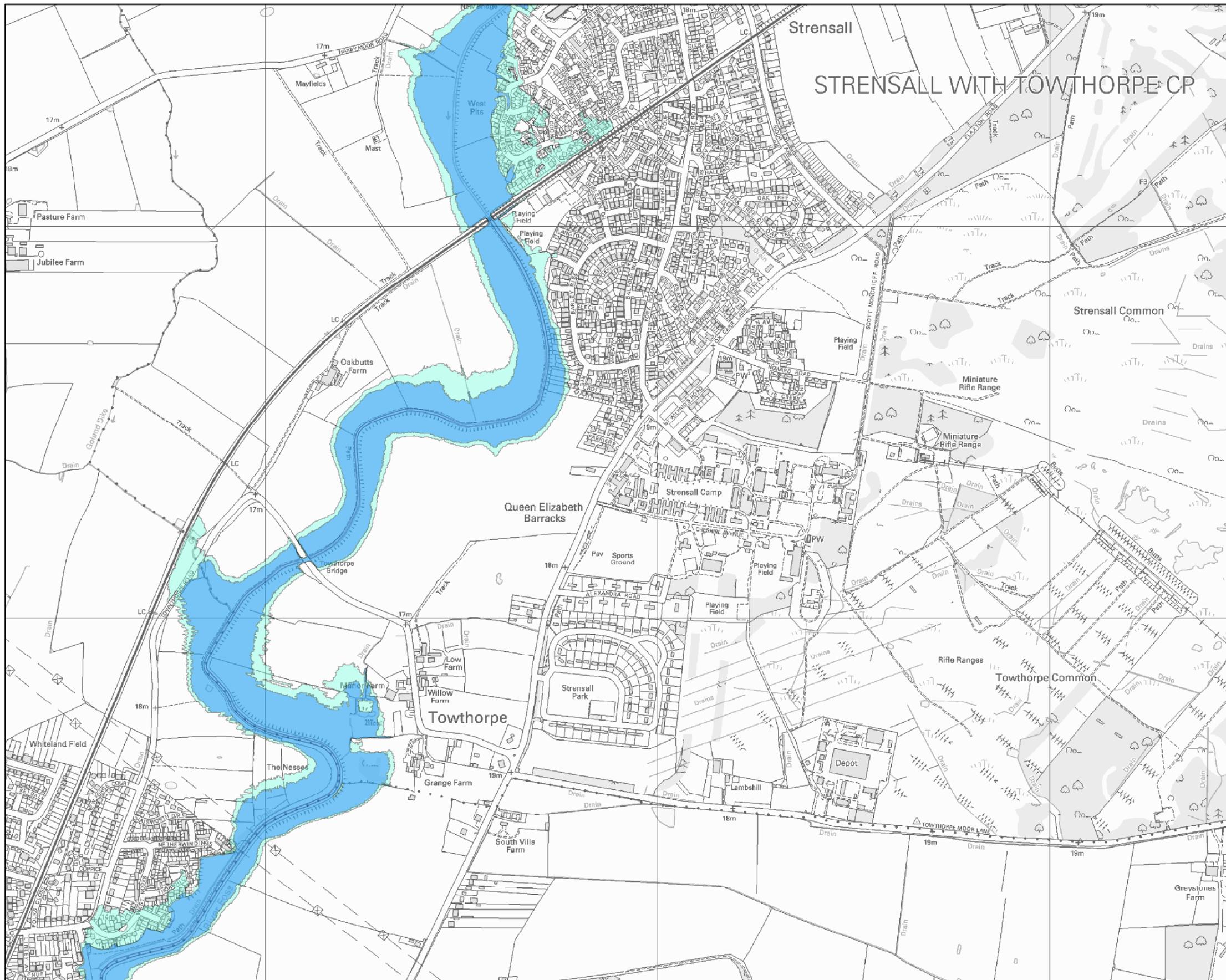
www.environment-agency.gov.uk

Scale: 1:10,000



LEGEND

-  Main River
-  E-Bank Topping
-  Flood Storage Areas
-  Areas Benefiting From Flood Defences
-  Flood Zone 3 (FZ3)
-  Flood Zone 2 (FZ2)





Appendix B

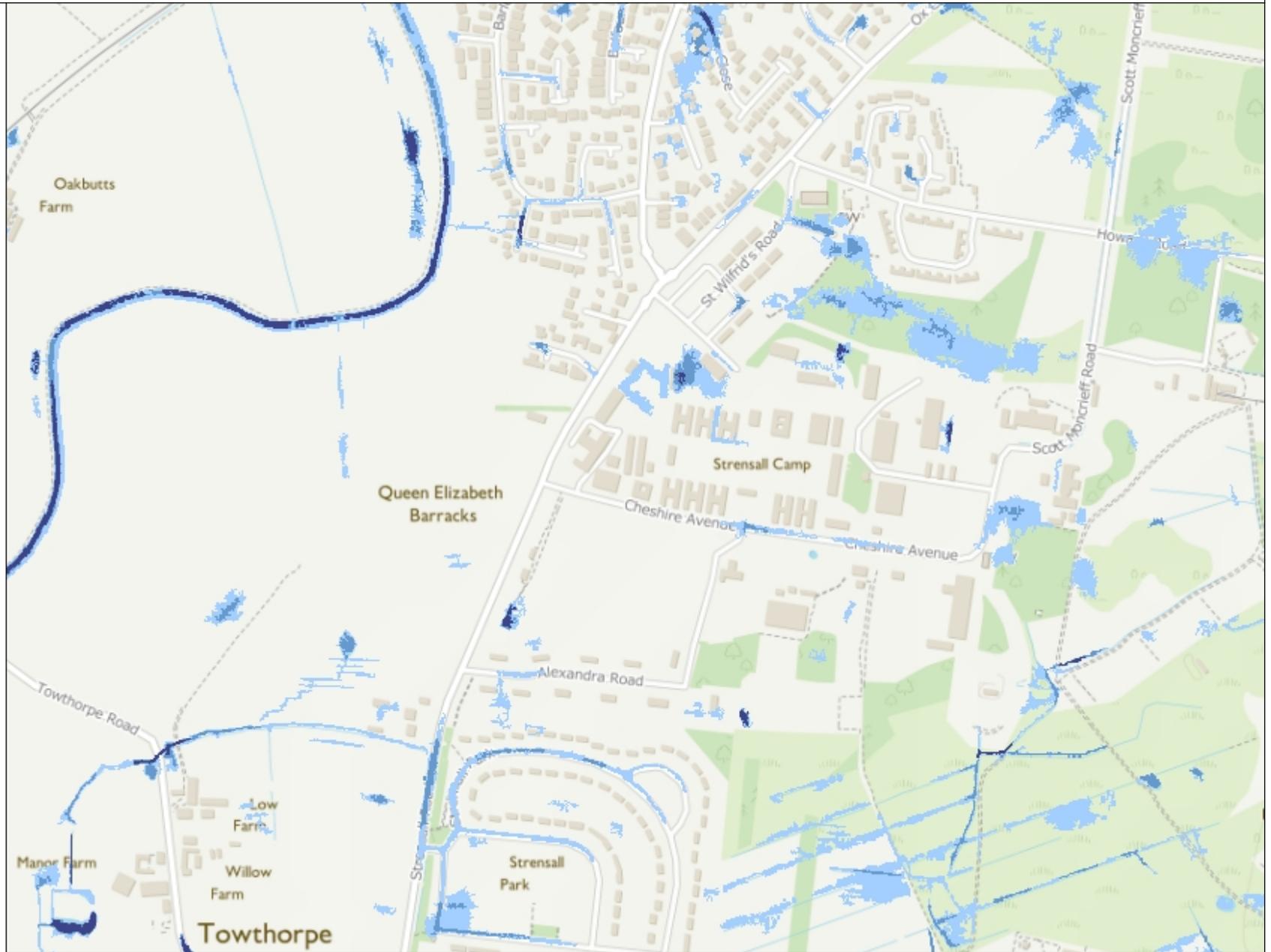
Surface Water Flood Risk Map

Surface Water Flood Risk Map centred on Queen Elizabeth Barracks, Strensall



Legend

-  Flood Extent 1 in 30
-  Flood Extent 1 in 100
-  Flood Extent 1 in 1000





Appendix D

Review of recreational use of the SAC and impacts of existing use

Residents from the proposed development at QEB, and some other residential developments proposed in the Local Plan, would be likely to make use of the adjacent SAC for recreational purposes. To enable assessment of the potential consequences of this, and consider opportunities to minimise effects to be included in a Visitor Impact Management Strategy, it is necessary to understand the baseline situation.

D1 Methods

The approach comprised a desk study, site visits and two visitor surveys. However the results of a DIO commissioned visitor survey undertaken by PCP³⁷, and a review of the results of the PCP survey and a similar survey undertaken by Footprint Ecology⁹ are covered in Appendix E.

Desk study

A request for existing information was sent to stakeholders with responsibility for, or involvement with, Strensall Common, namely: NE, DIO's Senior Access & Recreation Advisor, DIO's Training Safety Officer (TSO, who manages access on the SAC), a DIO Ecologist (who is involved with the conservation management of the SAC and other DIO sites), other contacts within DIO/MoD (with knowledge of current military usage of QEB and the SAC), and Yorkshire Wildlife Trust (YWT). Data sought comprised information about:

- vehicle access to the SAC – including car parks and any public byways on to the SAC;
- footpaths/trails on the SAC– formal or informal, that may be maintained by DIO and/or YWT;
- area of the SAC with access prohibited – any particular places or times of the day or year when public access is restricted or prohibited due to military training;
- estimated existing and future military population resident on and around QEB;
- estimated existing and future military usage of the SAC for training and/or recreation purposes, and;
- any known existing recreation impacts – e.g. any areas already under particular pressure from impacts such as damage to habitats, litter/fly-tipping, dogs/other domestic animals, anti-social behaviour, theft/destruction of property, damage by vehicles.

Site visits

Site visits were undertaken to Strensall Common on Friday 24 November 2017 and Friday 1 December 2017 by an ecologist from Wood. On 24th November the ecologist met with the TSO, NE and CYC to obtain information on recreational provision, pressures, constraints and opportunities that may exist on the SAC.

³⁷ Pickersgill Consultancy and Planning Ltd. (2019). *Strensall Common Visitor Survey Report. An unpublished report for DIO*

All of the permissive trails within the Common (with the exception of approximately 400m of 'Red route', see Figure D.1 for an illustration of the permissive access on the Common) were walked by the ecologist, between the hours of 1400-1600 on 24 November and 0800-1600 on 1 December. Nearly all of the total extent of the paths were walked once over the two visits.

The purpose of the visit was to identify evidence of recreation causing effects on the qualifying habitats (or other notable flora/fauna) on the site. The approach drew on an article by YWT; "*Human Impacts on Nature Reserves – The Influence of Nearby Settlements*"³⁸.

Types of evidence recorded included:

- litter and fly-tipping;
- damage and disturbance by dogs ("damage" referring to faeces, and "disturbance" referring to a dog off the lead which could cause potential disturbance to grazing sheep or ground-nesting birds);
- anti-social behaviour, including vandalism, graffiti, barbecues;
- theft and destruction of wildlife or properties; and
- damage by vehicles (including informal car parks).

A smartphone with Collector software was used to record evidence of recreational usage for later mapping in GIS. The results (below, and Figure D.1) represent the number of impacts and visitors observed as the surveyor covered the whole site over the total 10 hours.

In addition, the following evidence was recorded:

- occurrence and number of visitors, and number of dogs with them; and
- existing access/recreation provision e.g. locations and condition of trails, gates, signage and bins.

D2 Results

Desk study

The following key information regarding existing recreation/access provision and issues has been gathered.

Current and future population of QEB and usage of the Common

The STA, which covers the majority of the 572ha SAC area, is managed by DIO. A small portion of the SAC (42ha) is owned and managed by YWT (see Figure D.1).

The STA is used in conjunction with QEB, with approximately 100,000 personnel (from units across the MOD, reserves, cadets, and other organisations such as the police) passing through every year for training. Live firing is undertaken on the purpose-built ranges and other "dry" (i.e. field-based training activities without live ammunition) are undertaken on the wider Common. These transitory users are largely accommodated in the 799 training "beds" that are available at QEB.

³⁸ Yorkshire Wildlife Trust (YWT, 2017). *Human Impacts on Nature Reserves – The Influence of Nearby Settlements*. InPractice Issue 97, CIEEM, September 2017

While the above transitory usage equates to ~273 people per night using QEB and/or the Common for military training purposes, there are ~500 permanent/day-to-day staff at QEB. These are accommodated either in the ~95 Single Living Accommodation (SLA) units within QEB itself, with the remainder living in either the 177 Single Family Accommodation houses (SFA, which is "outside the wire" of QEB) or other accommodation (military or private) away from QEB altogether.

Current access provision and management

Live firing occurs intermittently throughout the week, with Friday being a day with no firing, while maintenance takes place. Firing also occurs on two weekends a month. Due to recurring historic issues with public incursions into training areas during live firing, a fence was installed in 2009 to demarcate the Range Danger Area (RDA, see Figure C.1) and gates within this fence are locked during firing. Civilian access was prohibited altogether (from 2012) to certain areas, following consultation with the local Parish Council, MP and the TSO. Both the Council and local MP supported the decision to prevent public access to this part of the ranges. These access restrictions have prompted some conflict with the public, with an on-site protest of c.150 people taking place and negative media attention. Hence, it is important that the VIMS fully considers the perceptions and reactions from the public in any changes to the current access provision.

Ecological considerations form an important part of DIO's management of the STA. A conservation group, comprising representatives from DIO, CYC, NE and other specialist interest groups (e.g. Butterfly Conservation) regularly meet to review conservation management on the site. Grazing of the SAC (including some of the YWT reserve) with sheep is managed under a Higher Level Stewardship (HLS) agreement with a tenant farmer, and there have been targeted efforts to support other notable flora and fauna, including pillwort, water vole (*Arvicola amphibious*) and the dark-bordered beauty (a nationally-scarce moth for which the Common is the only site in England).

DIO provide two free, permissive car parks on the boundary for the public, and there are also two vehicle 'pull-ins' along the western boundary of the site on the York/Flaxton Road. The two permissive car parks (Car Park (CP) 1 and CP2, see Figure D.1) have information panels and bins, which DIO maintain. YWT does not provide any car parks, although CP3 and CP4 are closest and assumed that visitors to their reserve by car would likely use those car parks.

Four permissive footpaths (see Figure D.1), which start and end at the main car parks, have a cumulative total length of 20km and are provided and maintained by DIO. Some paths are always available whilst others (within the RDA) are subject to closure during periods of live firing. DIO have classified these routes as "easy", "medium" and "advanced" according to difficulty. These routes are regularly used by the local community for walking, dog walking and running. Black route loops south from CP1 along the eastern boundary of QEB and back through the RDA, while Yellow route runs between CP1 and CP2 along the boundary with Strensall Golf Course. YWT also provide permissive footpaths on their reserve, in addition to the PRow's which traverse their site.

In 2019, DIO employed a Training Safety Marshal (TSM), to monitor and police the training areas. YWT does not have any regular physical presence on their reserve; they attend when there is work to be done (approximately half a day, once a month), and have quarterly volunteer task days.

DIO provide a leaflet illustrating the circular routes, which are clearly waymarked in the field with colour-coded discs. There are nature information boards at car parks, informing of some of the interest features of the site. There are also numerous signs warning the public of the hazards that may be present in terms of military training, or other hazards such as deep water. YWT also provide an information panel on their reserve.

Site visit

A summary of observations of access provision and recorded evidence of recreational/urban edge effects are provided below, with the locations indicated on Figure D.1.

Access provision

Car parks: CP1 has capacity for approximately 20 cars, with seven vehicles present at 1430 on 24 November. There are a small number of litter/dog mess bins, a nature information board at the trailhead of Red/Yellow route, and a variety of signs warning of vehicle prohibition and other military restrictions. CP2 also has capacity for approximately 20 cars, with this being virtually full at 1600 on 24 November. This location has a similar array of bins and signage and provides the trailhead for Red, Yellow and Brown routes. CP3 is a pull-in/layby with capacity for approximately five cars and one car present at 0800 on 1 December³⁹. There is no other access infrastructure other than military warning signs. CP4 is the same as CP3 with no cars present at 0800 on 1 December. The majority of car park users were accompanied by dogs.

Footpaths: These are predominantly fairly clear and waymarked, although it was noticed that some signs were difficult to spot on the Brown route and towards the southern extent of the Black route. The paths are very wet in places, with new sections of boardwalk having been recently installed (see also 'Vehicle damage' impacts, below). In some places, footpaths have become widened or braided around wet areas or vegetation, and/or become intermingled with vehicle tracks. There are myriad other informal trails (or 'desire lines') across the site; these were too numerous to attempt to map during the site visit, but a qualitative appraisal is that these were most numerous in the vicinity of CPs 1 and 2 and the Red/Yellow route between these points. There are small benches dotted throughout the network of routes.

Bins: These are provided at both CP1 and CP2. Litter bins seemed in poor repair, while dog mess bins are fairly new. No bins were overflowing nor was there much other litter nearby when visited (see Impacts, below).

Signage: there is a proliferation of military warning signs at certain points, such as where the boundary of the entire STA may be unclear, at car park/trailheads and around the RDA boundary. Nature education/interpretation panels, illustrating trail maps and flora and fauna that might be observed by the visitor, are located at CP1, CP2, and there are two on Yellow route.

Visitors and types of use observed during the site visits

A total of 40 visitors were observed during the combined site visit (Figure D.1). Visitors were generally of an older demographic (albeit as the visits took place on Fridays, young people would have been at school), either solo or in small groups of two or three, with all but two visitors (a jogger and a photographer) engaged in walking one or more dogs (total 44 dogs). Dogs were invariably off the lead.

Recorded incidences of recreational/urban edge effects

Figure D.1 shows the locations where visitors and recreational/urban edge impacts were recorded. Table D.1 provides a summary of the number of each type of impact recorded.

³⁹ It should be noted that the weather was inclement on the morning of Friday 1 December, with some light overnight snow and ice, and heavy rain/sleet showers.

Table D.1 Frequency of occurrence of recreational/urban edge effects with distance from car park

	0-100m from a car park	101-500m from a car park	501-1000m from a car park	1001m+ from a car park	Total
Litter and fly-tipping	8	6	6	0	20
Damage and disturbance by dogs	4	8	4	4	20
Anti-social behaviour	0	1	0	0	1
Theft and destruction of wildlife/property	1	0	0	0	1
Damage by vehicles	1	9	7	20	37

Litter and fly-tipping: Very little litter was observed, relative to the size of the site, and what was recorded comprised an occasional bottle/can or plastic bag. These were fairly evenly distributed relative to distance from car park, although no litter was recorded over 1000m from a car park. A small amount of fly-tipping, including some garden waste, was recorded at CP3.

Damage and disturbance by dogs (represented by faeces and dogs off the lead): Only occasional occurrences of dog faeces were recorded. The majority of instances of this impact relates to (potential) disturbance of habitats (e.g. ponds) or wildlife (e.g. ground-nesting birds) by dogs off the lead, which, with few exceptions, they were. The most occurrences of disturbance by dogs occurred 101-500m from a car park. A dog was observed worrying sheep (that were on the other side of a fence) at CP2. No cats were observed during the site visit.

Anti-social behaviour including vandalism, graffiti, barbecues: a single bonfire site was recorded from within woodland on Red route, close to QEB.

Theft and destruction of wildlife and properties: the single instance of deliberate damage/theft was recorded comprising a removed bollard and damaged gate/fencing at the very north of the site (with Lords Moor Lane). This may be associated with perpetrators facilitating access on to the site with quad bikes.

Damage by vehicles (including informal car parks): The majority occurred over 1000m from a car park. There is considerable widening and churning up of Brown route from the aforementioned illegal vehicle access at Lords Moor Lane. This damage extends all the way along the north-eastern boundary of the site, and then into where Brown route joins Red route. However, it should also be noted that this trackway and others may also be used by military/contractor/farmer vehicles. There is also considerable widening and churning up of wet sections of trail where boardwalks have recently been installed; this particularly noted on certain stretches of Red route in and near the RDA.

Visitors: The majority of visitors, with their dogs, were observed 101-500m from a car park, however this simply reflects where they were observed. Most will have originated at one of the car parks.





Appendix E

Comparison of PCP and Footprint Visitor Survey Results and Visitor Survey of Strensall Common (PCP, 2019)



Technical note:

Summary comparison of the Strensall Common Visitor Surveys

1. Introduction

Footprint Ecology (FPE) undertook a survey of visitors to Strensall Common in late summer/autumn 2018 on behalf of City of York Council. The report ('Visitor surveys and impacts of recreation at Strensall Common SAC¹) was issued in February 2019, alongside an updated Habitats Regulations Assessment² of the CYC Local Plan.

Following a review of the FPE report, consultants (Avison Young (AY) and Wood Environment & Infrastructure Solutions UK Ltd. (Wood)) acting on behalf of the Defence Infrastructure Organisation (DIO) who are promoting inclusion of the Queen Elizabeth Barracks (QEB) in the CYC Local Plan for residential development, raised concerns with regard to some details of the approach to the work and some of the extrapolations and conclusions that were drawn from the data collected.

Therefore, to address the concerns, Wood, on behalf of the DIO commissioned Pickersgill Consultancy and Planning Ltd. (PCP) to undertake additional surveys in summer/autumn 2019 to complement the evidence base established by FPE.

This document presents a summary comparison of the surveys and findings in the following sections:

- Section 2: Methods;
- Section 3: Results;
- Section 4: Housing change and implications for levels of recreation use;
- Section 5: Summary conclusions.

2. Methods

Key issues of potential concern with the FPE survey methods were:

Direct counts of visitors and questionnaires

- Very narrow survey window, 10 days in total;
- Inconsistent survey durations at chosen sample locations, with no explanation;
- Not all locations surveyed on the same day;

¹ Liley, D. and Lake, S. (2019). *Visitor surveys and impacts of recreation at Strensall Common SAC. An unpublished report by Footprint Ecology for City of York Council*

² Waterman Environment & Infrastructure Ltd. (2019). *Habitats Regulations Assessment of the City of York Council Local Plan*

- Lack of clarity on whether the survey days captured data to explore the effects of firing, non-firing, weekday and weekend days;
- No consideration of school holiday versus term time;
- Omission of a question in respect of whether interviewees were military staff.

Car park counts

- Dates and times of car park counts are different to those used for the face-to-face survey work and so do not directly correlate; and
- Disproportionate number of weekend days included in the car park count dataset.

Tally Counts

- Data on the total number of people visiting the common not collected.

To complement the FPE survey, which is based on an established approach that has been used in the assessment of similar studies at other European sites across the UK, a revised sampling strategy was designed to eliminate these concerns and PCP commissioned to undertake the survey work.

A comparison of the survey methods is presented in Table 2.1.

Table 2.1 Comparison of survey and analysis methods

	FPE	PCP
Face-to-face interviews and direct counts	While the data are presented as representing "late August" and "early September" (para 2.10), the work was conducted over a 10-day period between 30 August and 10 September (Table 5), so only effectively representing a period of just over a week, at a peak time of year.	Survey data gathered over a wider period between end June and late Sept (para 3.2.4/Table 2; and para 3.4.2/Table 4) and– stratified to capture term-time and school holidays (see below).
	FP's survey periods appear to be inconsistent between locations i.e. Locations 1 and 2 were surveyed for 8 hours each in August (16 hours total), and Locations 1, 2 and 3 in September for 16 hours each (48 hours in total, para 2.10).	Locations 1, 2 and 3 were all subject to equal hours for interview/direct counts i.e. 8hrs on each of survey days set out below, with 48hrs total survey per location for the whole survey effort
	The August surveys took place on a Thursday and a Friday (no live firing) with the surveys split between the two car-parks on each day (i.e. 4 hours total in each car-park on each day, para 2.11)).	Term-time Weekday Firing Term-time Weekday Non-firing Term-time Weekend Non-firing Holidays Weekday Firing Holidays Weekday Non-firing Holidays Weekend Non-firing (para 3.2.4/Table 2)
	It is unclear whether the survey days have captured data to explore the effects of firing, non-firing, weekday and weekend days (paras 2.11-2.12 and Table 5).	
	None of the survey days capture a full day's data from all access points combined, which would have provided a more complete picture of use of the site (paras 2.10-2.12 and, Tables 2-5),	All locations were surveyed on the same day (para 3.2.4/Table 2; and para 3.4.2/Table 4)
Car park counts	The dates and times of car park counts (Table 2) are different to those used for the face-to-face	Car park counts carried out on same days as face-to-face interviews and direct counts to contribute to full

FPE	PCP
survey work (Table 5) and so do not directly correlate.	dataset for a given day (para 3.2.4/Table 2 and para 3.3.1).
Car park counts were carried out on 6 days, with 40% of the counts being on a Saturday (Table 2), an over-representation of weekend days.	Car park counts were carried out on 6 days, stratified to capture effects of school holidays, weekends and range firing (para 3.2.4/Table 2 and para 3.3.1)
Additional tally counts from all access points to the SAC	Additional counts were made, using combination of surveyors and cameras, from 7 access points, over 2 x 12 periods in a single 48hr period (para 3.5.8 and Map 3).

3. Results

Concerns with respect to the results of the FPE survey resulted primarily from the key issues highlighted in Section 2 above. A comparison of the key outcomes from analysis of the respective surveys is presented in Table 3.1 below.

Table 3.1 Comparison of the key findings

	FPE	PCP	Comment
Car park counts	The total number of parked vehicles around the site at any one time ranged from 4-16 with a mean of 9.7 vehicles. The Galtres car-park was the busiest car park (paras 3.1-3.2)	An average of 10.7 vehicles at any one time were parked in one of the car parks or laybys allowing access to the Strensall Common site (para 6.1.1). Almost all (96%) of these vehicles were cars (para 6.5.1). Each vehicle brought an estimated 1.4 people to the Common (para 4.6.2). The majority of visitors enter via either the Scott Moncrieff road Car Park One (37%) or the Galtres Car Park Two (30%, para 10.3).	Average is comparable ~10 cars parked at any one time.
Direct and automated counts	Counts of people entering the SAC were made at key access points. These totals combined indicate around 17.2 'groups' entering the site on average per hour, or around 206 groups per 12-hour day (para 5.5). No estimate of total visitor numbers to the Common.	Estimated 124,000 visitors per annum in 2019 (para 10.1).	Total estimated is in the range of similar sites e.g. Shapwick Heath, which is about 500 ha (Strensall is 572ha), and gets about 75k visitors per year (around 205 per day averaged over the whole year), whilst Saltfleetby-Theddlethorpe Dunes NNR covers 600ha and gets around 290k visitors per year (Natural England, 2013 ³). The estimate is less than 50% of the number reported for the latter site.
	No assessment of variation in visitor numbers by type of day.	There is considerable variation by type of day (e.g. term time weekend non-firing (average 565 visitors per day) relative to term time weekend firing (290 visitors per day), school holiday weekend non-firing (540) relative to school holiday weekend firing (277), (paras 9.9 and 9.10).	There is considerable variation by type of day.
Visitor activities and behaviours	51% of visitor interviews at Scott Moncrieff Road, and 41% at Galtres car park (Table 6).	49% of visitor interviews were conducted at Car Park One (Scott Moncrieff Road), with 43% at Car Park Two (Galtres car park) (para 4.1.1).	Similar results, although PCP data is a better representation as all the survey points were covered for the same duration and on the same day, unlike the FPE survey.

³ Natural England (2013). *The economic impact of Natural England's National Nature Reserves. Natural England Commissioned Report NECR131.*

FPE	PCP	Comment
		Scott Moncrieff car park is the main access point during both surveys.
95% of interviews were those who had undertaken a trip from home that day included people staying away from home (paras 6.1-6.2 and Table 6)	92% of respondents had travelled from their home to the site on the day of interview (para 4.2.1)	Comparable.
Total number of people in all groups was 308 accompanied by 190 dogs; giving a mean of 1.5 people and 1 dog per group (para 6.3).	<p>Across the whole period on average half (49.6%) of images captured of people (either an individual or a group) were undertaking dog walking activities (para 4.4.1).</p> <p>The counts equate to 21.8 people and 14.0 dogs per hour on the firing day, 33.8 people and 18.8 dogs per hour on the non-firing day. Mean of 1 dog per 1.5-2 people depending on the day (para 8.4).</p>	Comparable.
<p>The most frequently recorded activity was dog walking (70% of interviewees). Other activities included walking (14%, para 6.4).</p> <p>63% had at least one dog with them (para 6.3)</p>	The main activities on the Common were dog walking (72% of visitors) followed by general recreational walking (14%, para 4.4.1)	Comparable.
Around a third (32%) of interviewees were visiting daily. Dog walkers were the group who visited the most frequently, with 43% visiting daily and a further 21% visiting most days (para 6.6 and Table 8).	Nearly a third of respondents (32%) visited the Common daily and almost three quarters (72%) visited once a week (para 4.5.1).	Comparable.
The majority of visits were short, with most (73%) spending less than an hour on the site (para 6.7). The median distance that visitors travelled on the Common was 2.5km.	The average time spent, or expected to be spent, on the Common was an hour. However, 71% spent less than 1 hour. Dog walkers on average spent 0.8 hours on site (para 4.5.4 and Table 11) and travelled a distance of 3.3km on the Common. Those without dogs travelled an average of 3.6km on the Common (para 4.7.11).	The PCP survey has a slightly higher estimate of distance travelled on the Common from PCP data.

FPE	PCP	Comment
	The median distance that visitors travelled on the Common was 3.0km (Table 12).	
78% of all interviewees visited regularly throughout the year (para 6.9).	Just over two thirds (68%) reported that they visited the Common with the same frequency all year round (para 4.5.9). The number of visitors does not vary greatly by time of year. However, summer attracts the greatest number of visitors (estimated at 29% of the annual total) and winter the fewest (21%, para 9.8).	Comparable. Provides confidence that the summer data does not seriously skew extrapolations of annual numbers
51% of those interviewed had been visiting Strensall Common for at least 10 years (para 6.10).	No comparable data	
Overall, two-thirds (67%) of interviewees had travelled by car, with a further 32% arriving on foot and one interviewee (1%) arriving by bicycle (para 6.11).	69% of respondents interviewed had reached the site by car (para 4.6.1).	Comparable.
The rural feel/wild landscape was the most common given reason underpinning site choice (52% of interviewees). Close to home was also important (51% of interviewees) and was the most commonly given single main reason for choosing Strensall Common as a destination (para 6.13).	57% of respondents stated "close to home" was their reason for choosing Strensall (para 4.7.12).	Comparable.
Of the 190 dogs accompanying interviewees, 85 (45%) were off the lead during the interview (para 6.3);	74% of the people, captured by the cameras as walking their dog, had the dog off the lead. This is a much higher percentage than observed at the car park locations, when greater caution was clearly required (para 4.3.8).	Not directly comparable but illustrates the high percentage of people who walk the dog off the lead on the common.
Visitor origins The mean distance was 5.7km and the median was 2.9km (para 6.19). Focussing on the visitors travelling from home, the median is 2.4km and 75% come from within 5.5km (para 6.20).	Those travelling from home on the day of the interviews had travelled an average distance of 7km however this is influenced by some long travel distances. A more	National statistics for outdoor recreation (Natural England, 2019 ⁴) indicate that "In 2018/19, 44% of visits were taken within 1 mile [1.6km] of respondent's homes, 24%

⁴ Natural England (2019) *Monitoring Engagement with the Natural Environment (MENE) Headline report 2019*

	FPE	PCP	Comment
		<p>meaningful measure of distance travelled is provided by the median of 2.5km (para 4.2.2).</p>	<p>were within 1 to 2 miles [1.6-3.2km] and 17% were within 3 to 5 miles [4.8 – 8 km].</p>
	<p>The median distance of those travelling to the site by car was 4.6km. 67.7% of interviewees who had travelled by car (division of 130 interviewees by 192 total interviewees with recognisable postcodes (Table 17).</p>	<p>The median distance of those travelling to the site by car was 5.1km. 68.8% of interviewees who had travelled from home had travelled by car (division of 151 interviewees by 222 total interviewees with recognisable postcodes (para 4.2.4).</p>	<p>Comparable.</p>
	<p>85% of interviewees travelled less than 5km (division of 163 interviewees from within 5km (Table 18) by 192 interviewees with recognisable postcodes (para 6.16)).</p>	<p>59.4% of interviewees travelled less than 5km (division of 143 interviewees from within 5km (Table 8) by 239 interviewees with recognisable postcodes (Table 7).</p>	<p>A greater proportion of the PCP interviewees have travelled more than 5km to the common compared to the FPE dataset.</p>
<p>Use of the site common by military personnel</p>	<p>Not assessed via interview.</p>	<p>3% of interviewees (7 individuals) were military staff. Two were resident at QEB, and the remaining 5 were residents at Strensall or nearby. All were taking part in off duty recreation (para 4.3.5).</p> <p>During the survey across all entry points to the common 12 of the 639 people observed (about 2%) were clearly military personnel. Two were known to be using the Common for recreational purposes as they were exercising their dog (para 8.2). It should be noted that a number of military staff could have been present when off-duty and hence they were not in uniform.</p>	<p>The FPE survey took no account of existing residents of QEB. Therefore estimates of increased use of the common presented by FPE will have overstated the 'additional' contribution to recreation use of the common.</p>

It is notable that many of the results are comparable. However, the PCP study has gone further than FPE in the following areas:

- Estimate of total numbers of visitors to the common annually:
 - ▶ PCP made estimates of numbers of people visiting the common annually by extrapolating from the counts made across all entry points to the Common over the 19th and 20th September 2019 and by reference to the findings of the visitor interview surveys undertaken on firing and non-firing days, weekdays and weekend days, and school holidays and school term time. The total estimated was 124,000 visits per annum.
 - ▶ Although FPE did not make this estimate, a simple extrapolation of their data is possible. FPE estimated 206 groups per 12-hour day entering the site, averaging 1.5 people per group, and it is assumed that this is the same for 365 days per year results in a total of around 113,000 visitors. It is considered that this number both over-estimates some factors, and under-estimates others, but it is notable that it is similar to the PCP estimate above.
- Recording the number of military staff using the common for recreational purposes:
 - ▶ Based on the interview data, 3% of interviewees (7 individuals) were military staff using the common for recreational purposes. 2% of the people observed during the counts across all entry points to the common were clearly military personnel, however a number of others could have been present off-duty (out of uniform).
 - ▶ The FPE survey appears to take no account of existing residents of QEB. There are 95 Single Living Accommodation (SLA) units on QEB, and at least two of the postcodes in the FPE report appear to map directly onto QEB indicating that QEB does contribute visitor numbers to the Common. Therefore, it is reasonable to conclude that estimates of increased use of the common presented by FPE will have overstated the 'additional' contribution to recreational use of the Common, as it appears to omit the contribution from QEB itself (i.e. the existing 95 SLA within QEB).

The PCP survey report does not present an estimate of the percentage increase in use of the Common with the proposed QEB development (as this was outside of their scope). Nonetheless, an estimate has been prepared and is presented in Section 4 below.

4. Housing change and implications for levels of recreation use

FPE has predicted the percentage increase in numbers of visitors to the Common with the QEB, and other allocated developments within 7.5km of the Common. Based on the numbers of properties in a sequence of 500m distance bands from the Common's boundary, and the recorded number of interviewees per property in the same distance bands, FPE calculated that there would be an approximate 24% increase in visitors to the common with the QEB, and other allocated developments within 7.5km of the Common.

Using the same approach as FPE, and property number data presented in the FPE report (Table 18), the PCP data has been used to make a similar prediction in respect of the percentage increase in numbers of visitors to the Common with the QEB, and other allocated developments within 7.5km of the Common. The number of interviewees per current property based on PCP data are presented in Table 4.1.

Table 4.1 Number of interviewees per current property

Distance from Strensall Common	Current residential properties	New development (plan allocations)	% Change in housing	Number of PCP interviewees	Interviewees per current property
0 - 500	883	543	61	42	0.047565
500 - 1,000	1523	2	0	55	0.036113
1,000 - 1,500	149	0	0	6	0.040268
1,500 - 2,000	791	0	0	4	0.005057
2,000 - 2,500	1269	492	39	6	0.004728
2,500 - 3,000	2900	928	32	5	0.001724
3,000 - 3,500	2772	334	12	10	0.003608
3,500 - 4,000	1863	53	3	5	0.002684
4,000 - 4,500	2180	0	0	3	0.001376
4,500 - 5,000	1637	780	48	7	0.004276
5,000 - 5,500	2463	1016	41	9	0.003654
5,500 - 6,000	4485	1293	29	16	0.003567
6,000 - 6,500	9956	395	4	4	0.000402
6,500 - 7,000	9305	213	2	8	0.00086
7,000 - 7,500	6743	604	9	5	0.000742
Total	48,919	6,653	14	185	

The PCP data have been plotted and a line, and equation, fitted in Excel. The trendline does not fit the PCP data as well as the FPE fitted trendline, however it has a reasonable R² value (Figure 4.1).

Figure 4.2 Interviews per property in relation to distance from Strensall Common boundary

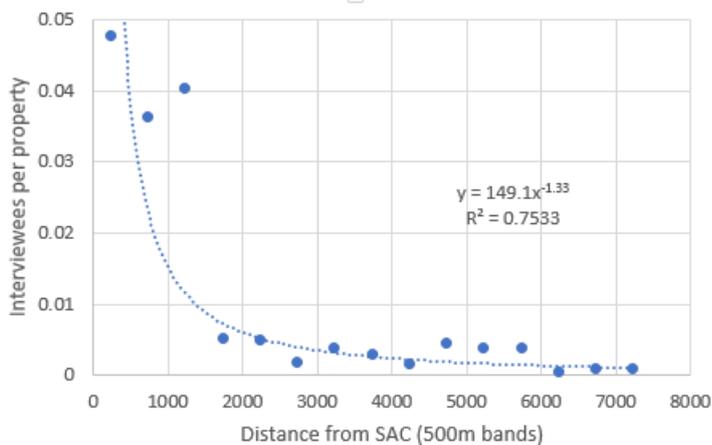


Table 4.2 Number of current interviewees and predicted increase based on fitted curve

Distance from Strensall Common	Number of PCP interviewees	Predicted additional interviewees as a result of new housing (data)	Predicted additional interviewees as a result of new housing (equation)	% change (data)	% change (equation)
0 - 500	42	25.83	25.83*	61.5	61.5
500 – 1,000	55	0.07	0.04	0.1	0.1
1,000 – 1,500	6	0.00	0.00	0.0	0.0
1,500 – 2,000	4	0.00	0.00	0.0	0.0
2,000 – 2,500	6	2.33	2.55	38.8	42.5
2,500 – 3,000	5	1.60	3.69	32.0	73.7
3,000 – 3,500	10	1.21	1.06	12.1	10.6
3,500 – 4,000	5	0.14	0.14	2.8	2.8
4,000 – 4,500	3	0.00	0.00	0.0	0.0
4,500 – 5,000	7	3.34	1.50	47.6	21.4
5,000 – 5,500	9	3.71	1.71	41.2	19.0
5,500 – 6,000	16	4.61	1.93	28.8	12.0
6,000 – 6,500	4	0.16	0.53	4.0	13.2
6,500 – 7,000	8	0.18	0.26	2.3	3.2
7,000 – 7,500	5	0.45	0.66	9.0	13.2
	185	43.62	39.89	23.5%	21.5%

* Initial reading of equation series constrained to the data point.

Based on the PCP data the predicted percentage increase in number of visits that might be expected with the QEB and other developments within 7.5km of the Common, is very similar to the FPE estimate (23.6% based on the data, 21.6% based on the equation from the PCP survey, and 24% from the FPE data). Additionally, if the FPE and PCP datasets are combined, the percentages are also almost identical to those in Table 4.2 above. However, if the number of SLA are included in the residential properties data then the 883 current residential properties referenced by FPE rises to 978, which reduces the predicted additional interviewee contribution from residential properties within 500m of QEB to 23.32, from 25.83, and also reduced the predicted increase in visitor use by 1.3% overall (based on the data relationship). Therefore, it is concluded that the figures discussed here, and by FPE, are a conservative worst case.

FPE also tested the overall access to Strensall Common as a result of different sites being excluded from the CYC Local Plan (para 7.6 and Table 20 of the FPE report). FPE concluded that without QEB and H59 (545 dwellings) all other allocations would be predicted to result in an overall change in access of 6%. A similar exercise has been undertaken with the PCP data and by reference to the allocation numbers indicated by FPE (excluding the SLA units). The results are presented in Table 4.3.

Prediction based on the PCP study data suggests that, without QEB and H59 (545 dwellings) all other allocations would result in an overall change in access of 9.6% (based on the data relationship). The other named allocations (ST8, ST9 and ST14) contribute a further 6%, and there is a balance from allocations elsewhere of 3.6%.

Table 4.3 Increase in access with different levels of development, checking the potential effect of removing different allocations from the CYC Local Plan

Scenario	Overall number of dwellings	% change in access (based on data)	% contribution of the allocation
All allocations	6653	23.6	23.6
All allocations apart from ST35, Queen Elizabeth Barracks	6153	10.7	12.9
All allocations apart from H59, Queen Elizabeth Barracks	6608	22.4	1.1
All allocations apart from ST8, Land north of Monks Cross	5685	22.3	1.2
All allocations apart from ST14, Land to the west of Wiggington Rd	5305	20.6	2.9
All allocations apart from ST9, North of Haxby	5918	22.1	1.4
Balance from other allocations within 7.5km	-	-	3.6

PCP predicted that 124,000 visits will be made to Strensall Common in 2019. This equates to c.340 people per day on average. A predicted increase of 23.6% in visit numbers would add c.29,264 visits per annum, or c.80 visits per day. Based on PCP data, and omitting consideration of the 95 SLA at QEB, the QEB development (ST35 and H59) is predicted to contribute around 59% (17,265 per annum / 47 per day). However, all the other allocations within 7.5km of the site would also contribute around 41% (11,998 per annum / 33 per day).

5. Summary conclusions

A comparison has been made of the methods and resulting analyses from the Strensall Common Visitor Surveys undertaken in 2018 by FPE and in 2019 by PCP.

To complement the FPE survey, which is based on an established approach that has been used in the assessment of similar studies at other European sites across the UK, the PCP work mirrored the FPE approach, although it was designed to eliminate a number of DIO's concerns over the methodology and resulting analyses.

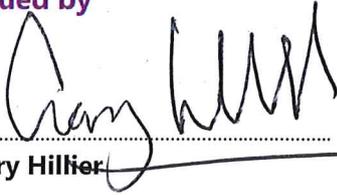
Sections 3 and 4 of the note present a comparison of the resulting analyses and an updated assessment of housing change and implications for levels of recreation use respectively. Whilst a number of the findings are similar, as would be expected, there are a number of differences too, indicating that there is variability in the data and that the FPE study should not be interpreted as definitive.

Key conclusions from the surveys, and supporting analyses are:

- The majority (just under 70%) of visitors interviewed arrive at the common by car. On average around 32% of people visit daily, although it is a greater proportion of dog walkers.

- The majority of visitors interviewed (around 70%) visit the common to walk dogs.
- FPE found that the median walk distance by interviewed visitors was 2.5km, whilst the PCP data suggested it is 3.0km.
- A much greater proportion of the PCP interviewees have travelled more than 5km to the common (40.6%) compared to the FPE dataset (15%).
- 124,000 people will visit the common in 2019. This is further broken down to c.340 people, 200 dogs and 30 cars on the site per day on average, and whilst there is little predicted seasonal variation, there is considerable variation by day (e.g. term time weekend non-firing relative to term time weekend firing).
- Based on the interview data, 3% of interviewees (7 individuals) were military staff using the common for recreational purposes. 2% of the people observed during the counts across all entry points to the common were clearly military personnel, however a number of others could have been present off-duty (out of uniform).
- The FPE survey appears to take no account of use by military staff using the common for recreational purposes, or of existing residents of QEB.
- Based on the PCP data the predicted percentage increase in number of visits that might be expected with the QEB and other developments within 7.5km of the Common, is very similar to the FPE estimate (23.6% based on the data and 21.6% based on the equation from the PCP survey, and 24% from the FPE data). However, if the number of SLA are included in the residential properties data then the predicted additional interviewee contribution from residential properties within 500m of QEB reduces to 23.32, from 25.83, and also reduces the predicted increase in visitor use by 1.3% overall (based on the data relationship).
- Nonetheless, the higher % figure has been used in further calculations as it is considered worst case.
- FPE also tested the overall access to Strensall Common as a result of different sites being excluded from the CYC Local Plan, concluding that other allocations would result in a 6% increase in visitor numbers, with QEB (ST35 and H59) resulting in a 18% increase. A similar process using PCP data suggests that other allocations would result in a 9.6% increase in visitor numbers, with QEB contributing 14%.
- A predicted increase of 23.6% in visit numbers would add, conservatively (as it takes no account of the presence of existing residents on QEB) c.29,264 visits per annum, or c.80 visits per day. Based on PCP data, and omitting consideration of the 95 SLA at QEB, the QEB development is predicted to contribute around 59% (17,265 per annum / 47 per day). However, all the other allocations within 7.5km of the site would also contribute around 41% (11,998 per annum / 33 per day).
- The resulting conservative total of 153,264, is still fewer visitors than other sites of a similar size receive annually.
- It is notable that the updated HRA⁵ concludes that the increase from all other allocations are acceptable i.e. an additional 7,440 people per annum (based on Footprint Ecology data, but 11,998 based on PCP data) is acceptable, in the absence of any additional mitigation specifically aimed at managing recreational pressures on the common, whilst the combined contribution of 29,760 (based on Footprint data, 29,264 based on PCP) would not be, even with the significant mitigation measures proposed to be implemented within Policy SS19 if it is retained.

⁵ Waterman Infrastructure & Environment Limited (2017). *HRA of Plan Allocations. Habitats Regulations Assessment of the City of York Council Local Plan*

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Strensall Common Visitor Survey Report

October 2019



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1. Introduction

- 1.1 Strensall Common is designated as a Special Area of Conservation (SAC). Strensall Common SAC supports one of the largest areas of lowland heath in northern England. Extensive areas of both wet and dry heath occur and form a complex habitat mosaic with grassland, woodlands and ponds.
- 1.2 The SAC has been classified for the following interest features:
 - H4010. Northern Atlantic wet heaths with *Erica tetralix* (Wet heathland with cross-leaved heath); and
 - H4030. European dry heaths.
- 1.3 Strensall Common is owned and managed by Defence Infrastructure Organisation (DIO) as an active military area. Whilst four small car parks around the boundary facilitate permissive public access to the Common, and there are a number of footpaths across the Common access to range areas is restricted on firing days, as the military use includes live firing on certain days.
- 1.4 DIO is promoting the allocation of Queen Elizabeth Barracks (QEB) and Towthorpe Lines, both of which lie adjacent to Strensall Common, for development through City of York Council's (CYC's) emerging Local Plan. However Natural England have raised concern in respect of the QEB allocation (ST35 and H59), and specifically in respect of the potential for an increase in recreational pressure, and consequent risks to site condition, which need to be assessed against the requirements of the *Conservation of Habitats and Species Regulations, 2017*, through a process referred to as a Habitats Regulations Assessment (HRA).
- 1.5 This research report was commissioned by Wood Environment & Infrastructure Solutions UK Ltd, on behalf of DIO, with the purpose of obtaining both quantitative and qualitative information in respect of recreational use of Strensall Common.
- 1.6 The intention of this study was to add to the evidence base in respect of recreational use of the Common, following a similar study undertaken by Footprint Ecology¹ in summer/early autumn 2018. Given that intention, the data collection methods adopted for this study broadly replicated those used by Footprint Ecology, although there were some key differences too, in particular in respect of the numbers of days surveyed, accounting for firing and non-firing days, accounting for holiday and non-holiday periods, and also

¹ Liley, D and Lake, S (2019). Visitor surveys and impacts of recreation at Strensall Common SAC. Unpublished report by Footprint Ecology for City of York.

within the inclusion of a count of all users of the Common over two days (one firing and one non-firing).

2. Objectives

- 2.1 The objectives of the research were defined as to obtain both qualitative and quantitative information on visitors' attitudes and behaviour via:
- Interviews to gain information on visitors' recreational activity and opinions;
 - Direct counts of visitors, dogs, horses, bicycles and vehicles;
 - Car park and layby counts;
 - Automated counters or cameras.
- 2.2 The research was also required to investigate any differences in visitors' attitudes and behaviour between:
- Weekends and weekdays;
 - Firing and non-firing days;
 - School term time and school holiday time.
- 2.3 A further objective was to estimate annual visitor numbers to the Common using the data collected.

3. Methodology

3.1 Overview

3.1.1 The research programme comprised five main elements:

- Face to face interviews with visitors;
- Direct counts of visitors, dogs, horses, bicycles and vehicles;
- Counts of vehicles in car-parks and laybys;
- Cameras or automated counters to capture 'everything that moves' at selected locations;
- Counts made across all entry points to the Common using a mixture of cameras and fieldworkers with the objective of counting people, dogs and cars at all entry points to the Common.

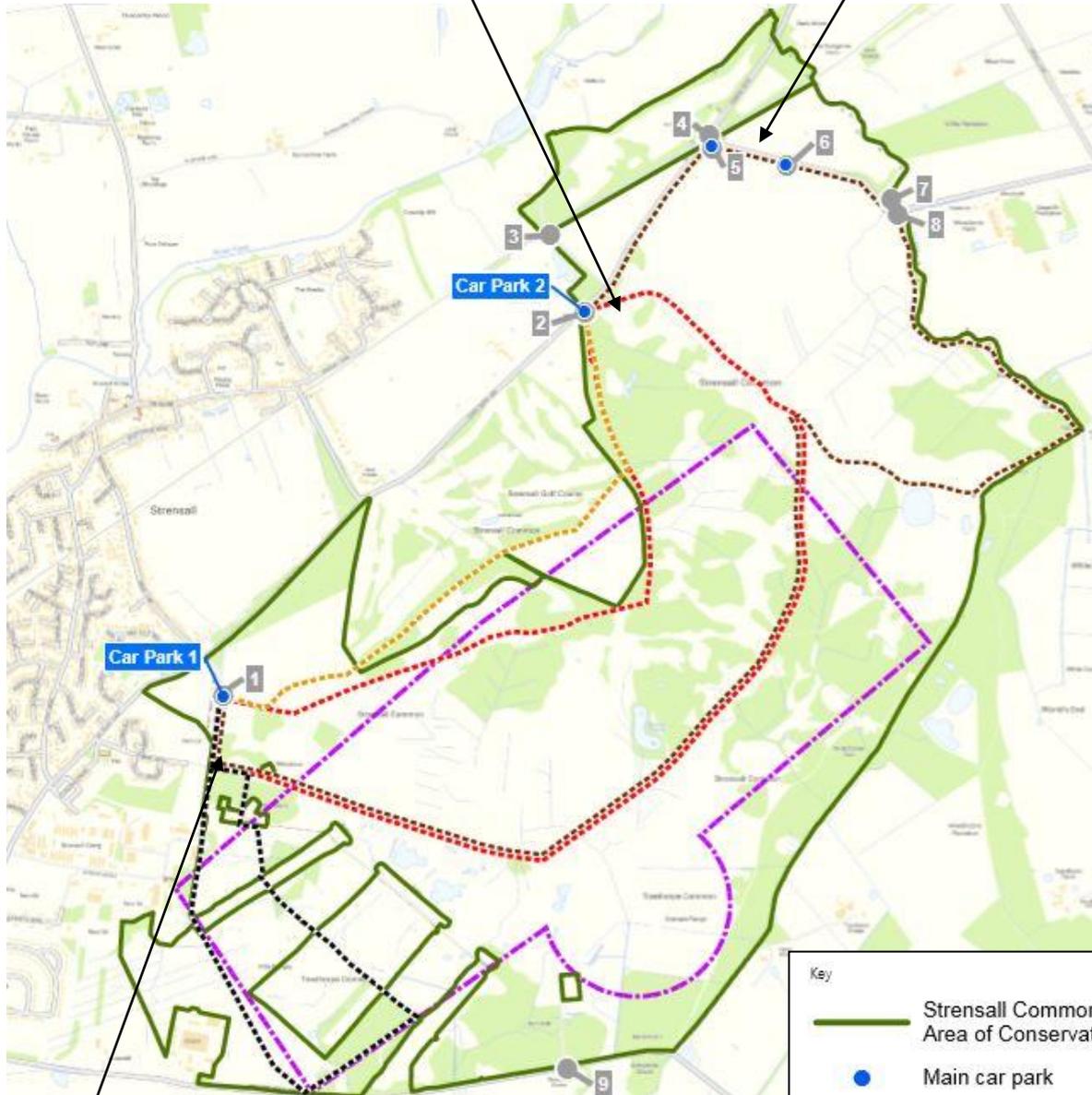
3.2 Face to Face Interviews and Direct Counts

3.2.1 Fieldwork was carried out at three separate locations around Strensall Common as illustrated in Map One. The three locations were Car Park One (Scott Moncrieff Road Car-Park), Car Park Two (Galtres Car Park) and Car Park Three which was at a point located nearer the perimeter of the Common where Common Road meets Lord Moors Lane by the railway line.

Map One: Strensall Common Survey and Direct Count Points

Car Park Two: The Galtres

Car Park Three: Corner of Common Road



Car Park One: Scott Moncrieff Road

Key	
	Strensall Common Special Area of Conservation (SAC)
	Main car park
	Parking locations included in transect
	Range Danger Area (RDA)
Footpath	
	DIO Yellow Route - Easy - ~2.3km
	DIO Black Route - Medium - ~3.8km
	DIO Red Route - Medium - ~7km
	DIO Brown Route - Advanced - ~7.5km

Table 1

Location	Description/Notes	Grid reference
Car Park 1: Scott Moncrieff Road car-park	Main car-park	SE 6358 5982
Car Park 2: Galtres car-park	Main car-park	SE 6485 6120
Car Park 3: Corner of Common Road and Lord Moors Lane	Edge of site close to railway crossing	SE 6520 6183

3.2.2 Direct counts and interviews were conducted on three days which had different circumstances:

- A weekday when there was firing;
- A weekday when there was no firing;
- A weekend when there was no firing.

3.2.3 In order to consider the extent there were different numbers of visitors, and different visitor behaviour, between school term and school summer holiday periods the suite of three survey days was carried out first in school term time and then repeated during school holidays.

3.2.4 The dates on which direct counts and interviewing took place were as follows:

Table 2

Date	School Time	Type of Day	Firing Activity
Thursday 27 th June 2019	School term-time	Weekday	Firing
Friday 28 th June 2019	School term-time	Weekday	Non-firing
Saturday 6 th July 2019	School term-time	Weekend	Non-firing
Thursday 25 th July 2019	School holidays	Weekday	Firing
Friday 26 th July 2019	School holidays	Weekday	Non-firing
Sunday 11 th August 2019	School holidays	Weekend	Non-firing

3.2.5 Originally, it had been intended that work on a school holiday weekend would take place on the weekend of 27th/28th July. Unfortunately, the weather conditions over that weekend were extremely wet so it was agreed with the client that the direct counts and interviewing for that weekend should be rescheduled, for the next non-firing weekend, when weather conditions were more suitable for recreational activities.

3.2.6 Although efforts were made to avoid adverse weather conditions the research in August did take place after a period of changeable weather. It is also worth noting that one of the interviewing days (Thursday 25th July) was the hottest day of the year. Although the weather on each day will inevitably have affected the results to some extent, it is felt that, over the six days on which the full range of research activities was conducted, sufficient variety of conditions was experienced for this effect to be not too great.

3.2.7 A description of weather conditions during the interviewing period is recorded below:

Table 3

Date	Weather Conditions	Average Temperature (Degrees Centigrade)
Thursday 27 th June 2019	Warm with a moderate breeze	23
Friday 28 th June 2019	Warm with a moderate breeze	21
Saturday 6 th July 2019	Sunny and warm	22
Thursday 25 th July 2019	Exceptionally hot, no breeze	35
Friday 26 th July 2019	Sunny no breeze	25
Sunday 11 th August 2019	Mixed sunshine with some light showers and a gentle breeze	20

- 3.2.8 There were four interviewing and visitor count shifts during each fieldwork day, each covering a two-hour period. The times covered were as follows:
- 7am – 9am;
 - 10am – 12noon;
 - 1pm – 3pm;
 - 5pm – 7pm.
- 3.2.9 By dividing the day into two hour blocks the interviewers were able to take comfort breaks yet still collect data across daylight hours.
- 3.2.10 Two experienced interviewers worked at each of the three designated survey locations (six interviewers in total). During the two hour blocks one interviewer carried out face to face interviews while the other interviewer recorded all passers-by at the survey location, including those being interviewed. This meant there was a continuous count carried out alongside the interviews within each two hour block. The two interviewers swapped roles over the course of the day in order to increase their interest and reduce fatigue.
- 3.2.11 The interviewer carrying out the count of visitors did so in the form of a tally recording the number of visitors in each passing group, the activity they were carrying out (for example walking, cycling) and the number of dogs on and off the lead or horses that were part of their group. This interviewer also recorded the time at which the group passed by. Groups and individuals were counted each time they passed the interviewer, for example at both the start and finish of their walk.
- 3.2.12 Interviewers carrying out surveys approached the next available visitor or visitor group without making any assumptions about the likelihood that the person would be willing or unwilling to complete an interview. Where possible, visitors were interviewed as they were leaving the Common rather than on arrival, to ensure that they could report their activities as accurately as possible. Where groups were approached, the person for interview within the group was selected randomly (except only that children under 16 in the group were not interviewed unless the permission of a parent or guardian had been obtained). In accordance with the Market Research Society's Code of Conduct unaccompanied children under the age of 16 were not approached for interview. No visitor was interviewed more than once. At the start of each interview, the respondent was asked if they had already given their views to another interviewer; if they had, the interview was discontinued.

3.2.13 Military staff were approached and invited to take part regardless of whether they were on duty or not. Routing was placed on the questionnaire so that these respondents were asked only questions which were applicable to them.

Surveys were conducted on tablets using SNAP software and the questionnaire was conducted face-to-face, with the interviewer recording the responses on to the tablet. As part of the interview, respondents were given a paper copy of the site map and asked to draw on it the route they had taken as accurately as possible.

3.2.14 A copy of the questionnaire used for the interviewing is shown as Appendix One.

3.3 Counts of Vehicles in Car-Parks and Laybys

3.3.1 Car park and layby counts of vehicles were carried out on the same days as the interviewing, and during designated times.

3.3.2 These were as follows:

- 9.30am – 10am;
- 12.30pm – 1pm;
- 3pm – 3.30pm;
- 4.15pm – 4.45pm;
- 7.00pm -7.30pm

3.3.3 Interviewers stationed at Car Park One counted at Car Park One and layby 9 (see Map 1). Interviewers at Car Park Two counted at Car Park Two and Car Park Three. Interviewers at Car Park Three counted at lay-bys and other informal parking areas including layby numbers 4,5,6,7,8. These counts were a snapshot in time reflecting the number of vehicles present at set points in time during the day. No attempt was made to count the number of vehicles over the whole of the 30-minute period.

3.3.4 As a point of note during the whole period the lay-by area 6 had tree stumps placed at its edge so it was not possible for vehicles to be left in this area.

3.3.5 A count was made of the total number of vehicles in the car park broken down by type. There were five different types of vehicle recorded:

- Cars with a bike rack;
- Camper vans;
- Commercial vehicles;
- Branded commercial dog walkers;
- All other vehicles

3.4 Automated Cameras

3.4.1 Two automated cameras were used to provide additional information on visitor numbers. They were situated towards the edge of the site. The locations of these cameras are shown on Map Two.

3.4.2 Bushnell Trail Cameras were used. They were attached to trees and angled low to the ground alongside the paths enabling them to record feet or wheels and the direction of travel, without capturing any personal information. Cameras were left in place for two 14 day periods, one in school term time and one during the school holidays. These dates were set to overlap with the interviewing and car park counts. The dates when the cameras were in place were as follows:

Table 4

Thursday 27 th June – Thursday 11 th July	School Term-Time
Thursday 25 th July – Thursday 8 th August	School Holidays

3.4.3 Cameras were set to record one image per trigger and reset after one second. This meant that the camera would record separate images of the path one second apart.

3.4.4 Images captured were then reviewed and any not relating to access were removed. In most cases these involved wildlife with many sheep triggering the camera at Location Two and a fox triggering the camera most nights at Location One. On several occasions at both locations the wind also caused leaves and branches to trigger the cameras.

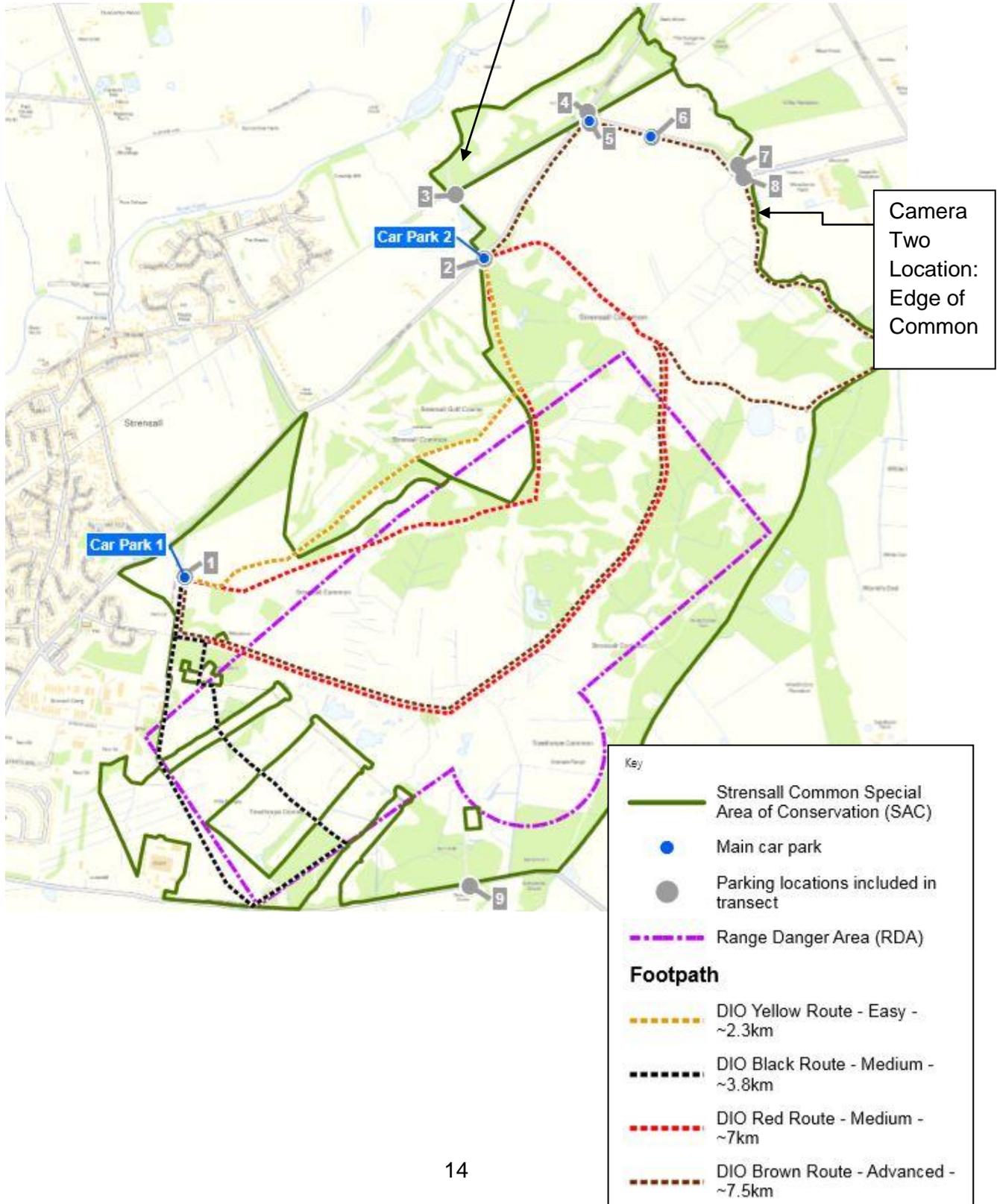
3.4.5 Images were reviewed in time order and then counts made of the number of separate groups passing in each direction.

3.4.6 It was not always easy to assign an activity or to identify separate groups, so best estimates were made. Dog walkers could usually be recognised by the presence of a dog or by the fact that they were carrying a dog lead. Bicycles and other vehicles were clearly identifiable. Joggers were normally recognisable by their trainers and their speed of movement within the photograph. There were also a few instances of dog owners jogging alongside their dog. Images which were separated by more than 30 seconds were assumed to relate to separate groups unless clearly shown to be the same.

3.4.7 Map Two below shows the position of the two automated cameras.

Map Two: Automated Camera Locations

Camera One Location: Foss walk near the sewage works



3.5 Counts at all Entry Points to the Common

3.5.1 The interview and tally count approach described in Section 3.2 provided counts of:

- The number of visitors passing by the interviewers at the three car parks;
- The number of cars present in the car parks at various times of day;
- The total number of people, dogs and vehicles passing cameras positioned in two locations of the Common over two periods of two weeks.

3.5.2 However, it was considered that this work had two major limitations:

- It did not cover all possible entry points to the Common and hence provides only a snapshot of entry and exit at a sub-set of the possible access points;
- It was impossible to be certain whether the same person was counted twice e.g. by the fieldworkers at two different car parks.

3.5.3 Therefore an additional task was added to the study to allow an estimate to be made of the total number of visitors to the Common, differentiating between a firing day and non-firing day.

3.5.4 Eight possible entry points to the Common were identified by PCP staff (see map 2 for locations) before the start of this work; DIO staff working on the Strensall site agreed that it was highly unlikely that anyone would enter the Common at any other location. Even in the highly unlikely event that a very small number of people did make what would have been an extremely difficult entry at any other point, the effect on the overall estimate of numbers of visitors would almost certainly have been marginal.

3.5.5 Cameras were installed at locations where it was felt that they would capture all those who entered the Common at that point. It was considered, however, that four of these entry points could not be covered adequately, even by multiple cameras, because there were so many different routes by which a visitor could enter the Common. Accordingly, a fieldworker was positioned at these locations.

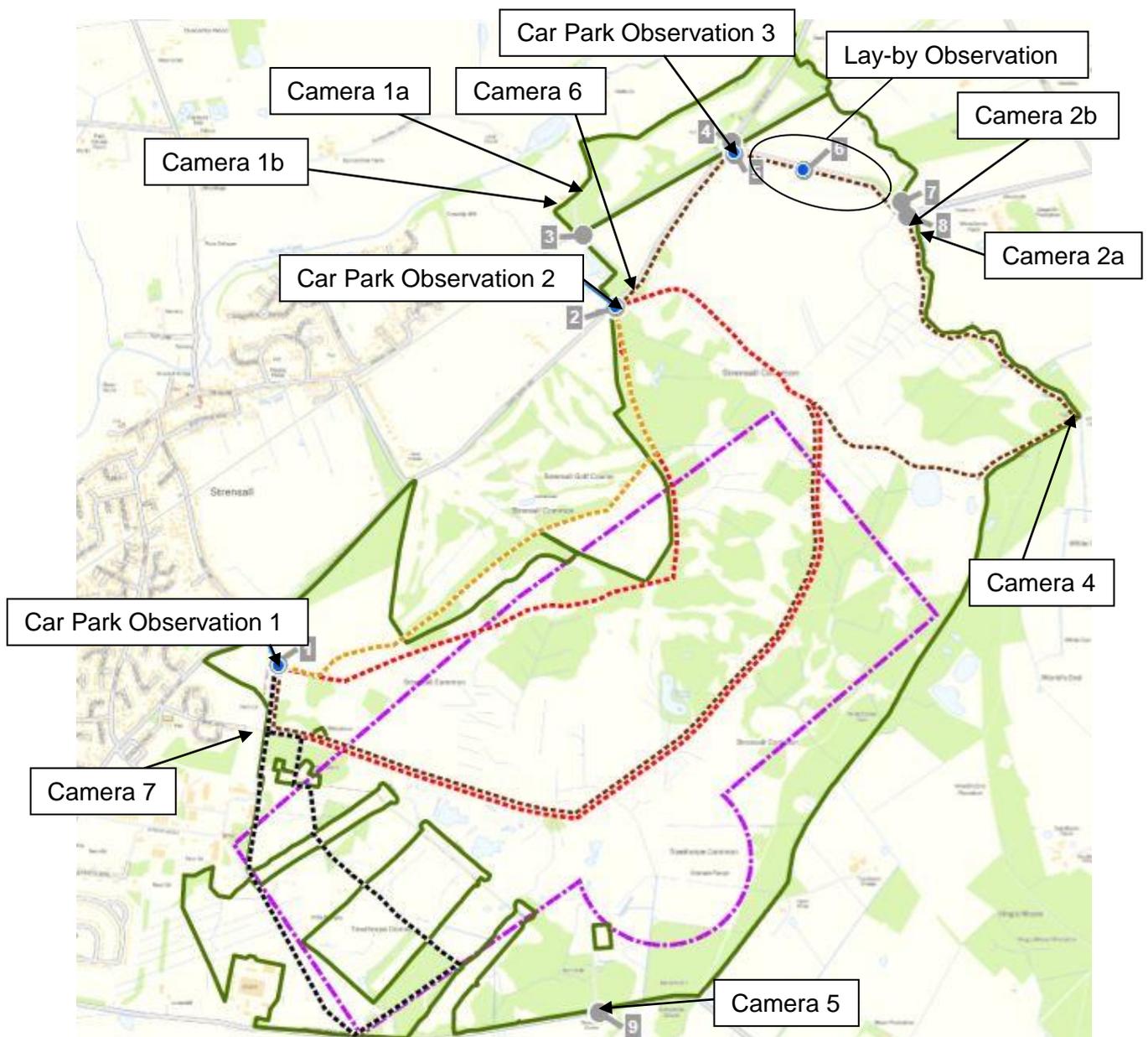
3.5.6 A total of eight cameras and four fieldworkers were used, as shown in Map Three below. Two cameras were erected at positions 1 and 2 to ensure that people and animals would be detected whichever way they entered the Common at that point. Fieldworkers were positioned at the three main Car Parks, from which there are several different routes on to the Common and for

which even multiple cameras would have been unlikely to pick up all those entering. The fourth fieldworker patrolled the area between Car Park Three and the camera located at the next bend in the road, from which it was possible, albeit unlikely, that visitors would gain access to the Common.

3.5.7 The cameras were positioned in such a way as to allow those entering and leaving the Common to be distinguished. When analysing the images from the cameras, only those entering the Common were counted in order to avoid double-counting the same individual. Similarly, the fieldworkers for this stage of work were briefed to count people, vehicles and dogs if they were entering the Common, but not if they were leaving it.

3.5.8 The work took place on one firing weekday (Thursday 19 September 2019) and one non-firing weekday (Friday 20 September 2019). Fieldworkers were present at the four locations throughout daylight hours (7am to 6.30pm). The cameras were active for the full 24 hours on these two days, but the analysis concentrated on the daylight hours when fieldworkers were also present.

Map Three: All Camera and Observation Location Points



3.6 Note regarding Terms and Breakdowns shown in Report

3.6.1 Frequent references are made in the report to differences in visitor numbers, attitudes and behaviour between school holidays and term time, between firing days and non-firing days and between weekends and weekdays. It was expected that visitor numbers would be higher on non-firing days than on firing days, and also on weekends than weekdays. In order to avoid confusing these two effects, comparisons between firing and non-firing days are made for weekdays only, and comparisons between weekdays and weekends are made for non-firing days only. Thus, key comparisons shown in the report are as follows:

- School term time / school holidays;
- Firing Days / non-firing days (weekdays only);
- Weekdays / weekends (non-firing days only)

3.6.2 Differences by 'circumstance' (i.e. term time v school holidays, weekends v weekdays and firing days v non-firing days) or by respondent characteristics are highlighted in the text only when believed to have 'commercial importance'. The term 'significant' in the report is used to denote differences at the 95% level of statistical confidence or higher.

4. Visitor Interview Results

4.1 Number of Interviews Completed

4.1.1 A total of 251 visitor interviews were conducted. The vast majority of interviews took place at either Car Park One (49%) or Car Park Two (43%). Only 20 interviews (8%) were conducted at the Car Park Three area.

4.1.2 The interviews were carried out on three days during school term time and three days during the school holiday period. Almost equal numbers of interviews were conducted in term time (48% of the total) and in school holidays (52%).

4.1.3 The following table shows the breakdown of interviews completed by day and location:

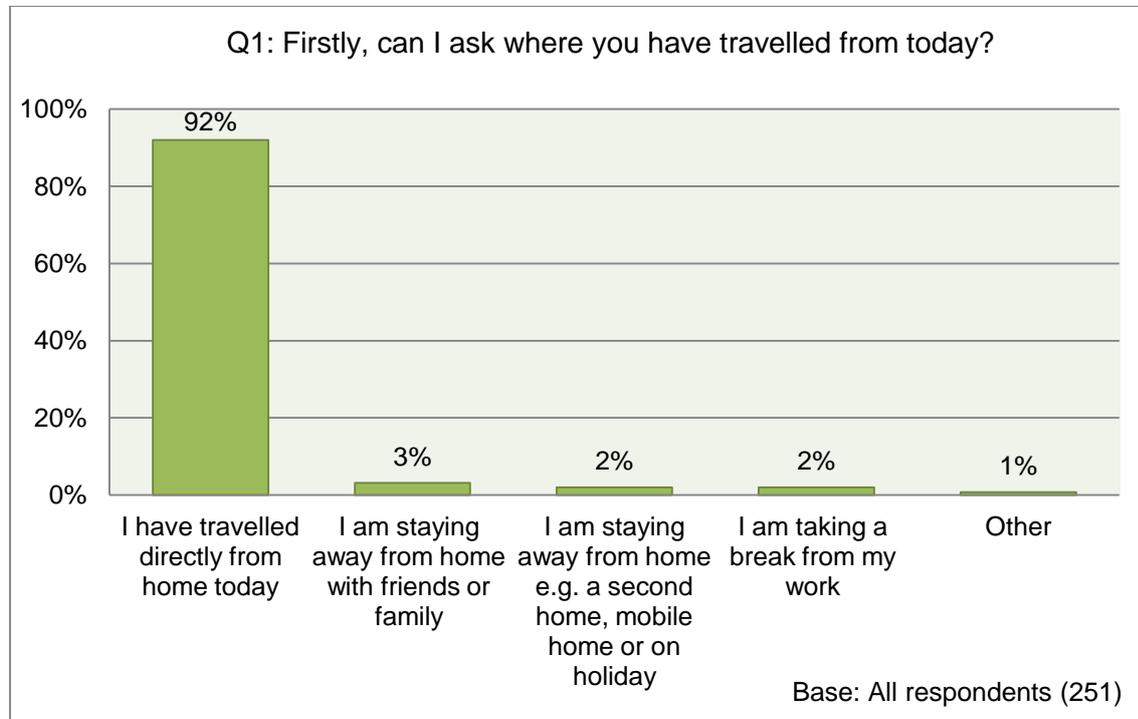
Table 5

Date			Groups Entering			Total
			Car Park 1	Car Park 2	Car Park 3	
Thursday 27 th June 2019	Term time	Firing	23	20	5	48
Friday 28 th June 2019	Term time	Non-Firing	24	19	0	43
Saturday 6 th July 2019	Term time	Non-Firing	11	18	10	39
Thursday 25 th July 2019	School holidays	Firing	14	9	2	25
Friday 26 th July 2019	School holidays	Non-Firing	17	20	0	37
Sunday 11 th August 2019	School holidays	Non-Firing	36	20	3	59
Total			125	106	20	251

4.2 Origin of Visitors

4.2.1 The vast majority of those interviewed (92%) had travelled directly from their home to the site. This figure did not vary significantly by weekend versus weekday, firing day versus non-firing day or term time versus school holidays.

Chart 1



4.2.2 Those travelling from home on the day of the interviews had travelled an average distance of 7km as the crow flies from their home to the car park at which they were interviewed. However, this figure is heavily influenced by the small number who had travelled a considerable distance and who presumably were not planning to return home the same day (the maximum distance recorded was 153km). A more meaningful measure of distance travelled is provided by the median of 2.5km.

4.2.3 The table below shows the same information for different types of visitor to the Common. The information is shown only for those who had travelled from home on the day of the interview and who provided a valid postcode. It is shown for all those travelling from home (222 people) and for subgroups such as dog walkers. In addition to the 151 people who came by car and the 69 who arrived on foot, there were two cyclists.

4.2.4 A point of interest is the short distance (a median of 5.1km) travelled to reach the Common by the 151 people using a car. This group accounts for two thirds (68%) of all day visitors travelling from home.

Table 6

Variable/type of interviewee	N	Distance (km)				
		Mean	Minimum	Median	Q3	Maximum
All day visitors (from home only)	222	7.0	0.1	2.5	6.15	153.5
Dog walkers (from home only)	162	6.2	0.4	2.1	5.73	153.5
Jogging/power walking (from home only)	5	1.6	0.1	1.2	1.41	4.5
Walking (from home only)	33	3.5	0.5	1.8	5.63	12.8
Visiting less frequently than once a week (from home only)	44	17.4	0.5	6.4	10.14	153.5
Visiting at least once a week (from home only)	167	3.0	0.1	1.7	5.13	12.8
Those travelling by car (from home only)	151	9.5	0.5	5.1	6.58	153.5
Those who arrived on foot (from home only)	69	1.1	0.1	0.8	1.26	5.7

4.2.5 Respondents referred to as walking were undertaking a walking activity on site. By those who arrived on foot we mean those who travelled to the site itself on the day by foot.

4.2.6 The following table shows the percentage of all respondents who gave a valid postcode, regardless of whether they had travelled from home or not on the day of the interview. It shows results for the total sample and key breakdowns.

4.2.7 A point of interest is that only about half (49%) of those interviewed were from Strensall itself. A further third (31%) were from neighbouring areas of York north of the river Ouse.

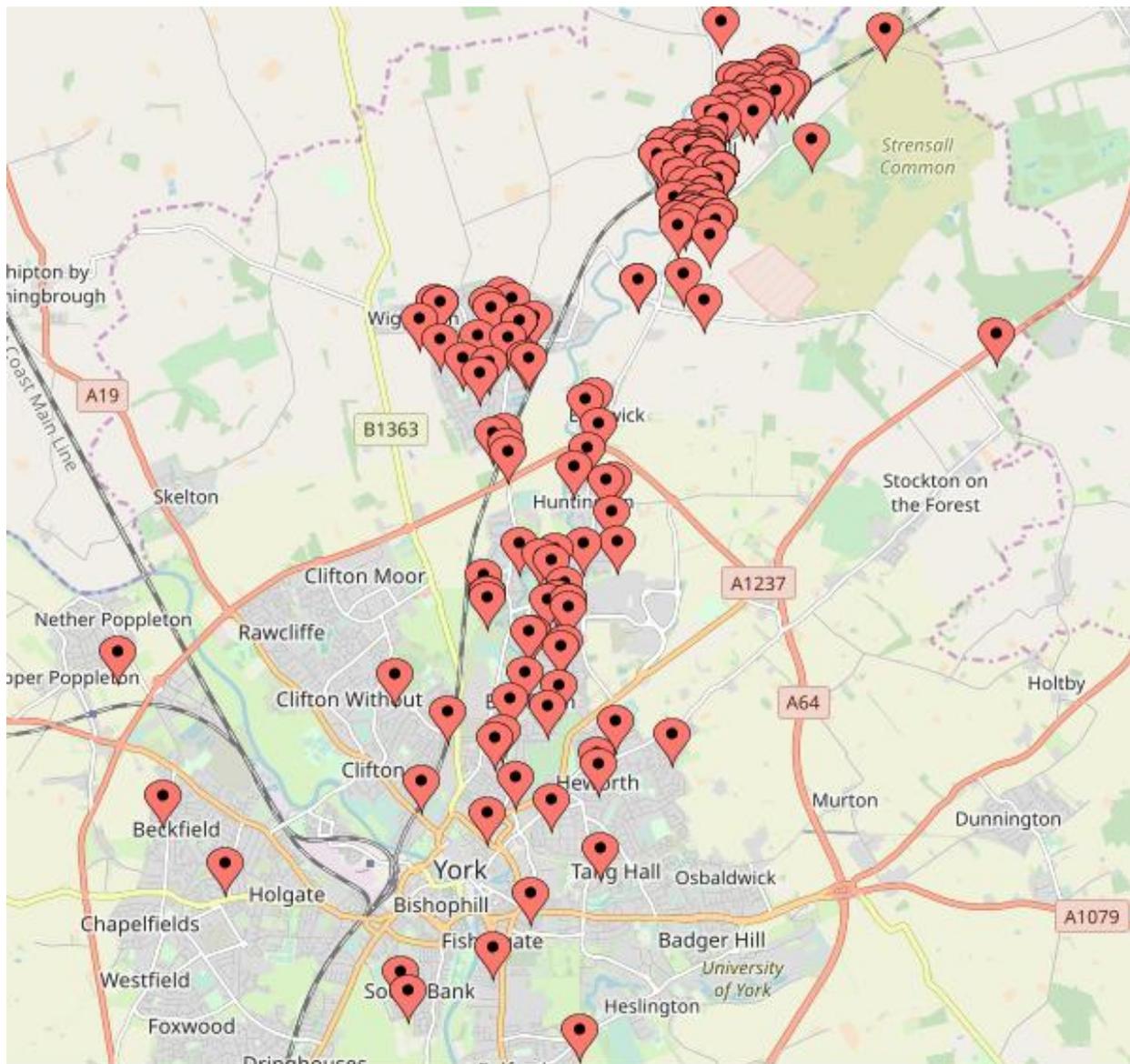
4.2.8 It can be seen that during school term time visitors were significantly more likely than in school holidays to live in Huntington, Earswick and New Earswick. 18.0% of visitors were from this area during school term time but only 7.7% in school holidays.

Table 7

Home postcode areas	Total (239)	School Term Time (122)	School Holidays (117)	Firing Weekdays (71)	Non-Firing Weekday (75)	Weekend Non-Firing (93)	All male groups (115)	All female groups (67)	Mixed groups (57)
Strensall	49.4%	47.5%	51.3%	45.1%	53.3%	49.5%	47.8%	59.7%	40.4%
Haxby & Wigginton	9.2%	9.8%	8.5%	9.9%	6.7%	10.8%	9.6%	7.5%	10.5%
Huntington, Earswick & New Earswick	13.0%	18.0%	7.7%	15.5%	9.3%	14.0%	13.9%	11.9%	12.3%
Other York (North of river)	8.8%	6.6%	11.1%	7.0%	6.7%	11.8%	7.8%	3.0%	17.5%
Other York (South of river)	2.1%	1.6%	2.5%	1.4%	1.3%	3.2%	3.5%	-	1.8%
Other Yorkshire	13.8%	13.1%	14.5%	18.3%	14.7%	0.7%	13.9%	13.4%	14.0%
Outside Yorkshire (South)	2.5%	2.5%	2.6%	1.4%	5.3%	1.1%	2.6%	3.0%	1.8%
Outside Yorkshire (North)	1.3%	0.8%	1.7%	1.4%	2.7%	-	0.9%	1.5%	1.8%

4.2.9 Maps four and five below show the same information in mapped form. Map four shows the location of the 197 visitors from the York area only, map five shows only those living some distance away. The furthest place of residence from York of any of the visitors lived was Sunderland to the North and Portsmouth to the South.

Map Four: Home Location of those in the Local Area who had Visited the Site



4.2.10 Table 8 below shows current residential properties, future developments (plan allocation) and interviewees by 500m distance bands. The table is based on 185 respondents who provided an accurate postcode and lived within 7,500m of the Common. Numbers of current residential properties, plan allocations and % change in housing in the table are as reported by Footprint Ecology.

Table 8

Distance from Strensall Common	Current residential properties	New development (plan allocations)	% Change in housing	Number of interviewees	Interviewees per current property
0 - 500	883	543	61	42	0.047565
500 – 1,000	1523	2	0	55	0.036113
1,000 – 1,500	149	0	0	6	0.040268
1,500 – 2,000	791	0	0	4	0.005057
2,000 – 2,500	1269	492	39	6	0.004728
2,500 – 3,000	2900	928	32	5	0.001724
3,000 – 3,500	2772	334	12	10	0.003608
3,500 – 4,000	1863	53	3	5	0.002684
4,000 – 4,500	2180	0	0	3	0.001376
4,500 – 5,000	1637	780	48	7	0.004276
5,000 – 5,500	2463	1016	41	9	0.003654
5,500 – 6,000	4485	1293	29	16	0.003567
6,000 – 6,500	9956	395	4	4	0.000402
6,500 – 7,000	9305	213	2	8	0.00086
7,000 – 7,500	6743	604	9	5	0.000742
Total	48,919	6,653	14	185*	

4.2.11 Please note the total number of interviewees totals 185 as the remaining interviewees who provided a valid postcode came from beyond 7,500 km away.

4.3 Demographic Profile of Visitors to the Common

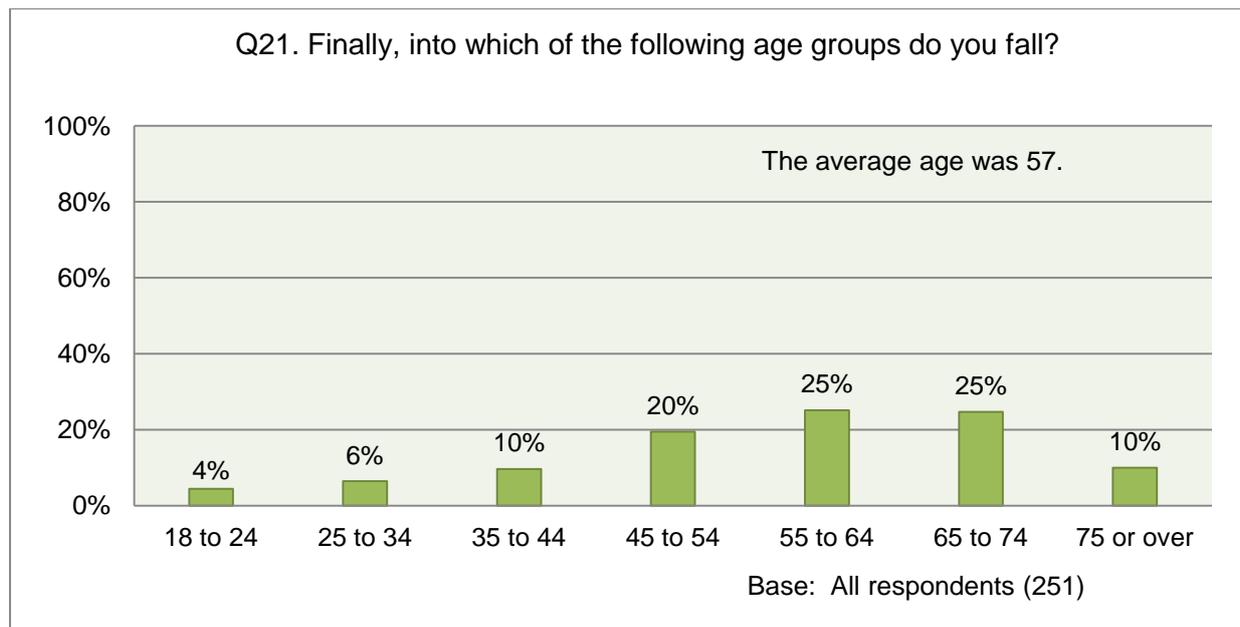
4.3.1 59% of the 251 interviews were conducted with a male respondent and 41% with a female respondent. However, the respondent was often a member of a mixed group and a more meaningful profile of visitors is obtained when all members of the party are included.

4.3.2 Including all members of the group, not just the person completing the interview, 56% of the group members were male and 44% were female. 48% of the groups had no adult females, 29% had no adult males and 24% had at least one adult male and one adult female.

4.3.3 Very few under 18 year olds were encountered by the interviewers and they accounted for only 6% of the group members.

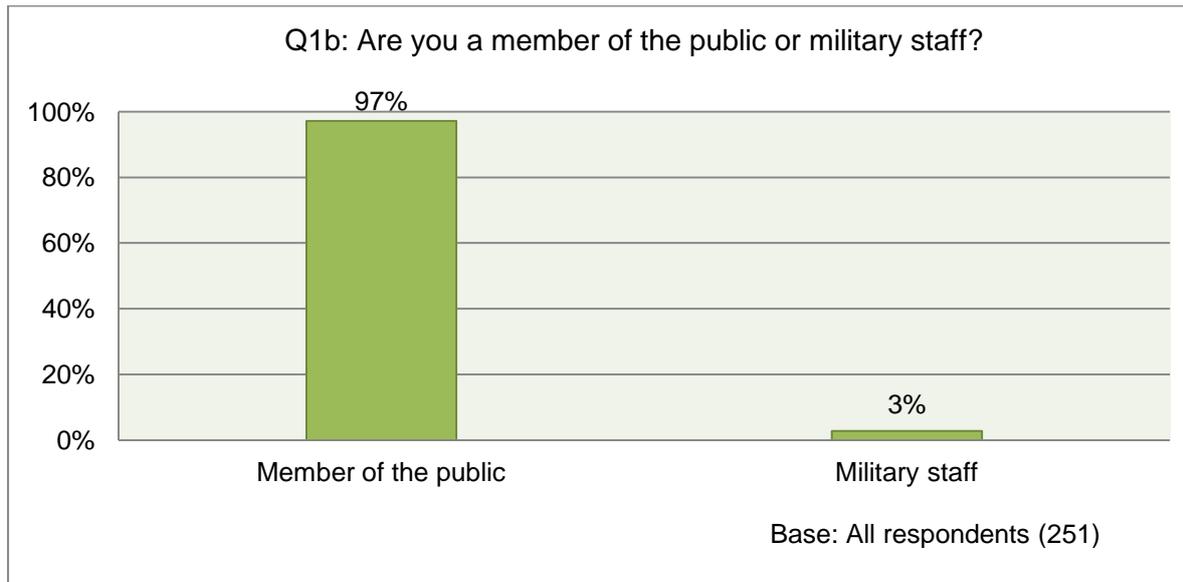
4.3.4 More than half (60%) of respondents were over the age of 54 and the average age of respondents was 57.

Chart 2



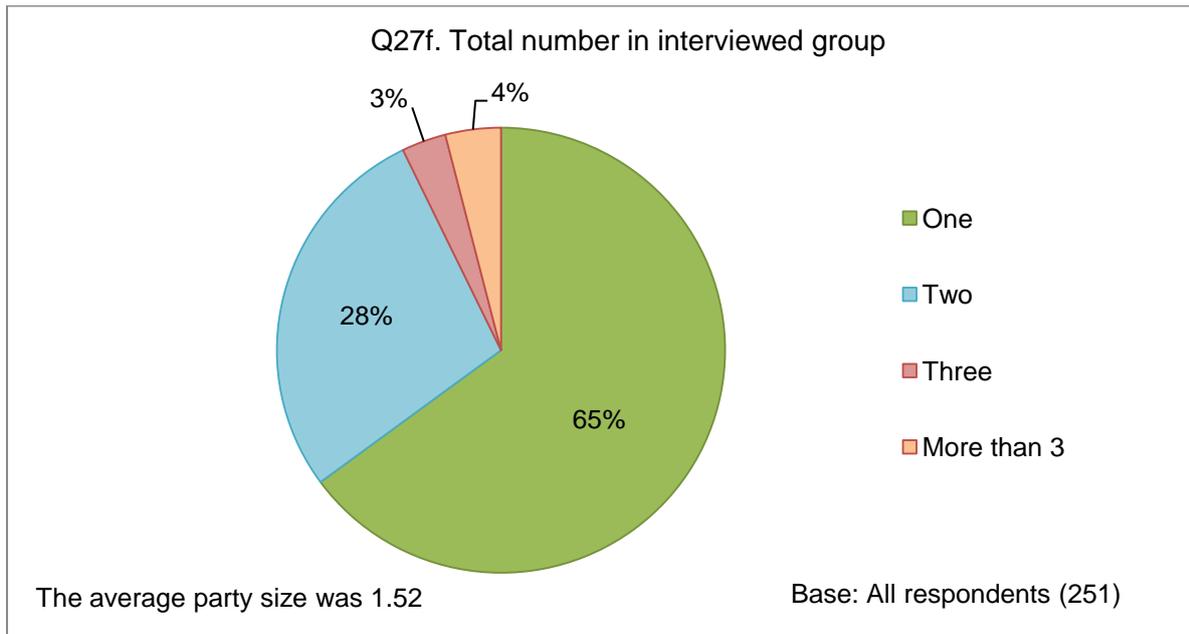
4.3.5 The vast majority of respondents (97%) were members of the public. Only seven respondents (3%) were military staff. Two of these respondents were resident at QEB and the remaining five were residents at Strensall or nearby. All were taking part in off-duty recreation.

Chart 3



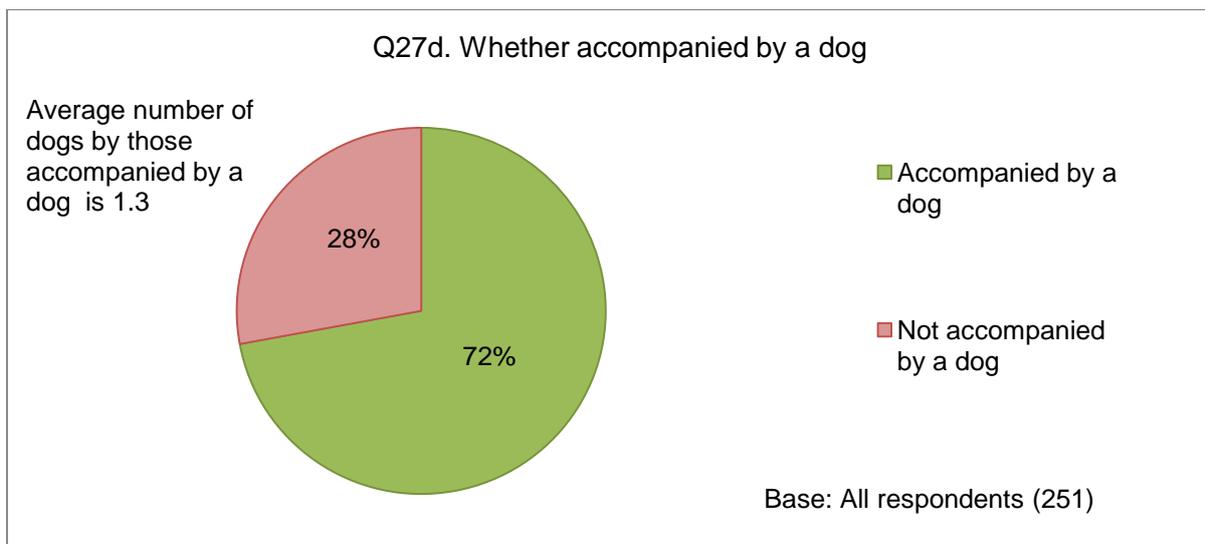
4.3.6 Group size varied from just one person on their own up to 13 people (the latter being a walking party). Almost two thirds (65%) of respondents were visiting the Common on their own, although it is worth noting that a large proportion of these were accompanied by a dog. The average group size of people who took part in an interview was 1.52, very similar to the 1.47 average group size of all those encountered by the observers at the same locations (the observers counted all those taking part in the interview and any other groups passing by whilst the interview was in progress). This suggests that the respondents taking part in the interview formed a representative sample of all those encountered at the interviewers' locations.

Chart 4



4.3.7 72% of the interviewed groups had a dog with them demonstrating the popularity of the Common amongst dog walkers. The number of dogs being walked per dog-walker ranged from just one to seven. The person walking seven dogs is believed to be a commercial dog walker. In total 236 dogs were observed with an average of 0.9 dogs per group, but 1.3 dogs per group that had a dog with them. This figure is similar to the 0.8 dogs per group calculated from the direct counts made by the interviewers at the same locations.

Chart 5

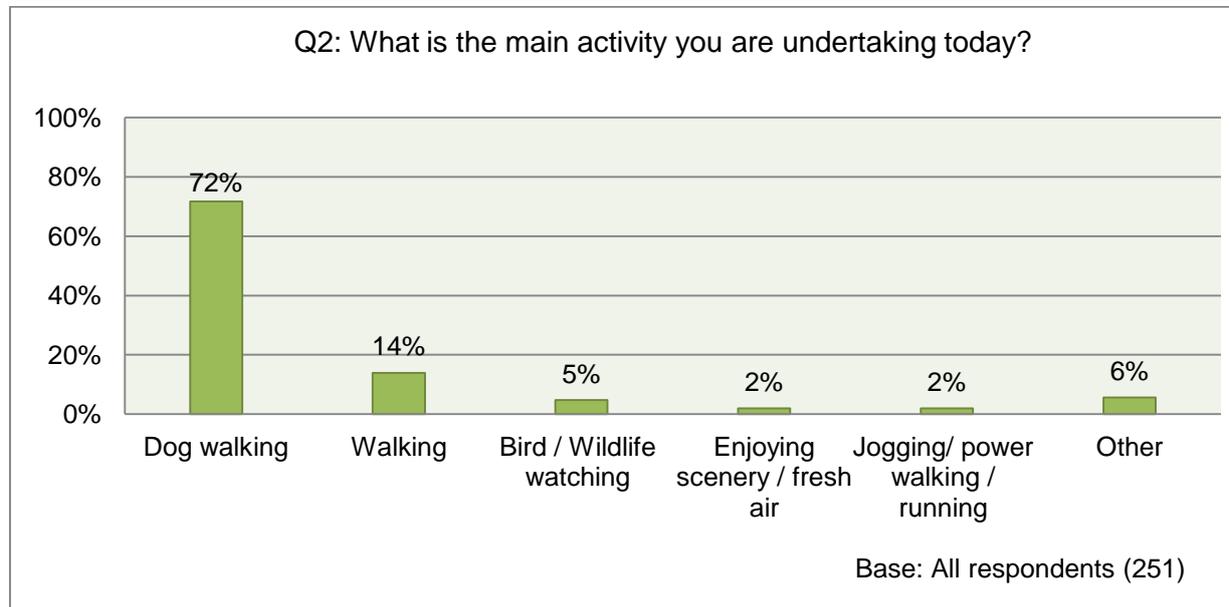


4.3.8 42% of the dogs observed were off lead during the interview. However, it is worth noting that the interviews took place mainly near the car parks and owners may have kept their dogs on the lead for safety reasons while taking part in the interview. Therefore, the actual percentage of dogs off the lead within the Common itself is likely to be higher. The figures from the camera observations would support this theory because across the two cameras for the whole 28 day period 74% of dogs observed were off their leads.

4.4 Activities Undertaken

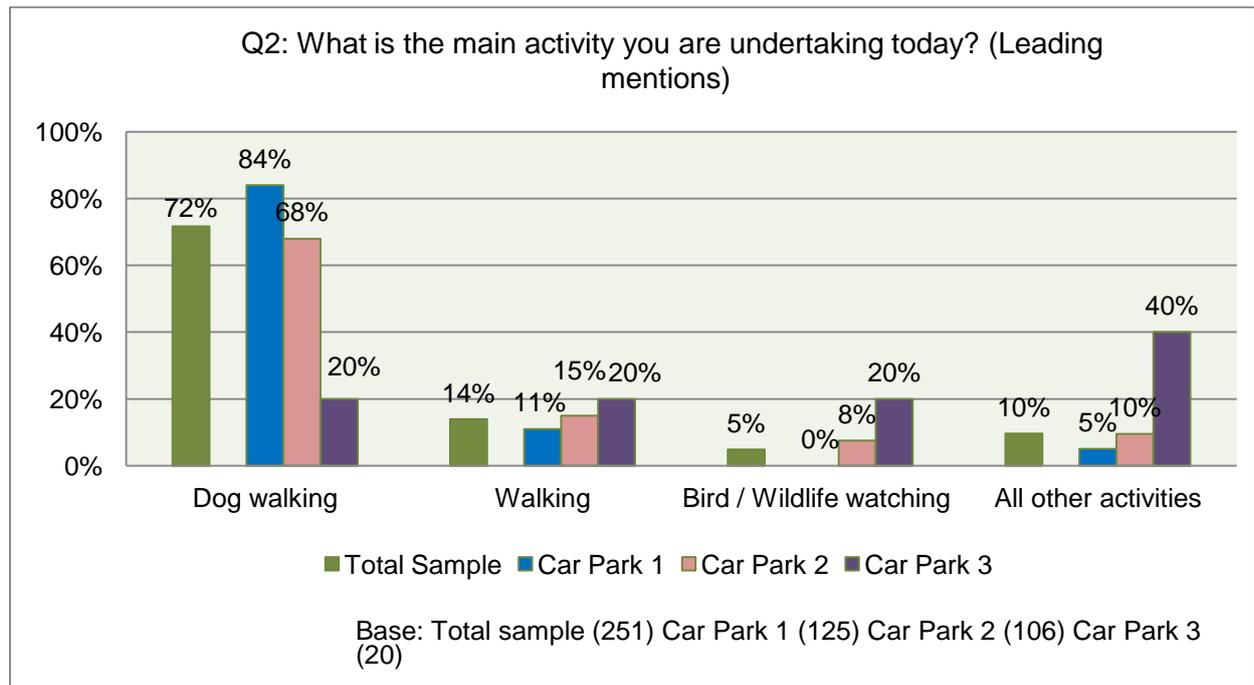
4.4.1 The most frequently recorded activity was dog walking (undertaken by 72% of respondents). 14% of respondents stated that they were walking but without a dog, making this the second most popular activity. This differed from the camera observations which had identified proportionately more walkers without a dog relative to walkers with a dog. This will be noted in section 7.3 of the report. The absence of cyclists in the areas of the Common covered by the interviewers carrying out the direct counts will be noted in Section 5.1 of the report.

Chart 6



4.4.2 There was some variation shown between the three car park areas in activities undertaken. Car Park One was more likely to be used as a location for dog walking with 84% of respondents at this location undertaking a dog walking activity. The base for Car Park Three was only very small so therefore does not lend itself to accurate comparisons, but there was some evidence that respondents were more likely to visit this area to look at wildlife or carry out other activities (which included train spotting).

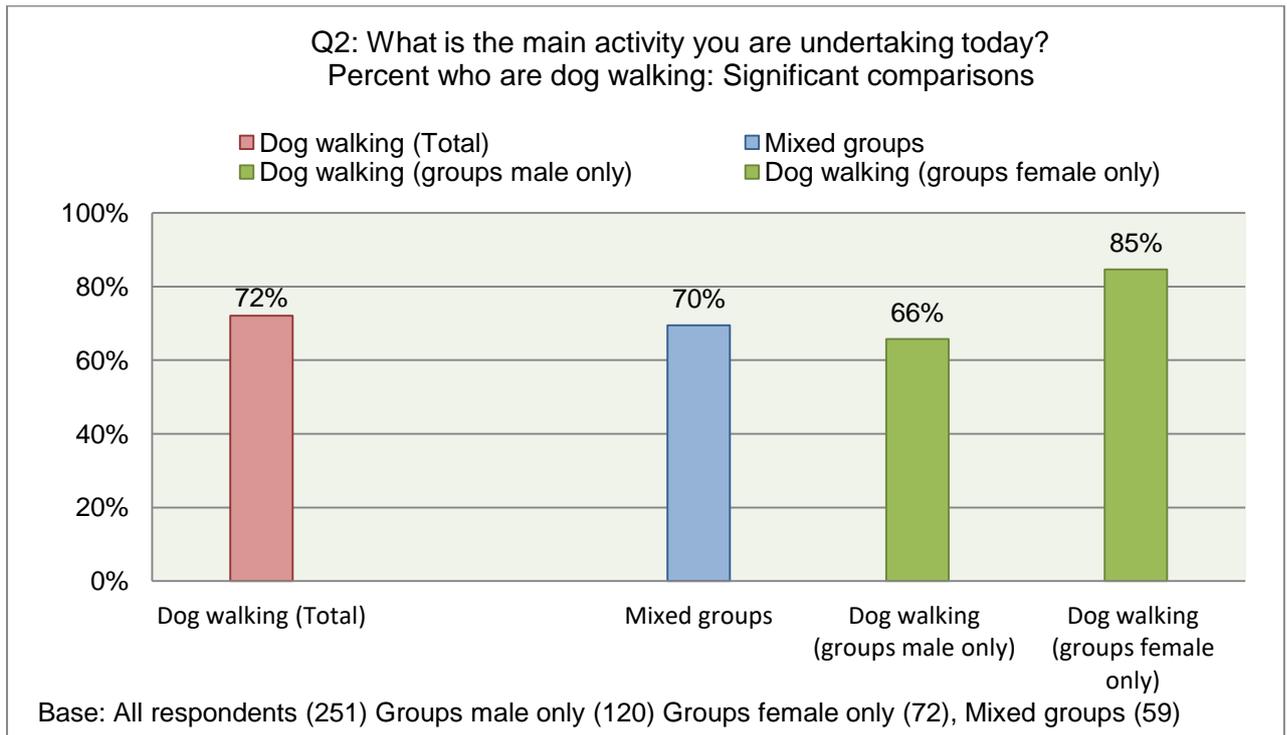
Chart 7



4.4.3 There were no significant differences in activity undertaken as a result of the circumstances when the interviews were undertaken.

4.4.4 As show in the chart below, some differences were noted in the gender of dog walkers. 85% of those groups who comprised of only females were undertaking dog walking. 66% of groups comprised of only males were undertaking dog walking activities.

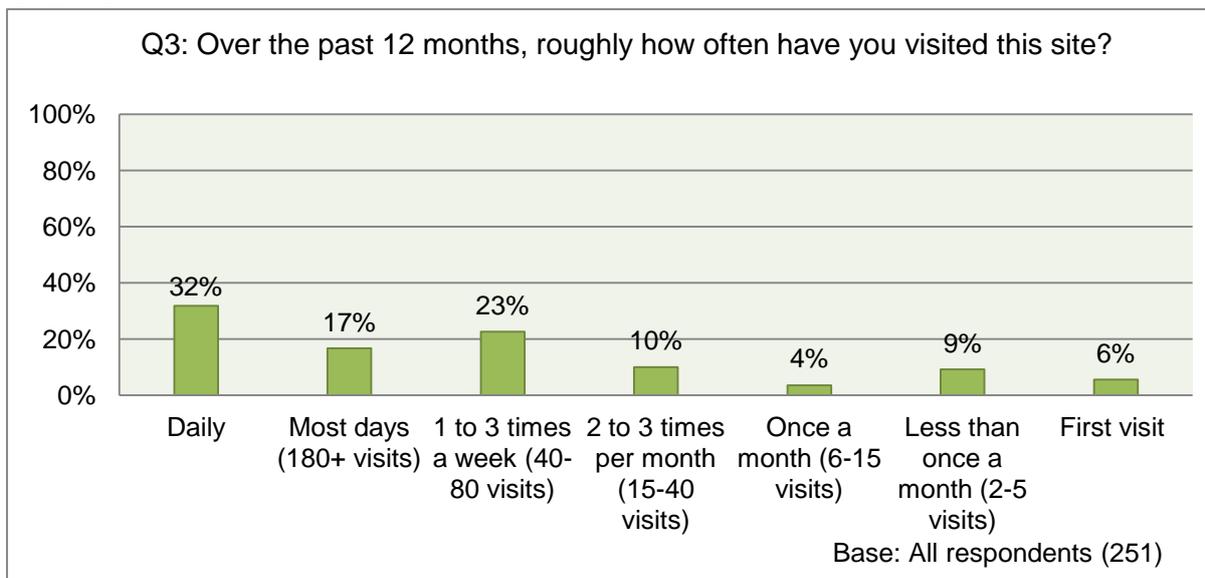
Chart 8



4.5 Visiting Patterns

4.5.1 Nearly a third (32%) of respondents visited the Common daily and almost three quarters (72%) visited at least once a week. No significant differences were recorded according to the circumstances on the day of the interview.

Chart 9



4.5.2 Dog walkers were the group most likely to visit the site daily. 39% of dog walkers visited the site on a daily basis, and 58% did so at least most days, compared to 13% and 24% respectively of those who were carrying out other activities.

Chart 10

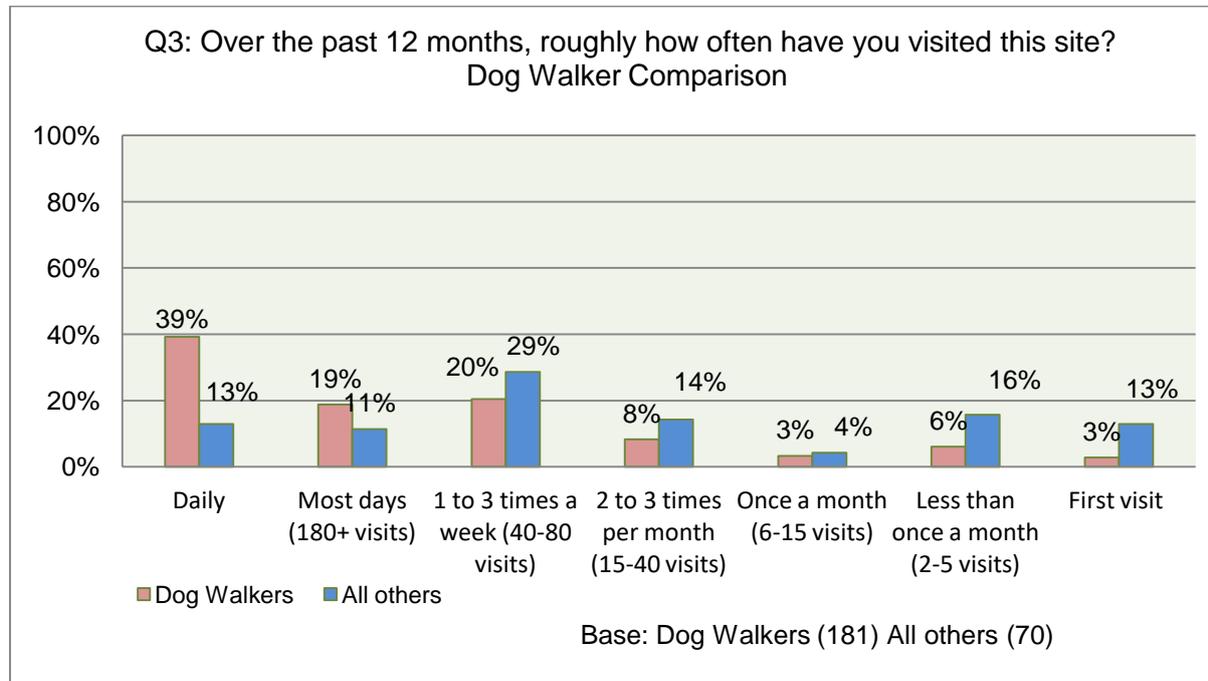
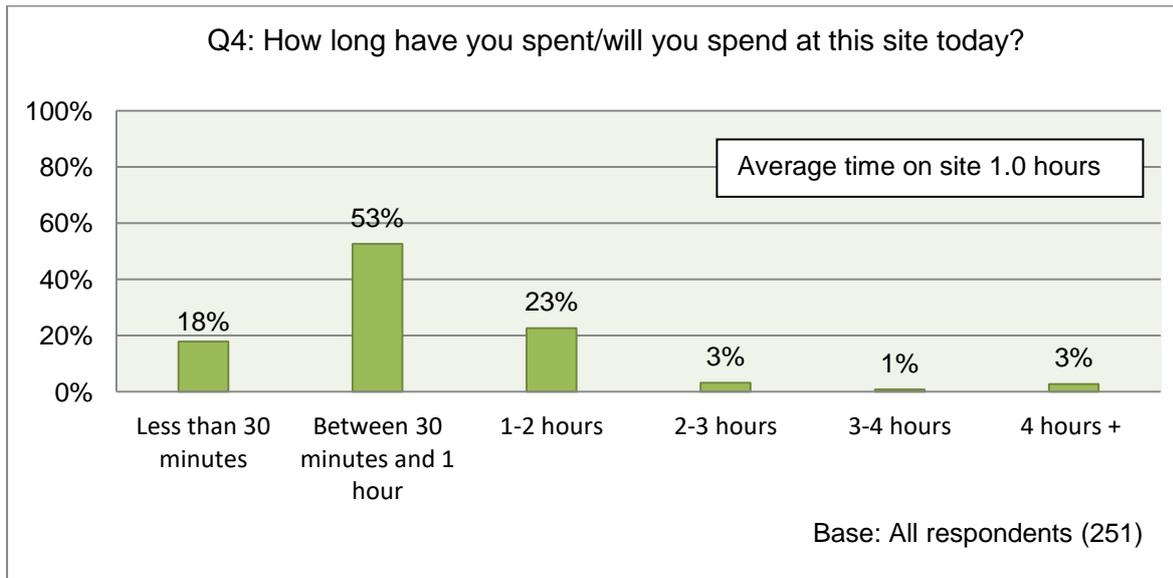


Table 9

Frequency of Visits	Activity undertaken on site (Number of respondents)						
	Total (251)	Dog Walking (181)	Walking (34)	Bird/Wildlife watching (12)	Enjoying scenery – fresh air (5)	Jogging/ power walking/ running (5)	Others (14)
Daily	31.9%	39.2%	23.5%	-	20.0%	20.0%	7.1%
Most days (180 + visits)	16.7%	18.8%	14.7%	-	20.0%	80.0%	7.1%
1 to 3 times a week (40-80 visits)	22.7%	20.4%	32.4%	25.0%	-	-	7.1%
2 to 3 times per month (15-40 visits)	10.0%	8.3%	5.9%	25.0%	-	-	35.7%
Once a month (6-15 visits)	3.6%	3.3%	5.9%	-	20.0%	-	7.1%
Less than once a month (2-5 visits)	8.8%	6.1%	11.8%	8.3%	-	-	35.7%

4.5.3 The majority of visits to the site were short. Just over half of respondents (53%) spent between 30 minutes and an hour on site. 18% spent under 30 minutes. The average time spent on site was approximately one hour.

Chart 11



4.5.4 Dog walkers spent a little less time on the site on average than other walkers. 60% of dog walkers were on site for between 30 minutes and one hour and their average length of stay was 0.8 hours. Those walking without a dog spent an average of 1.2 hours on site.

4.5.5 Wildlife watchers tended to stay on site the longest, spending on average 2.7 hours on the site.

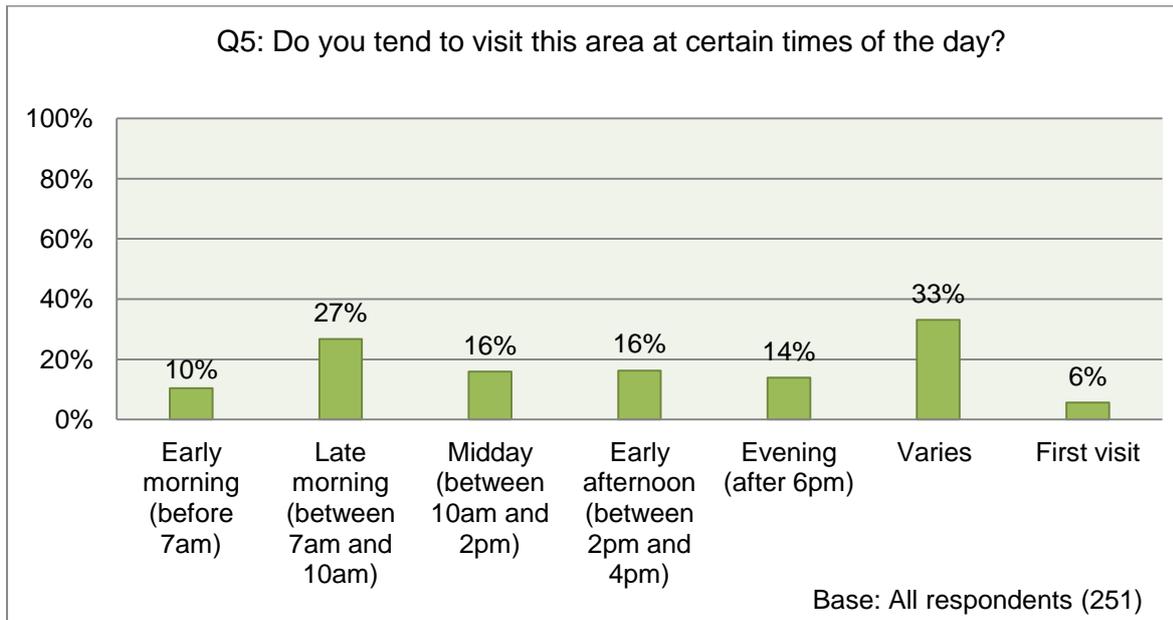
Table 10

Frequency of Visits	Activity undertaken on site (Number of respondents)						
	Total (251)	Dog Walking (181)	Walking (34)	Bird/Wildlife watching (12)	Enjoying scenery – fresh air (5)	Jogging/ power walking/ running (5)	Others (14)
Average time spent on site (in hours)	1.01	0.82	1.21	2.71	2.05	0.95	1.18
% of time spent on Common							
Less than 30 minutes	17.9%	18.8%	11.8%	-	20.0%	40.0%	28.6%
Between 30 minutes and 1 hour	52.6%	60.2%	35.3%	16.7%	40.0%	20.0%	42.9%
1 – 2 hours	22.7%	19.9%	47.1%	8.3%	40.0%	-	14.3%
2 – 3 hours	3.2%	1.1%	2.9%	41.7%	-	-	-
3 – 4 hours	0.8%	-	-	8.3%	-	-	7.1%
4 hours +	2.8%	-	2.9%	25.0%	-	40.0%	7.1%

4.5.6 There were no significant differences in length of time spent on site between term time and school holidays, between weekdays when firing was taking place and weekdays when firing was not taking place or between non-firing weekends and non-firing weekdays.

4.5.7 A third of respondents (33%) stated that they did not visit the site at any particular time of the day. The times visited by those who did tend to visit at a particular time were spread quite evenly across the day. However, the most likely period was between 7am and 10am when just over a quarter (27%) of respondents tended to visit the site. [Note that some respondents stated that they had more than one time of day when they tended to visit.] This does conflict with the findings from the camera observations (outlined in section 7.5 of the report) but it should be borne in mind that respondents here were answering questions about their visiting patterns in general not just on the day of the visit.

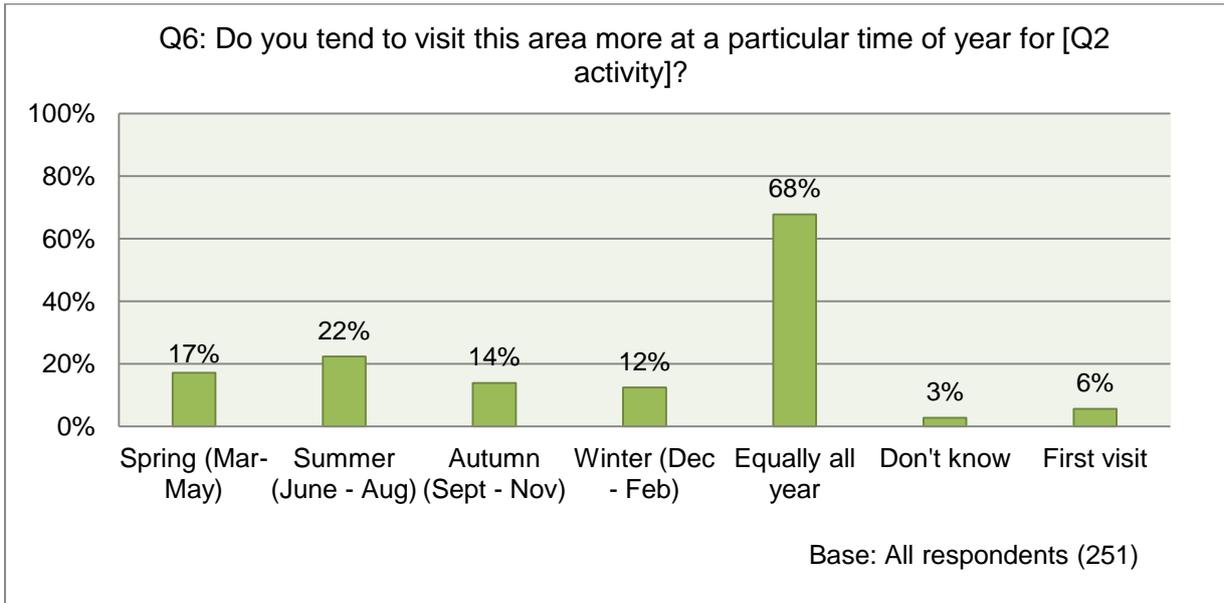
Chart 12



4.5.8 Dog walkers were significantly different from the rest of the sample in that they were more likely to visit the site between 7am and 10am. 30% of those with a dog tended to visit the site between 7am and 10am compared to 19% of those without a dog.

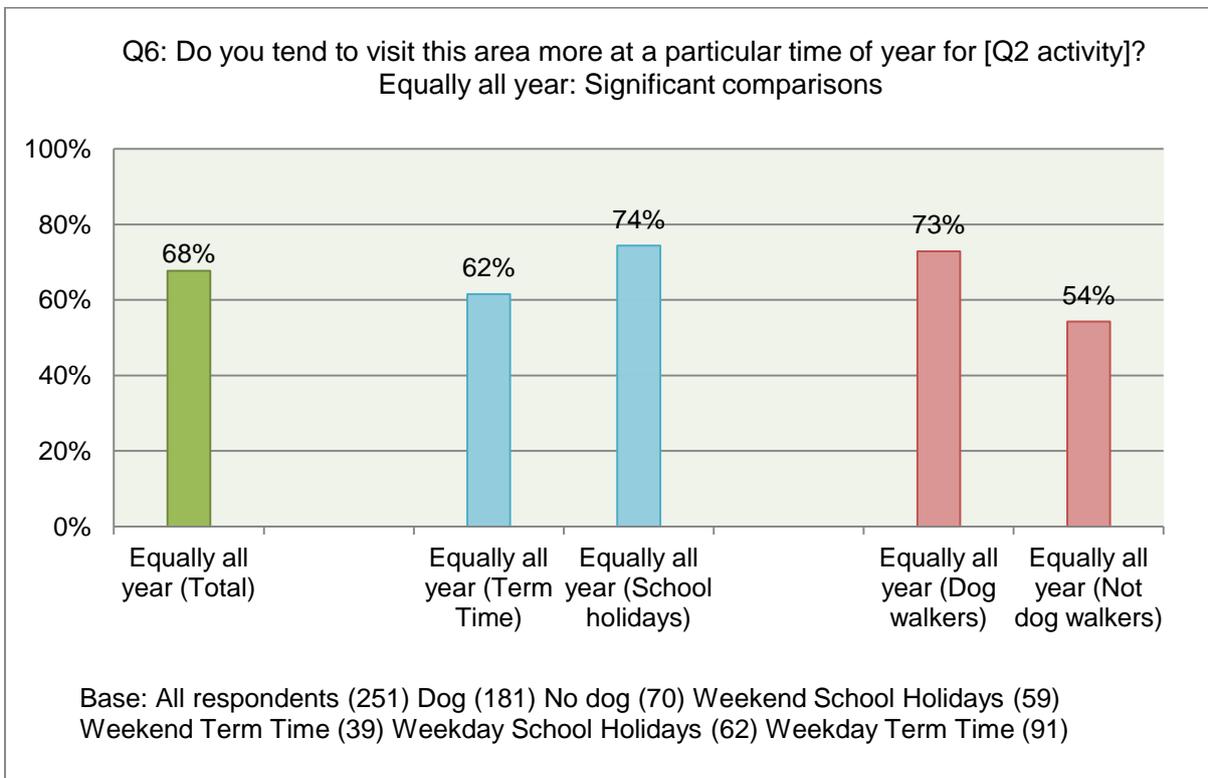
4.5.9 Just over two thirds of respondents (68%) visited the Common equally all year around. Amongst those tending to visit at specific times of year, summer was the most popular season and winter the least popular (22% and 12% respectively tended to visit more at these times of year).

Chart 13



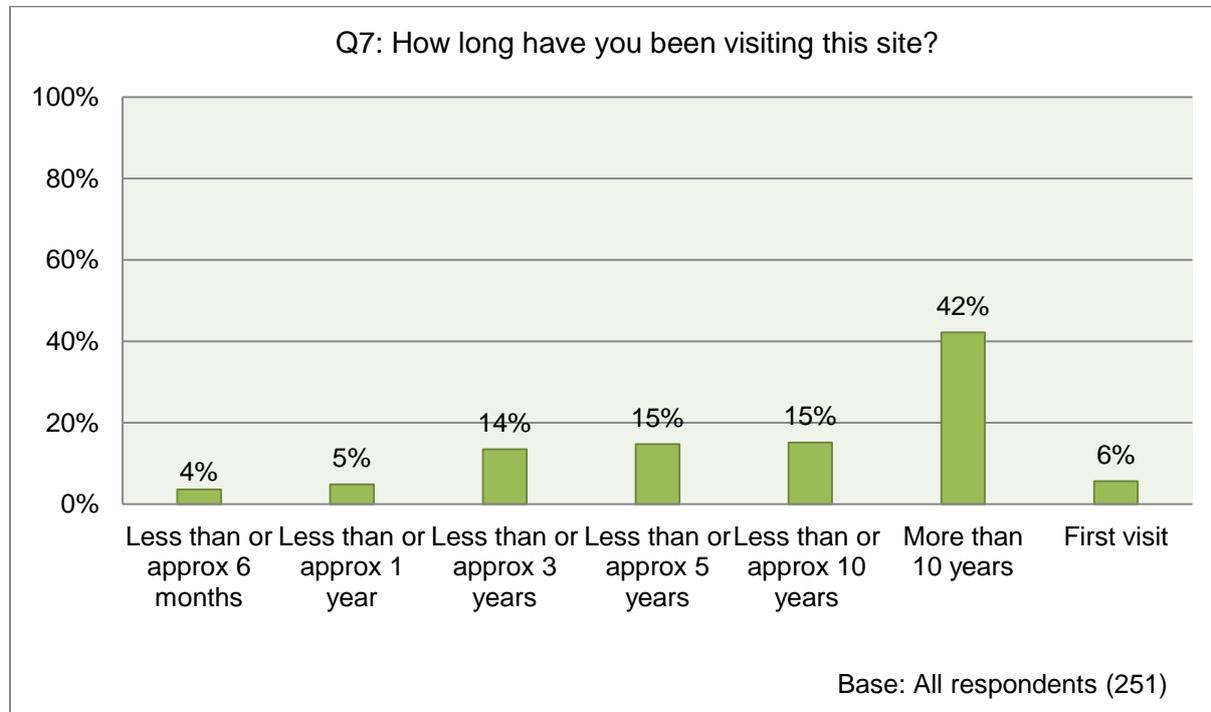
4.5.10 Those visiting in school holidays were more likely to visit equally all year round than those visiting in term time. Not surprisingly, dog walkers were also more likely to visit equally all year round.

Chart 14



4.5.11 The Common has clearly been long established as a recreation area. Almost half of all respondents (42%) stated that they had been visiting the Common for 10 or more years and almost three quarters (72%) for over three years. 6% were on their first visit.

Chart 15

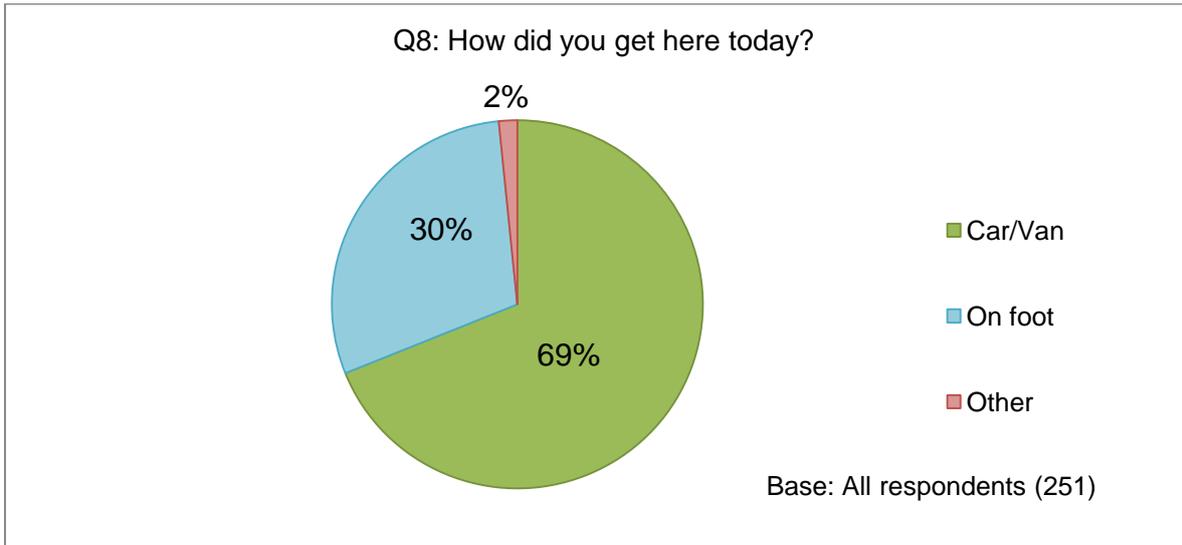


4.6 Mode of Transport to the Site

4.6.1 The main method of accessing the site was by car or van with just over two thirds (69%) arriving in this manner. However, it should be noted that these interviews took place at car parking sites and may therefore be more likely to capture people who came to the site in this way.

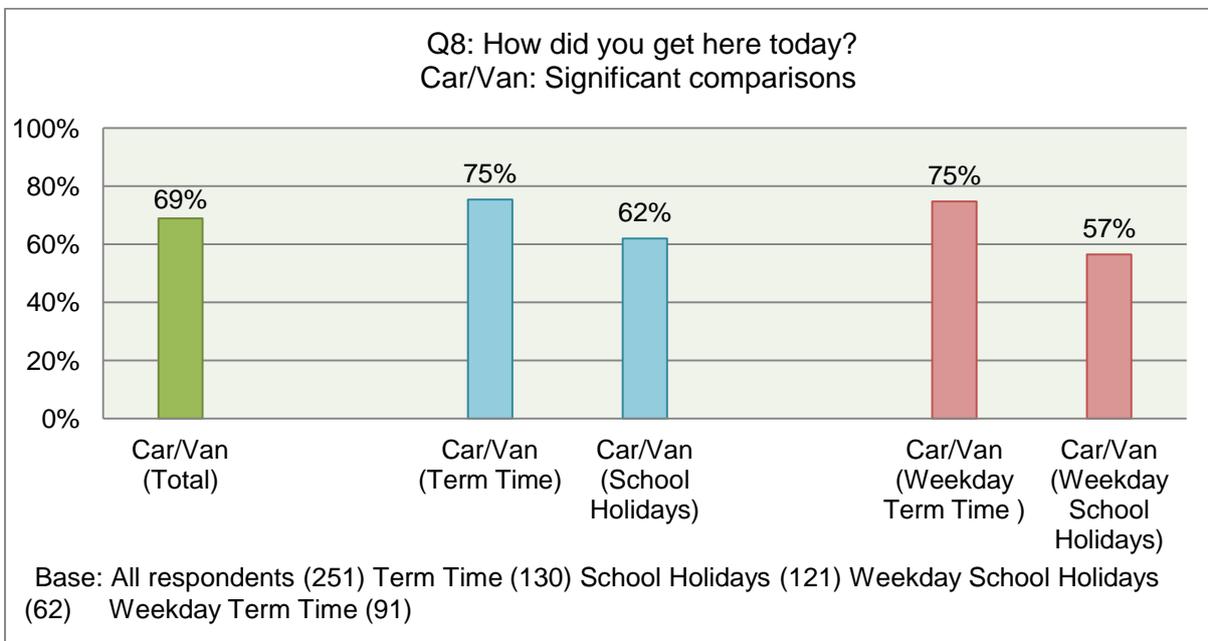
4.6.2 The direct count estimates reported in Section 5.1 below show an average of 22.4 people per hour at the site across all six days of fieldwork. Taking the above figure of 69% arriving in a vehicle, this suggests that 15.5 people per hour will reach the site in this way. The car park counts reported in 6.1 below estimate an average of 10.7 vehicles per check and this can be assumed to be the average per hour given the estimate from the visitor survey of an average length of visit to the Common of one hour. It can therefore be estimated that each vehicle brought an average of 1.4 people to the site.

Chart 16



4.6.3 Those visiting the site in term time, and particularly on weekdays in term time, were significantly more likely to have accessed the site by car/van. A possible explanation is that during term time, and particularly on weekdays in term time, people have less time and need to access the site more quickly.

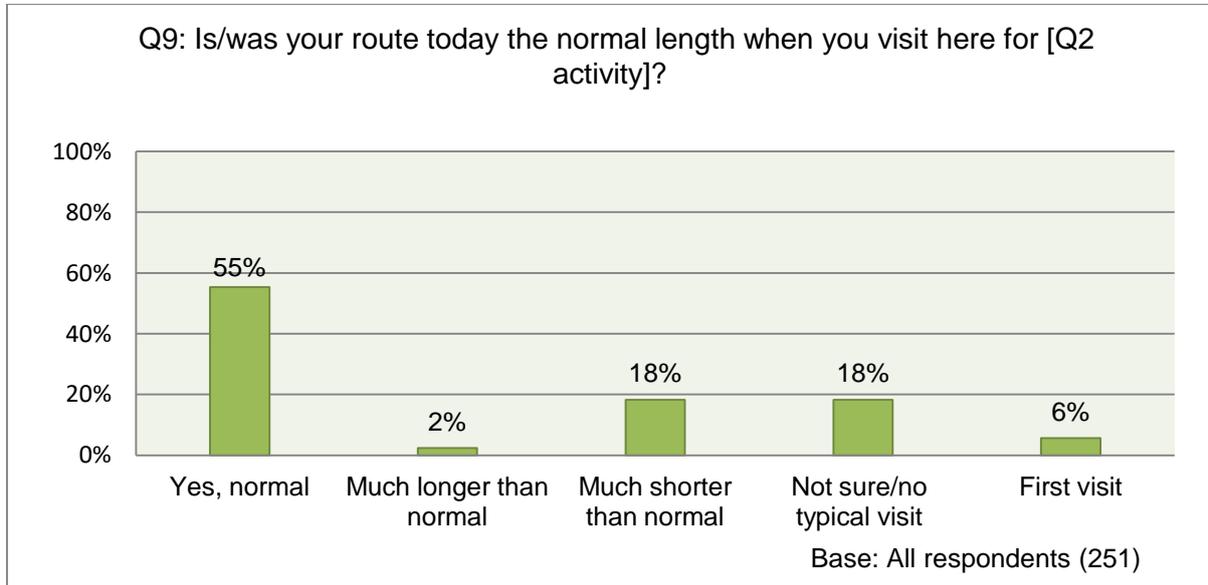
Chart 17



4.7 Route Travelled

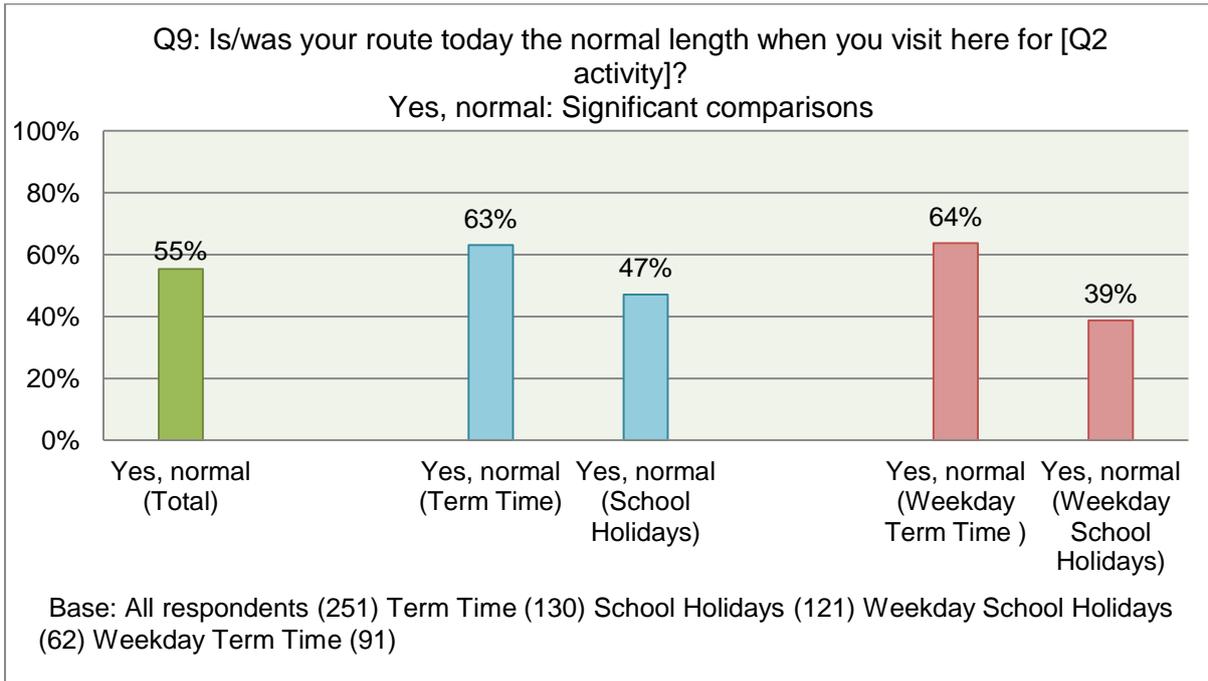
4.7.1 Over half of respondents (55%) stated that they were taking a normal route for their activity. However, more respondents were on a shorter rather than longer route than normal.

Chart 18



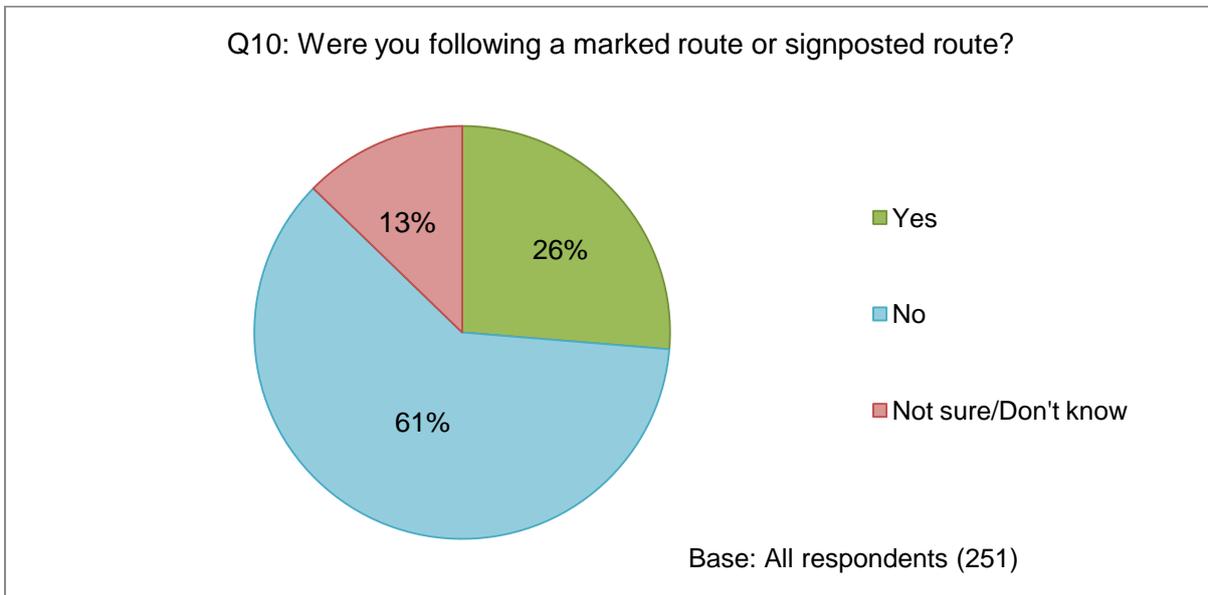
4.7.2 These figures were significantly different in term time compared to school holidays. During term time 63% of respondents were following a normal route whereas in school holidays only 47% were. This probably again reflects the time constraints of visitors during school term time.

Chart 19



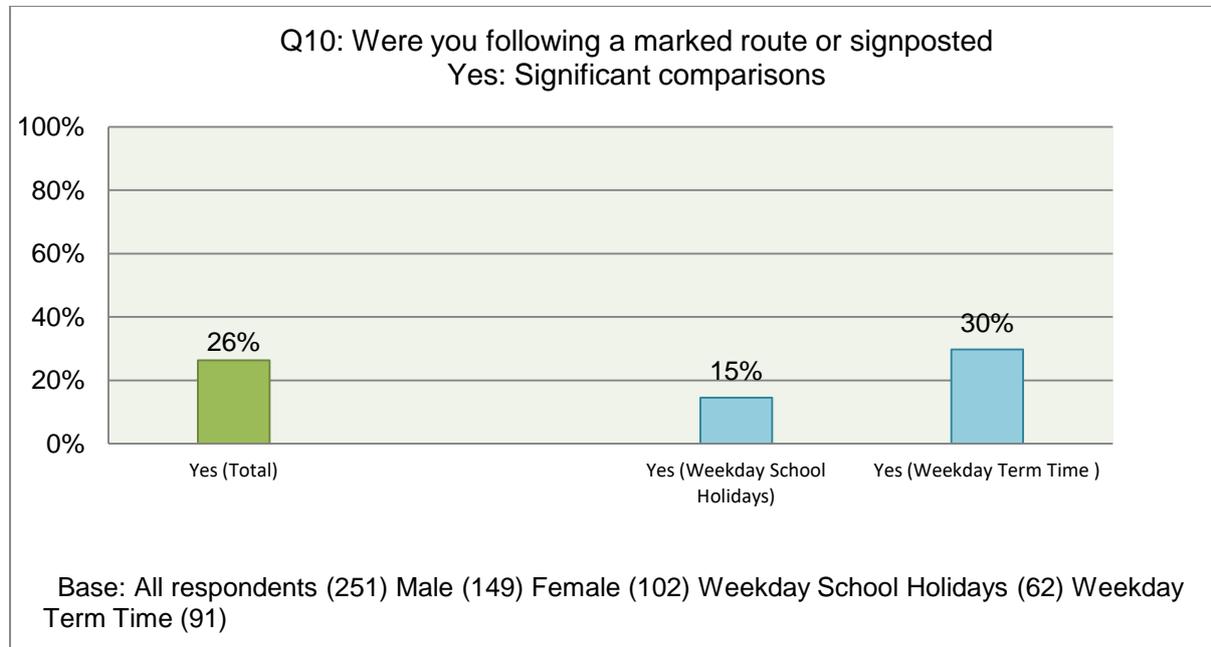
4.7.3 Only just over one quarter (26%) of respondents stated that they were following a marked or signposted route. 13% were not sure whether or not it was marked / signposted.

Chart 20



4.7.4 Those visiting on a weekday in term time were significantly more likely to use marked or signposted routes. This is likely to be a further reflection of the greater time pressure visitors are under during school days.

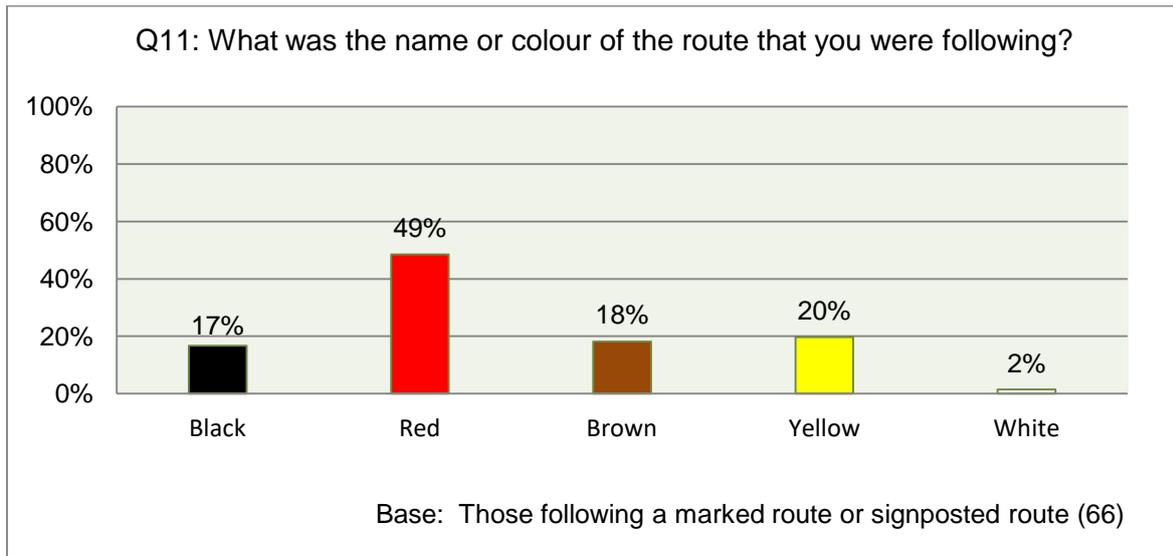
Chart 21



4.7.5 Given that most of the marked or signposted routes go through the firing area of the Common, use of the marked or signposted routes was greater on non-firing than on firing days (70% were not using a marked or signposted route on firing days compared with 57% not using a marked or signposted route on non-firing days).

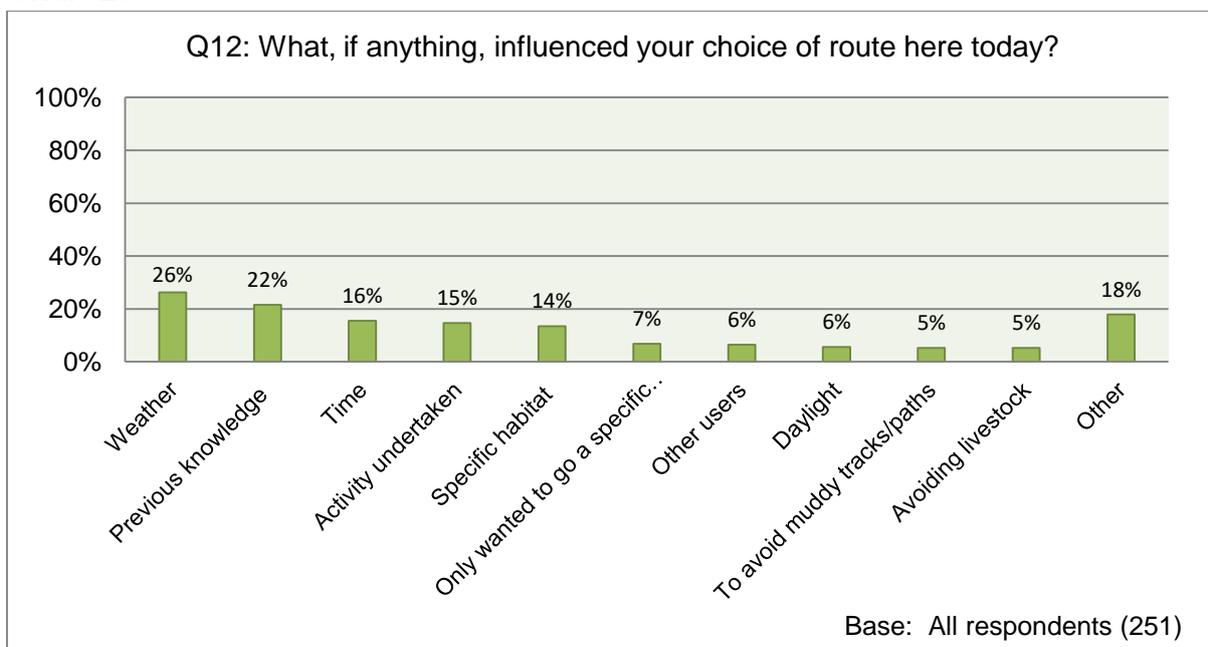
4.7.6 Amongst the minority following a marked or signposted route the red route (medium 7km route) was much the most popular. The signposted routes on site are clear to see. Although they are not all specifically made of gravel or tarmac they are proper tracks where vegetation has been cut back to allow easier access.

Chart 22



4.7.7 The two most mentioned influences over choice of route were the weather conditions (mentioned by 26% of respondents) and previous knowledge / experience of the route (22%). Only 1% mentioned that their route was influenced by whether firing was taking place that day, which seems at odds with the difference in marked and unmarked route use between firing and non-firing days.

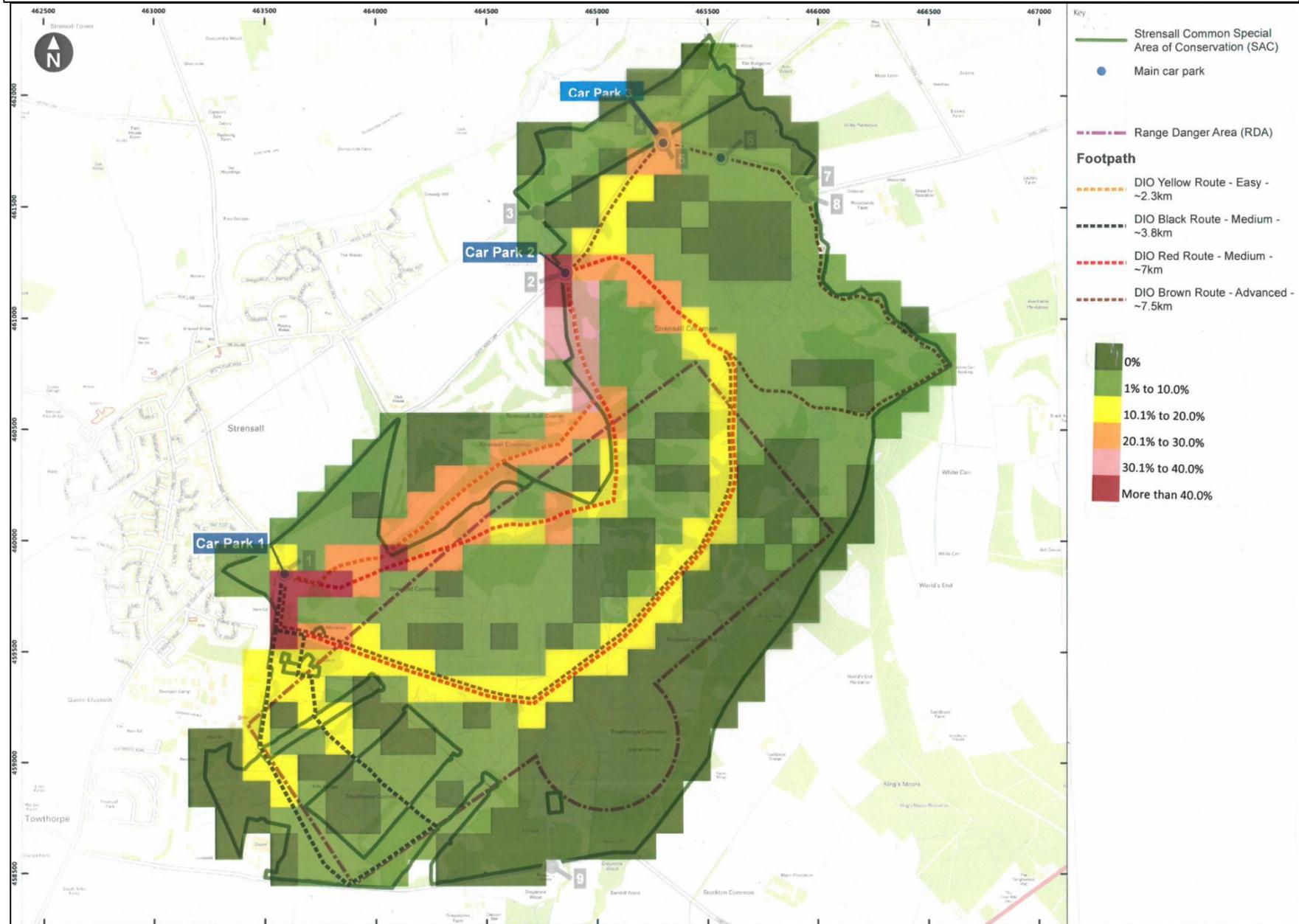
Chart 23



- 4.7.8 Respondents were asked to draw the route they had taken on a map of Strensall Common provided by the interviewer. Inevitably, when the respondents' route was not on one of the designated paths it could be represented only very approximately on the map. However, an attempt was made to reproduce the information provided by a series of route density maps, shown below. Because the routes taken on firing days were necessarily outside the firing area, separate maps are shown for firing and non-firing days. For non-firing days, there is sufficient information to allow term time and school holidays to be differentiated, but with only two days of interviewing conducted on firing days, the number of routes taken is insufficient to allow differentiation between term time and school holidays.
- 4.7.9 The maps below show that respondents did keep to footpaths for much of the time, even if they rarely completed the whole of one of the designated paths. Parts of the yellow route, the red route close to car parks one and two and the brown route close to car park three were most likely to be used on non-firing days. On firing days, respondents' routes were most likely to include parts of the yellow, red and black routes closest to car park one, the yellow and red routes closest to Car Park Two and the brown route closest to Car Park Three.

Route Density across Strensall Common

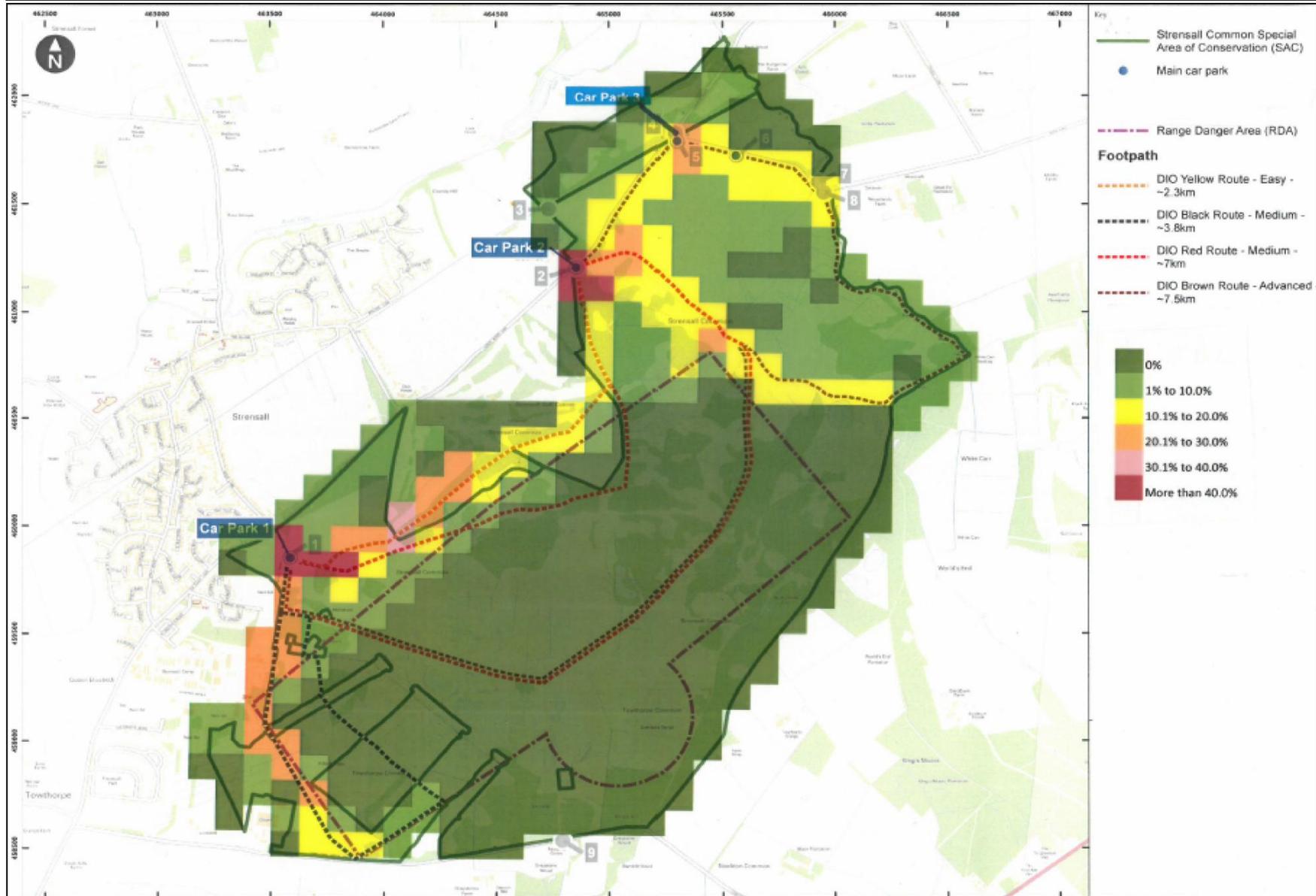
Percentage of all Routes Taken (School Holidays Non-Firing)



Route Density across Strensall Common Percentage of all routes taken (Term-Time Non-Firing)



Route density across Strensall Common
 Percentage of all routes taken (Firing Total)



4.7.10 The maps also showed that the average distance to travel within the Common was 3.3km. 42% of respondents walked between 1km and 3km in distance within the Common. Route distances during school holidays were shorter (3.2km on average) compared to school holidays (3.5km on average). This perhaps reflects the greater availability of leisure time available to visitors during the school holidays.

4.7.11 Those who were dog walking on site travelled an average distance of 3.3km compared with an average of 3.6km of those who were walking without a dog.

Table 11

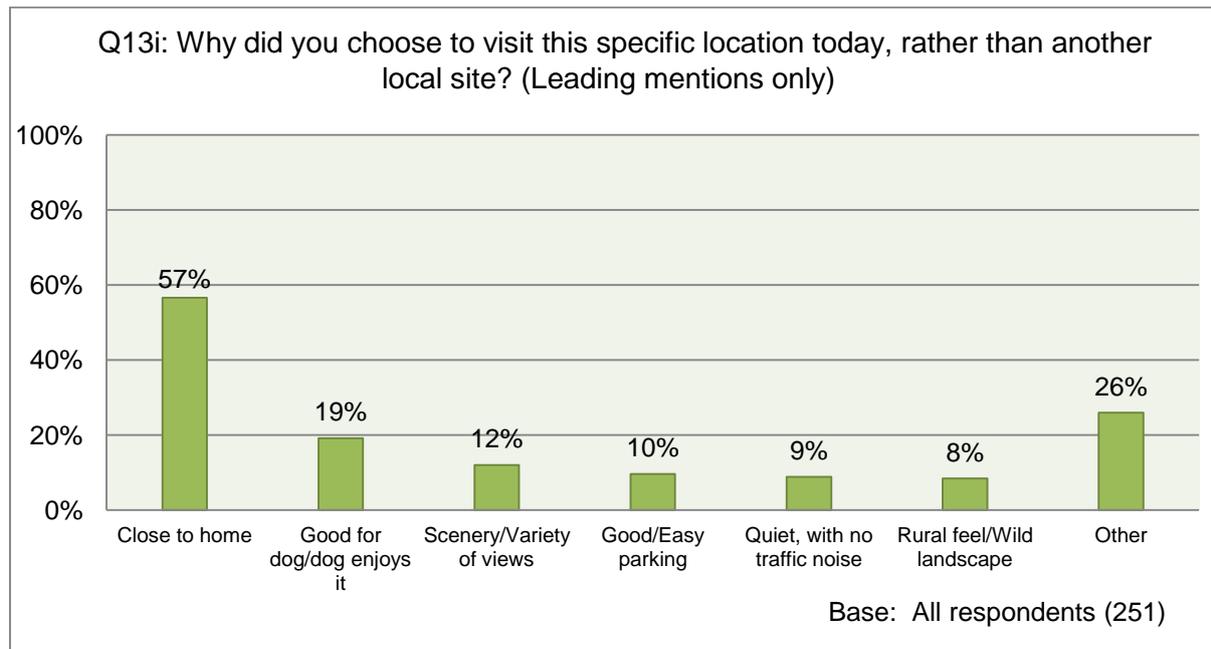
Route Distance travelled in the Common (km)	
Base: 196 (Those who produced an accurate route map)	
Less than 1 km	12 (6.1%)
1km – 1.99km	41 (20.9%)
2km - 2.99km	41 (20.9%)
3km – 3.99km	43 (21.9%)
4km – 4.99km	30 (15.3%)
5km – 5.99km	9 (4.6%)
6km – 6.99km	12 (6.1%)
7km or more	8 (4.1%)

Table 12

Route Distance travelled in the Common (km)			
Mean	Median	Minimum	Maximum
3.33	3.00	0.38	10.31

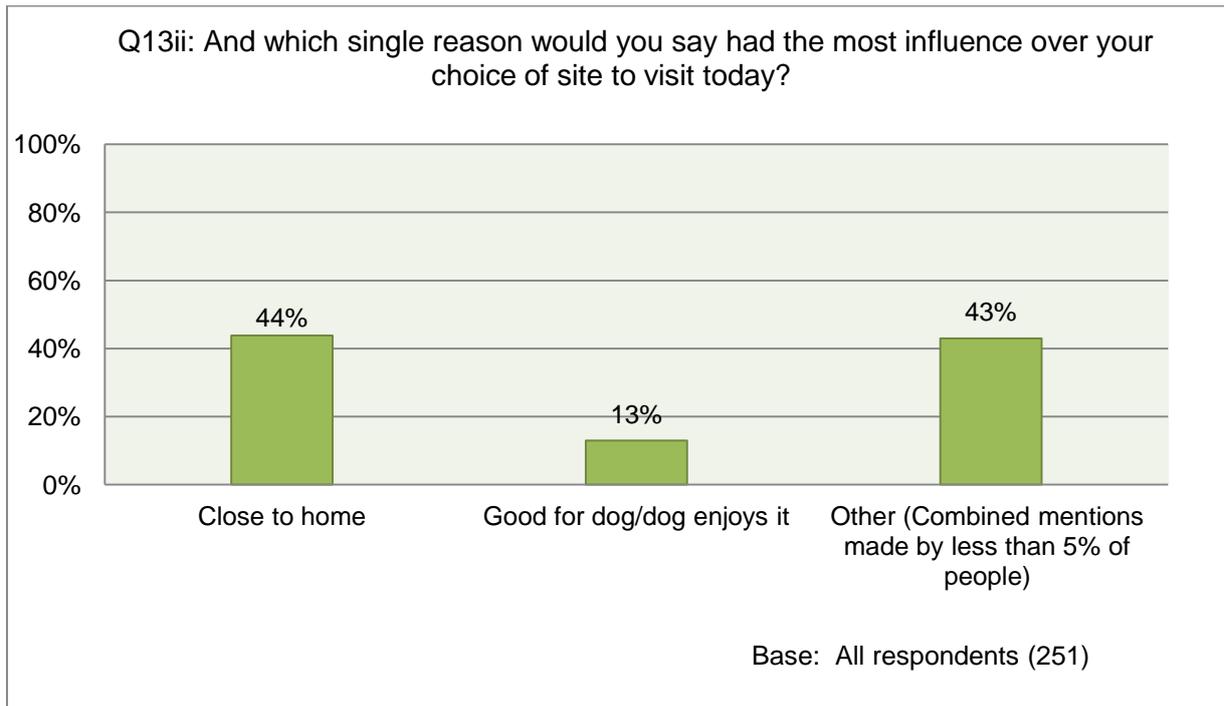
4.7.12 The main reason for choosing Strensall Common rather than another local site was its proximity to the respondent's home. 57% of respondents stated that this was their reason for choosing Strensall. Suitability of the Common for their dog was another frequently stated reason (mentioned by 19% of all respondents and 27% of those with a dog).

Chart 24



4.7.13 The same two reasons dominated when respondents were asked to give one single reason influencing their choice of Strensall Common rather than another local site.

Chart 25

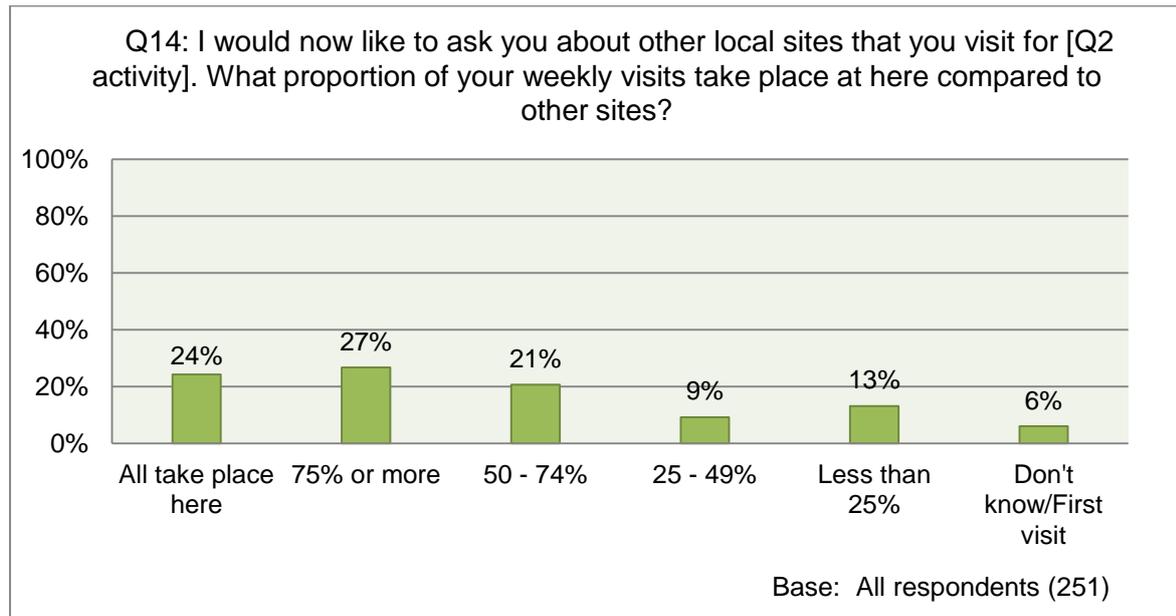


4.8 Use of Other Sites

4.8.1 One quarter (24%) of respondents use only Strensall Common for the activity they were undertaking on the day of the interview. A further 27% use the Common for at least 75% of occasions when they undertake that activity.

4.8.2 In all, 72% of respondents use the Common for 50% or more of the occasions on which they undertake that activity. Clearly, the Common meets the requirements of the majority of its users very well.

Chart 26



4.8.3 Dog walkers used Strensall Common on an even greater proportion of occasions (56% of dog walkers stated that 75% or more of their dog walks were at the Strensall site compared with 39% of those carrying out other activities).

4.8.4 When asked which other location they would have visited if they had not been able to come to Strensall Common, respondents did not appear to have many suggestions. 22% of respondents did not know where they would go and 16% thought they would not go anywhere at all. The River Foss was the most likely alternative, with one fifth (20%) of respondents suggesting this as an alternative location.

Q15: Which one location would you have visited today if you could not visit here?
Base: All respondents (251)

Table 13

Alternative Locations	% Mentioned
River Foss	20%
Strensall (other than Common)	6%
Earswick	4%
Nowhere	16%
Don't know	22%

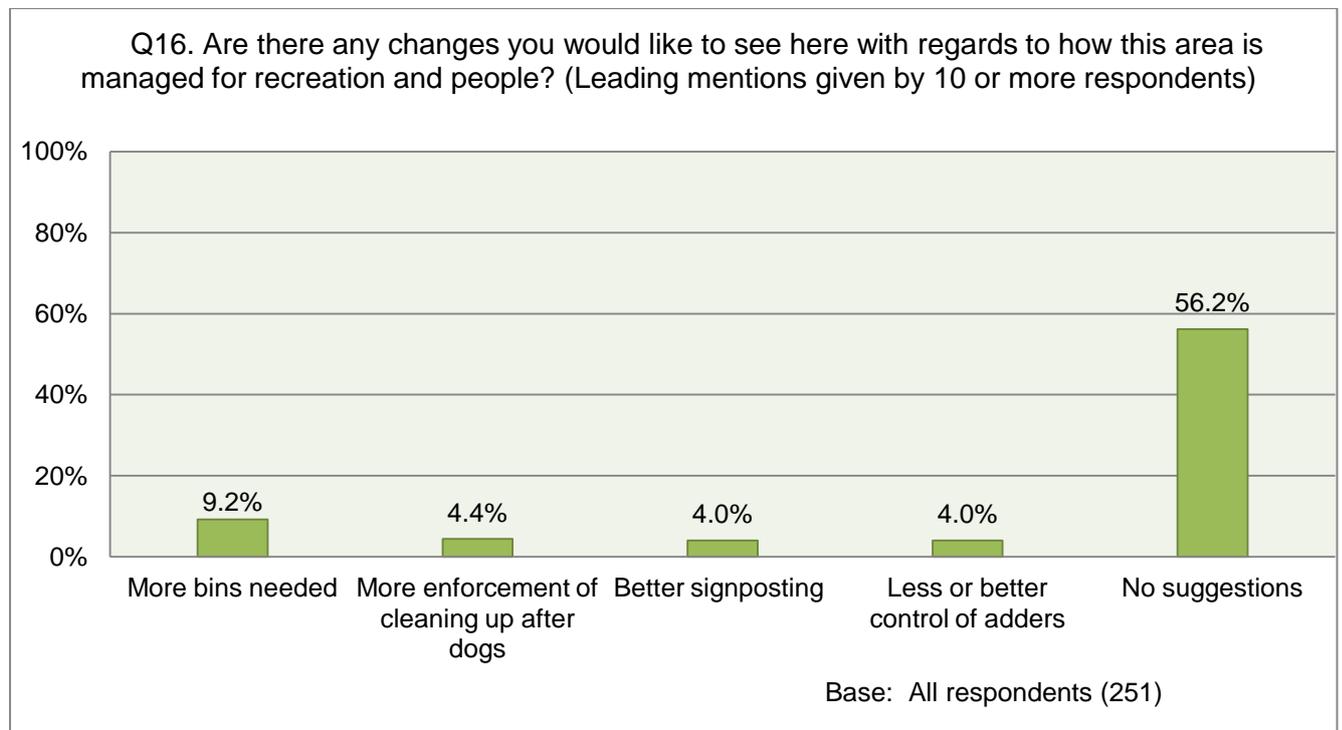
4.9 Recreational Management

4.9.1 Respondents were asked whether there were any changes they would like to see on site. Over half of respondents (56%) did not have any suggestions to make.

4.9.2 Those who did put forward a suggestion were most likely to be concerned about the cleanliness of the site. 9% of respondents wanted to see more bins on the site and 4% to see better enforcement of clearing up after their dogs.

4.9.3 4% would like to see better signposting and 4% requested better control of the adder population.

Chart 27



4.9.4 There were a number of other individual comments made. These are listed for reference in Appendix B.

5. Direct Counts

5.1 Numbers Counted

- 5.1.1 Over the six days when direct counts were made of people and dogs passing the three interviewing points over a period of eight hours, a total of 733 separate observations were made. These observations comprised 1,074 people in total entering or leaving the site. The average group size was therefore 1.47. As already noted, some visitors to the Common will have been counted twice by the procedure used, but the estimates do nevertheless allow usage of different parts of the Common to be assessed.
- 5.1.2 Over the same period 552 dogs were counted and this equates to 0.75 dogs per group.
- 5.1.3 Expressed in terms of numbers per hour, these figures equate to 15.3 groups, 22.4 people and 11.5 dogs per hour across all interviewer locations.
- 5.1.4 No cyclists were recorded by the observers at the interviewers' locations. The more remote areas of the Common, where 12% of the camera observations were of cyclists, obviously lend themselves more readily to this activity.
- 5.1.5 The table below shows a summary of the different days and the number of groups, people and dogs encountered on each date. Figures shown are averages per hour.

Table 14

Date	Groups	People	Dogs
Thursday 27 th June 2019	13.9	17.8	8.9
Friday 28 th June 2019	16.5	22.6	10.8
Saturday 6 th July 2019	14.2	22.6	9.9
Thursday 25 th July 2019	8.4	13.1	6.1
Friday 26 th July 2019	12.1	16.6	9.7
Sunday 11 th August 2019	26.8	41.9	23.9
All days	15.3	22.4	11.5

- 5.1.6 The cameras had recorded a large increase in the number of people observed at the two sites over the weekend of 6th, 7th July, particularly from Camera One (situated near the Foss Walk). No such increase was recorded by the counts made by the interviewers at car parks 1, 2 and 3 on 6th July, suggesting that the increase from the cameras must have been mostly the result of heavy use of the Foss Walk rather than the rest of the Common.
- 5.1.7 Much the busiest day on site was the Sunday in school holidays (11th August) when an average of 26.8 groups, 41.9 people and 23.9 dogs were counted per hour. This is probably reflective of the fact this was a sunny holiday weekend day after a period of very wet weather. This day's interviewing and observation was later than originally intended because of the poor weather two weeks earlier and the cameras had been taken down by this time, so it is not possible to check whether a similar increase was recorded at the two camera sites. The cameras had been erected to monitor the number of visitors and animals over two continuous periods of 14 days, one in term time and one in school holidays. Whilst the 14 day period was designed to overlap with the interviewing days as far as possible, it was not felt to be essential to extend this period just because the interviewing had to be postponed.
- 5.1.8 The quietest day at the interviewer locations was Thursday 25th July when it is likely that the combination of the extremely hot weather conditions and the fact that it was a firing day deterred people from visiting the site. Relatively low activity on this day was also recorded by the cameras and is noted in section 7.1.

5.2 Variation by Car Park

- 5.2.1 Interviewers at Car Park One recorded the highest number of people. On average 7.9 groups, 11.6 people and 7.4 dogs were observed there per hour. However, there were some variations by day. On Saturday 6th July (which was a non-firing weekend) more people were counted at Car Park Two than Car Park One.
- 5.2.2 Across the whole period under review, Car Park Two, The Galtres, had the second highest number of people passing through with 6.1 groups, 9.1 people and 3.9 dogs per hour on average.
- 5.2.3 Car Park Three was the least used car park area with only 1.2 groups on average per hour observed at the site.

Table 15

Date	Term time vs school holidays	Firing vs Non-Firing	Groups Entering			Total People			Total Dogs		
			Car Park 1	Car Park 2	Car Park 3	Car Park 1	Car Park 2	Car Park 3	Car Park 1	Car Park 2	Car Park 3
Thursday 27 th June 2019	Term time	Firing	8.0	5.0	0.9	10.3	6.0	1.5	6.0	2.9	0.0
Friday 28 th June 2019	Term time	Non-Firing	7.4	7.8	1.3	10.4	10.9	1.3	6.5	4.0	0.3
Saturday 6 th July 2019	Term time	Non-Firing	4.5	7.8	1.9	6.3	13.5	2.8	4.1	5.5	0.3
Thursday 25 th July 2019	School holidays	Firing	3.3	3.5	1.6	5.9	4.9	2.3	4.0	1.6	0.5
Friday 26 th July 2019	School holidays	Non-Firing	6.6	5.0	0.5	9.1	6.6	0.9	6.4	2.8	0.5
Sunday 11 th August 2019	School holidays	Non-Firing	17.9	7.8	1.1	28.0	12.5	1.4	17.1	6.4	0.4
All days			7.9	6.1	1.2	11.7	9.1	1.7	7.4	3.9	0.3

5.3 Variation by Circumstances

- 5.3.1 There were also some notable variations in numbers depending on the circumstances pertaining on the day of counting. Most notably, the weekend produced much higher numbers of visitors than weekdays (32.2 people per hour on a non-firing weekend compared with 19.6 on a non-firing weekday). This difference between the weekend and weekday (64%) is much higher than the 4% difference recorded from the car park counts. The reason for these different estimates of the 'weekend effect' is not clear – it cannot be explained on the basis that weekend visitors are less likely to arrive in a vehicle as the visitor survey suggests the reverse if anything.
- 5.3.2 Numbers were also higher on non-firing compared with firing days but not as significantly (19.6 people per hour on a non-firing weekday compared with 15.4 on a firing weekday, a difference of 27%). This is broadly consistent with the estimate of a 19% difference from the car park observations, but greater than the estimated difference of only 6% based on the camera observations.
- 5.3.3 Numbers during term time were slightly lower than during school holidays from the interviewers' observations at the car parks (20.9 compared with 23.8 people per hour). This is the opposite conclusion from both the car parking and the camera observations, which both suggest slightly higher numbers of visitors in term time.
- 5.3.4 This is further evidence that the pattern of visiting according to the daily circumstances (whether a firing day or not, whether term time or school holidays, whether a weekend or weekday) varies according to the point of access to the Common.

Table 16

	Groups Entering				Total People				Total Dogs			
Date	Car Park 1	Car Park 2	Car Park 3	Total	Car Park 1	Car Park 2	Car Park 3	Total	Car Park 1	Car Park 2	Car Park 3	Total
Firing day (weekday)	5.6	4.3	1.3	11.1	8.1	5.4	1.9	15.4	5.0	2.3	0.3	7.5
Non-firing (weekday)	7.0	6.4	0.9	14.3	9.8	8.8	1.1	19.6	6.4	3.4	0.3	10.1
Weekend (non-firing)	11.2	7.8	1.5	20.4	17.1	13.0	2.1	32.2	10.6	5.9	0.3	16.9
Weekday (non-firing)	7.0	6.4	0.9	14.3	9.8	8.8	1.1	19.6	6.4	3.4	0.3	10.1
Term Time	6.6	6.8	1.3	14.8	9.0	10.1	1.8	20.9	5.5	4.1	0.2	9.8
School Holidays	9.3	5.4	1.1	15.8	14.3	8.0	1.5	23.8	9.2	3.6	0.4	13.2
All days	7.9	6.1	1.2	15.3	11.7	9.1	1.7	22.4	7.4	3.9	0.3	11.5

5.4 Variation by Time of Day

5.4.1 The observations of number of people recorded by the interviewers at the three car parks showed a different pattern by time of day compared with the cameras. Although the observations at the car parks showed below demonstrated that more people visited the site between 10am and 12noon than between 7am and 9am, they also showed a sharp drop off in numbers from 1pm onwards. The reduction recorded by the cameras was much more modest.

5.4.2 The quietest time on site was between 7am and 9am when the average number of people entering the site was 15.1 per hour. The number of people per group was lower than average at this time, but the number of dogs per group was higher. Clearly it is a time of day when many walk their dog without human company.

Table 17

Timebands	Groups Entering				Total People				Total Dogs			
	Car Park 1	Car Park 2	Car Park 3	Total	Car Park 1	Car Park 2	Car Park 3	Total	Car Park 1	Car Park 2	Car Park 3	Total
7am to 9am	6.8	4.6	1.1	12.5	8.5	5.3	1.3	15.1	7.4	3.5	0.8	11.8
10am to 12noon	11.3	9.2	2.0	22.4	15.7	14.3	3.1	33.1	10.6	6.3	0.2	17.1
1-3pm	5.8	6.3	1.2	13.2	9.9	9.4	1.6	20.9	5.3	3.4	0.1	8.8
5-7pm	7.9	4.5	0.6	13.0	12.5	7.3	0.7	20.4	6.2	2.2	0.1	8.4

6. Car-park Count Results

6.1 Average Number of Vehicles by Day

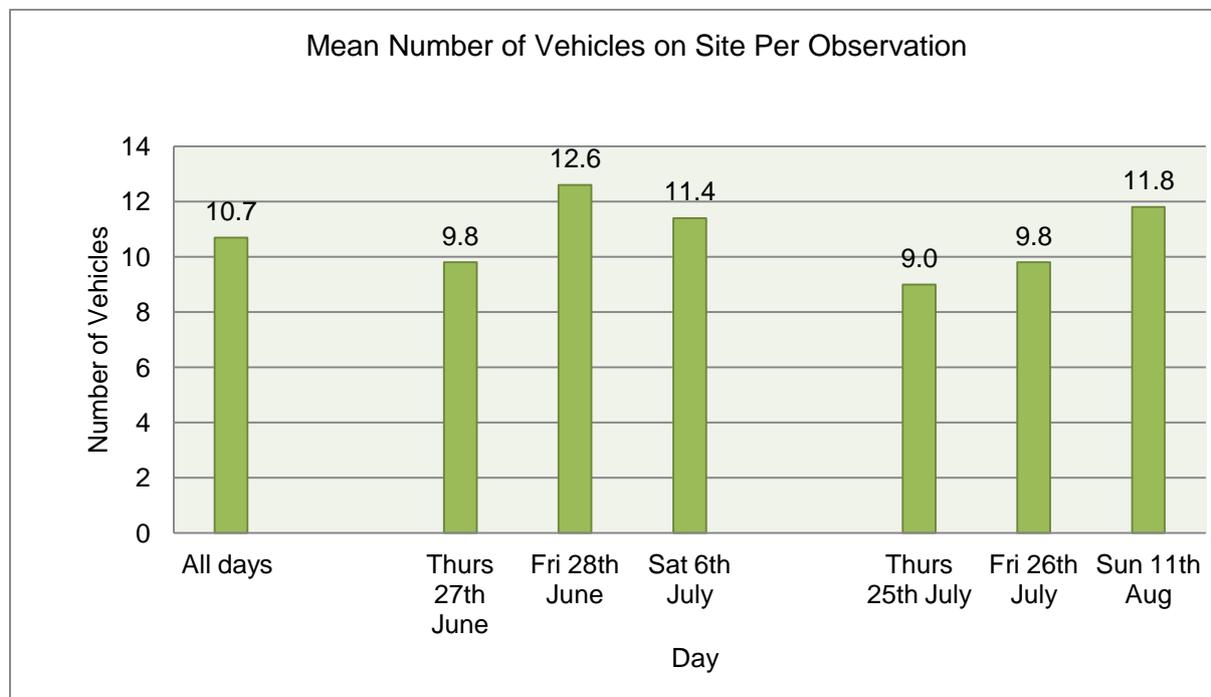
6.1.1 The mean number of vehicles parked on the site at any given observation time was **10.7**.

6.1.2 The number of parked vehicles varied depending on the day of observations. The busiest day on site was Friday 28th June when 12.6 vehicles were observed on average.

6.1.3 The two quietest days on site for vehicles were the two Thursday firing days. The quietest day overall was Thursday 25th July which had an average of 9.0 vehicles per observation. This could be related to the fact that temperatures were excessively hot and dog walkers in particular may have stayed away from the site during the main part of the day for that reason. As discussed above, the weather experienced on the days on which the observations were made will naturally have some effect on the results of the research, but not, it is believed, to the point that it materially alters the conclusions drawn.

6.1.4 The busiest day was Friday 28th June. Numbers on that day exceeded even the two weekends when counts were made.

Chart 28



6.2 Average Number of Vehicles on Site

6.2.1 The majority of parked vehicles were in the two main car parks, as shown in the table below. Only a small number of vehicles were parked in lay-bys and around the edge of the site. Layby 6 is not shown below as this was blocked off so as not to allow parking. The busiest car park was Car Park Two (the Galtres) which had on average 4.5 cars at any one observation time.

Table 18

Day	Average number of vehicles per count										
	Car Park 1	Car Park 2	Car Park 3	Layby 3	Layby 4	Layby 5	Layby 7	Layby 8	Layby 9	Other areas	Total site
Thursday 27 th June 2019	3.6	4.2	0.0	0.0	1.0	0.0	0.6	0.0	0.0	0.4	9.8
Friday 28 th June 2019	3.0	8.8	0.4	0.0	0.2	0.0	0.0	0.0	0.0	0.2	12.6
Saturday 6 th July 2019	2.2	4.6	0.6	0.0	3.2	0.0	0.8	0.0	0.0	0.0	11.4
Thursday 25 th July 2019	2.0	2.4	0.6	1.0	0.6	1.0	0.0	0.0	1.4	0.0	9.0
Friday 26 th July 2019	2.8	2.8	0.6	0.8	0.4	1.2	0.6	0.2	0.0	0.4	9.8
Sunday 11 th August 2019	5.8	4.0	0.4	0.0	0.6	0.0	0.2	0.8	0.0	0.0	11.8
All days	3.2	4.5	0.4	0.3	1.0	0.4	0.4	0.2	0.2	0.2	10.7

6.3 Average Number of Vehicles by Circumstance

6.3.1 Differences were clearly observed depending on the circumstances of the day when observations took place. These are illustrated in the table below² :

Table 19

Type of Day	Average number of vehicles per observation
Firing day (weekday)	9.4
Non-firing day (weekday)	11.2
Weekend (non-firing)	11.6
Weekday (non-firing)	11.2
Term time	11.2
School holidays	10.2

6.3.2 From this data we can observe that 19% more vehicles were seen on a non-firing weekday compared with a firing weekday and 4% more vehicles were seen on a non-firing weekend compared with a non-firing weekday. However, the difference between weekend and weekday numbers should be regarded as 'not proven' because the pattern was not consistent between the term time and school holiday observation periods.

6.3.3 Use of car parks was 10% higher during term time (11.2 vehicles observed on average) than during school holidays (10.2). One possible explanation for this is that local residents may have been more likely to be away from home during school holidays.

² The weekday (non-firing) observations are shown twice in the table to facilitate the comparison between firing and non-firing days, and between weekends and weekdays.

6.4 Average number of Vehicles by Time of Day

6.4.1 The highest number of vehicles observed was during the lunchtime period of 12.30-1pm. During this period across the six days an average of 14.5 vehicles was recorded.

6.4.2 9.30-10am was the second busiest of the five periods when checks were made with an average of 12.0 vehicles observed.

6.4.3 The maximum number of vehicles recorded at any one time was on Saturday 6th July between 12.30-1pm when 27 vehicles were observed across the car parks and laybys.

6.4.4 The quietest period for vehicles was between 7.00 – 7.30 pm when there was an average of 5.3 vehicles on site.

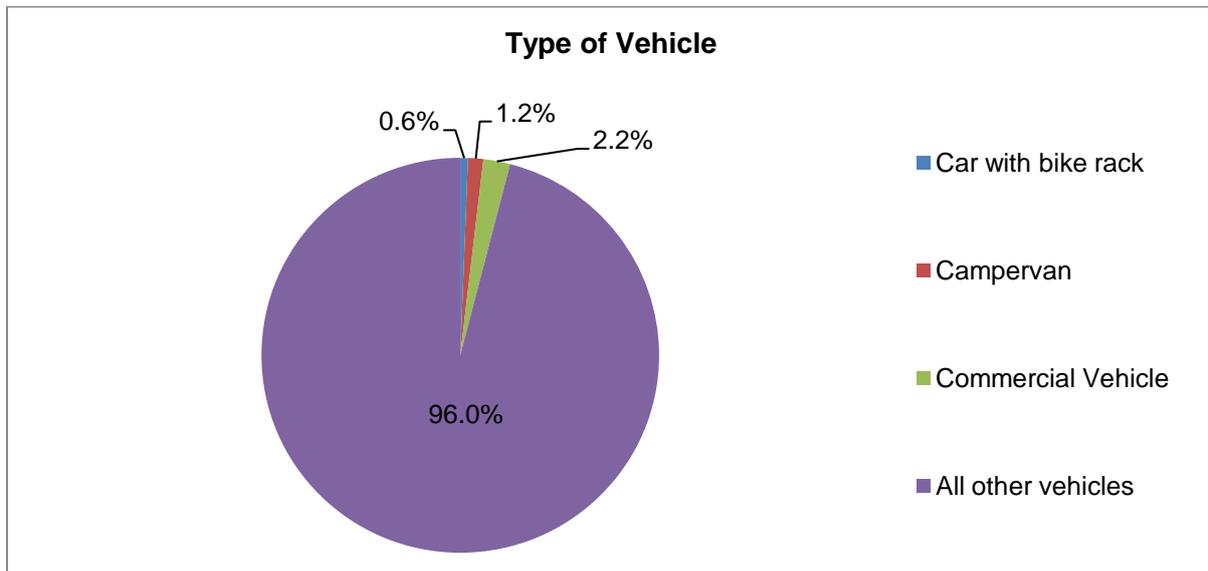
Table 20

Date	Term time vs School holidays	Firing vs Non-Firing	9.30am - 10am (No of vehicles)	12.30pm- 1pm (No of vehicles)	3-3.30pm (No of vehicles)	4.15- 4.45pm (No of vehicles)	7pm- 7.30pm (No of vehicles)	Total number of vehicles per day	Average number of vehicles per observation
Thursday 27 th June 2019	Term time	Firing	11	10	7	15	6	49	9.8
Friday 28 th June 2019	Term time	Non-Firing	10	21	20	7	5	63	12.6
Saturday 6 th July 2019	Term time	Non-Firing	9	27	13	7	1	57	11.4
Thursday 25 th July 2019	School holidays	Firing	14	10	6	8	7	45	9.0
Friday 26 th July 2019	School holidays	Non-Firing	15	9	6	10	9	49	9.8
Sunday 11 th August 2019	School holidays	Non-Firing	13	10	18	14	4	59	11.8
Average			12.0	14.5	11.7	10.2	5.3	53.7	10.7

6.5 Types of Vehicle Recorded

6.5.1 Across the whole period of observation a total of 322 vehicles of any type were recorded across the car parks and laybys. The vast majority (96%) of these vehicles were cars without a bike rack. Only four camper vans in total were recorded and these were exclusively people pulling into the car park to break their journey. Only two cars with a bike rack were recorded. Seven commercial vehicles were recorded but no observations of branded commercial dog walker vehicles were recorded.

Chart 29



7. Automated Camera Results

7.1 Total number of Observations

- 7.1.1 In total over 4,000 individual images were logged across the two cameras. However, a large number of these were not relevant to this study. On Camera One during both periods foxes and rabbits frequented the path on most nights. On Camera Two there were well over one thousand sheep triggered pictures over the 14 days. There was also a number of early morning deer sightings on this camera. Overall 2,464 of these images were relevant to the study and analysed further.
- 7.1.2 On Camera One there were a number of vehicles driving up and down the track, presumably to the housing situated nearby. There were 228 vehicle observations moving north and 271 observations moving south. The camera captured the vehicles but not the number of occupants of the vehicles so therefore these data are not included in the results below.
- 7.1.3 Camera Two captured just one vehicle which it is believed was a farmer's vehicle. This was included in the analysis of the number of people as it was possible to see that one man was present.
- 7.1.4 Camera One recorded many more images overall than Camera Two, probably because of its proximity to the Foss walk and to local housing.
- 7.1.5 Examples of the photographs recorded by the two cameras are shown on the following page.

Example Photographs (Left-hand side shows Camera One and right-hand side Camera Two)



7.1.6 The following table shows the number of people recorded in total by the cameras across the two periods:

Table 21

Total individuals passing the camera point	Camera One		Camera Two		Combined Camera One and Two		
	Travelling North	Travelling South	Travelling North	Travelling South	Travelling North	Travelling South	Average Per Day
Term Time (14 day period)	250	211	96	100	346	311	46.9
School Holidays (14 day period)	232	228	74	93	306	321	44.8
Total (28 day period)	482	439	170	193	652	632	45.9

7.1.7 A total of 1,284 images of people passing the cameras were recorded. However, it is worth noting that a number of people visited the Common on several different days, and also passed the cameras more than once on any particular day, so this figure does not reflect the number of different people visiting the site.

7.1.8 There was little difference between the number of people travelling north and south.

7.1.9 On average, 5% more images of people were captured in term time (46.9 per day compared with 44.8 per day in school holiday time). This is consistent with the conclusion from the analysis of the car park counts, when term time observations were 10% higher than school holiday observations on average.

7.1.10 The overall average for the total period of 28 days across the two cameras combined was **45.9** people per day.

7.1.11 Table 22 below shows the averages per day across the two cameras during the term time recording periods:

Table 22

Average number of people passing the camera point per day			Camera One		Camera Two		Combined Camera One and Two		
			North	South	North	South	North	South	Total Combined
Thursday 27 th June 2019	Firing	23/19oc – Passing Clouds	15	16	1	6	15	22	38
Friday 28 th June 2019	Non-Firing	17/12oc – Partly Sunny	19	16	8	6	27	22	49
Saturday 29 th June 2019	Non-Firing	29/27oc – Sunny	9	11	12	9	21	20	41
Sunday 30 th June 2019	Non-Firing	21/19oc Partly Sunny	17	12	11	6	28	18	46
Monday 1 st July 2019	Firing	20/17oc – Scattered Clouds	14	15	3	2	17	17	34
Tuesday 2 nd July 2019	Firing	20/18oc – Sunny	15	10	2	1	17	11	28
Wednesday 3 rd July 2019	Firing	21/19oc – Sunny	13	13	6	16	19	29	48
Thursday 4 th July 2019	Firing	23/19oc – Partly Sunny	6	15	7	12	13	27	40
Friday 5 th July 2019	Non-Firing	22/20oc – Partly Sunny	21	14	5	5	26	19	45
Saturday 6 th July 2019	Non-Firing	21/17oc – Partly Sunny	33	19	17	11	50	30	80
Sunday 7 th July 2019	Non-Firing	19/15oc – Broken Clouds	40	26	10	8	50	34	84
Monday 8 th July 2019	Firing	19/17oc – Partly Sunny	25	20	2	3	27	23	50
Tuesday 9 th July 2019	Firing	18/16oc – Broken Clouds	9	13	3	7	12	20	32
Wednesday July 2019	Firing	21/20oc – Partly Sunny	14	11	9	8	23	19	42
Average									46.9

7.1.12 During the school term time the two busiest days recorded were Saturday 6th and Sunday 7th July when there were 80 and 84 captures on camera respectively. By contrast, however, despite similar weather, the previous weekend had shown a decline in numbers on both days compared with the preceding non-firing Friday and only a relatively small increase compared with the Thursday when firing took place. This suggests that the weather and the day of the week have a considerable effect on visitor numbers.

7.1.13 The two term time Tuesdays were quieter days on site. The lowest number of captures was on Tuesday 2nd July when only 28 people were recorded.

7.1.14 Figures for school holidays were not vastly different from those observed during term time:

Table 23

Average number of people passing the camera point per day	SCHOOL HOLIDAYS	Firing or Non-Firing	Weather Conditions	Camera One		Camera Two		Combined Camera One and Two		
				North	South	North	South	North	South	Total Combined
Thursday 25 th July 2019		Firing	23/19oc – Passing Clouds	10	18	3	0	13	18	31
Friday 26 th July 2019		Non-Firing	17/12oc – Partly Sunny	11	16	3	4	14	20	34
Saturday 27 th July 2019		Non-Firing	29/27oc – Sunny	23	19	11	3	34	22	56
Sunday 28 th July 2019		Non-Firing	21/19oc Partly Sunny	21	16	13	8	34	24	58
Monday 29 th July 2019		Firing	20/17oc – Scattered Clouds	10	11	1	14	11	25	36
Tuesday 30 th July 2019		Firing	20/18oc – Sunny	19	14	2	3	21	17	38
Wednesday 31 st July 2019		Firing	21/19oc – Sunny	20	15	6	6	26	21	47
Thursday 1 st August 2019		Firing	23/19oc – Partly Sunny	22	18	6	9	28	27	55

Average number of people passing the camera point per day			Camera One		Camera Two		Combined Camera One and Two		
Friday 2 nd August 2019	Non-Firing	22/20oc – Partly Sunny	18	15	8	6	26	21	47
Saturday 3 rd August 2019	Firing	21/17oc – Partly Sunny	16	17	6	7	22	24	46
Sunday 4 th August 2019	Firing	19/15oc – Broken Clouds	13	14	5	11	18	25	43
Monday 5 th August 2019	Firing	19/17oc – Partly Sunny	18	21	1	10	19	31	50
Tuesday 6 th August 2019	Firing	18/16oc – Broken Clouds	14	15	5	6	19	21	40
Wednesday 7 th August 2019	Firing	21/20oc – Partly Sunny	17	19	4	6	21	25	46
Average									44.8

7.1.15 As already noted, during school holiday time numbers on average were slightly lower than during term time. The busiest days during the school holiday period were again a non-firing weekend (Saturday 27th and Sunday 28th July). 56 and 58 people respectively were captured by the cameras on these days. The following weekend, when firing took place showed slightly below average numbers of people compared with the surrounding days.

7.1.16 The quietest day during this period was Thursday 25th July which was both a firing day and also one of the hottest days of the year.

7.1.17 Analysis of the number of people according to circumstances (school holiday versus term time, firing day versus non firing day, weekday versus weekend) is shown in Paragraph 7.4 below.

7.2 Number of Dogs

7.2.1 Across the 28 day period 681 dogs were counted by one or other of the two cameras, equivalent to an average of 24.3 per day. It is unlikely that many people, or therefore dogs, would have been counted by both cameras, as the route from Camera One to Camera Two is not part of a recognised footpath.

7.2.2 Of these dogs nearly three-quarters (73.6%) were observed off their lead.

7.2.3 The average number of dogs per person was 0.53.

Table 24

Total individuals passing the camera point		Camera One		Camera Two	
		Off lead	On lead	Total	Average per day
Camera One	Term time	168	76	244	17.4
Camera One	School holidays	174	69	243	17.4
Camera Two	Term time	69	22	91	6.5
Camera Two	School holidays	90	13	103	7.4
	Total	501	180	681	1.0
		73.6%	26.4%		

7.2.4 Camera One picked up over two thirds (68%) of all dogs counted. This is similar to the percentage of people picked up by Camera One (72%).

7.2.5 Whereas slightly more people were picked up by the cameras in term time than in the holidays, this was not the case of dogs. In fact, marginally more dogs were captured by one or other of the cameras in school holidays than in term time.

7.3 Activities Undertaken

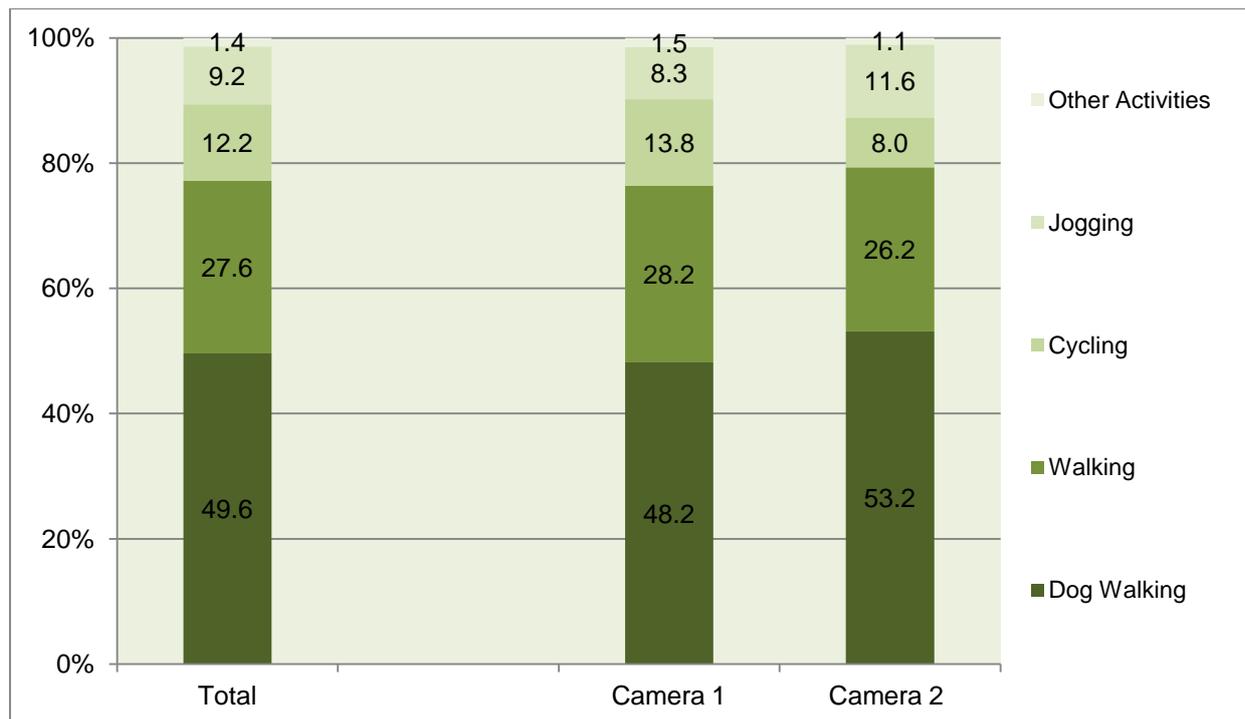
7.3.1 The predominant activity undertaken at the Common at both camera locations was dog walking. Across the whole period on average half (49.6%) of images captured of people (either an individual or a group) were undertaking dog walking activities.

7.3.2 The next most popular activities were general walking undertaken by just over a quarter (27.6%) of groups followed by cycling (12.2%). Nearly a tenth of instances (9.2%) were joggers and the remaining 1.4% of instances were of people undertaking other activities including wildlife photography, pushing a pushchair or riding on a scooter.

7.3.3 No images of horse riders were captured as part of either fieldwork period.

7.3.4 The following chart shows the proportion of different activities undertaken at the locations of Camera One and Camera Two.

Chart 30



7.3.5 Camera Two had a higher incidence than Camera One of dog walkers (53.2%), whereas those recorded by Camera One were slightly more likely to be walking without a dog. This may reflect Camera Two's less busy location with greater ability to let the dog off its lead (Camera One was positioned close to the Foss Way). Those at Camera One were also more likely to be cycling (13.8%) compared to Camera Two (8.0%), possibly reflecting the more uneven terrain at Camera Two making it only really suitable for those with mountain bikes. The track at Camera One could be considered more family friendly as it would be easier for a child to cycle or for an adult to push a buggy. Indeed, the instances of children being pushed in a pushchair all occurred at the Camera One location.

7.4 Variations by Circumstance

7.4.1 The camera observations included one weekend when firing was taking place, so it is possible to compare both weekdays and weekends with and without firing (interviewer counts did not include a weekend when firing took place).

7.4.2 The number of people captured by the cameras was very similar for weekdays (whether or not firing was taking place) and for the weekend with firing. However, on the non-firing weekend much higher numbers were recorded (an average of 59.9 per day compared with the overall average of 45.9). It is worth noting that firing can be heard right across the Common including at the Camera One location.

7.4.3 Weekdays when there was no firing produced 7% more visitors than weekdays with firing, though the pattern varied between term time and school holidays. The non-firing weekend in the school holidays produced 28% more visitors than the firing weekend.

7.4.4 Weekends with no firing produced 37% more visitors than weekdays with no firing.

Table 25

Weekday/weekend	Firing/Non-Firing	Term Time	School Holidays	Total
Weekday	Firing	39.0	42.9	41.0
	Non-Firing	47.0	40.5	43.8
Weekend	Firing	-	44.5	44.5
	Non-Firing	62.75	57.0	59.9

7.5 Variations by Time of Day

7.5.1 The table below shows the average number of people captured by the two cameras by time of day. It can be seen that, as would be expected, very few people passed the cameras between 9pm and 7am. The busiest times were between 9am and 6pm when between 3-4 people per hour were seen in both term time and school holidays.

Table 26

Time Band	Average number of people per hour						
	School Holidays	Term Time	Firing	Non-Firing	Weekday	Weekend	Total
Midnight – 7am	0.20	0.15	0.15	0.23	0.17	0.20	0.18
7-9am	2.32	2.32	1.92	3.05	2.18	2.69	2.32
9am – 12noon	4.45	4.38	4.44	4.37	4.00	5.46	4.42
12noon – 3pm	3.19	3.19	2.65	4.17	2.40	5.17	3.19
3-6pm	3.31	3.86	3.07	4.5	3.20	4.54	3.64
6-9pm	1.93	2.26	2.28	1.77	2.40	1.33	2.09
9pm-Midnight	0.26	0.36	0.30	0.33	0.35	0.21	0.31

8. Counts across all Entry Points to the Common

- 8.1 Further observations took place on two term-time weekdays, Thursday 19th September and Friday 20th September. On these days, all entries to the Common were recorded, either by camera or by a fieldworker, between 7am and 6.30pm. In the case of vehicles, an “entry” to the Common was defined as one in which the vehicle passed beyond the car parks.
- 8.2 A total of 476 observations were made over the two days, 221 observations were recorded on the Thursday and 255 on the Friday. In total the observations captured 639 people, 377 dogs, 26 bicycles and 55 vehicles. No horses were observed. All but 12 of the 639 people observed were civilians; two of the 12 military personnel were known to be using the Common for recreational purposes as they were exercising their dog and left the Common a short time later. Most of the vehicles (35 of the 55) were recorded by Camera points 1 and 1b in the area of the Foss Walk, the remainder by Camera 5 on Towthorpe Road. At Towthorpe Road, all the vehicles were military. No attempt was made to record the number of military vehicles passing the interviewers at Car Park One on Scott Moncrieff Road and travelling to the main DIO buildings.
- 8.3 On one of these days firing was taking place; the other was a non-firing day. The numbers of people, dogs and bicycles were all appreciably higher on the non-firing day (by 55%, 34% and 171% respectively), but the number of vehicles was 43% lower. Almost all the decline in vehicles was recorded at Camera point 5, where numbers declined by 86%. This entry point is used by military personnel only and numbers would be expected to be lower on a firing day.
- 8.4 These counts are only a snapshot based on two days of the year only. However, they are considered to provide a reasonable indication of the number of visitors per term-time weekday, and of the difference between firing and non-firing days, given that the weather was broadly similar on both days (cloudy and overcast but no rain), all entry points to the Common were covered and visitors were counted once only. The counts equate to 21.8 people and 14.0 dogs per hour on the firing day, 33.8 people and 18.8 dogs per hour on the non-firing day.
- 8.5 The majority of visitors to the Common entered via one of the car parks (1 and 2 in particular). However, camera position 7 (on Howard Road to the west of Scott Moncrieff Road) was also an important entry point, with 19% of all visitors on these two days entering at this point. No people entered the Common via camera position 4 over the whole of the two days and only 1, 4,

5, 7, 7 and 10 people entered via camera points 4, 5, 2, 2b, 3 and 6 respectively. The two cameras 1 and 1b capturing people entering the Common via the Foss Walk recorded a total of 51 people entering at these points.

8.6 Car Park One was used by considerably more people than Car Park Two on the non-firing day, whereas the two car parks were used by similar numbers of people on the firing day. The reasons for this are not known.

Table 27

	Number of people – 19th	Number of people – 20 th	Number of people - Combined
Car Park 1	81 (32%)	158 (41%)	239 (37%)
Car Park 2	84 (33%)	107 (28%)	191 (30%)
Car Park 3	0 (0%)	7 (2%)	7 (1%)
Lay-by	1 (0.4%)	0 (0%)	1 (0.2%)
Camera 1	7 (3%)	10 (3%)	17 (3%)
Camera 1b	15 (6%)	19 (5%)	34 (5%)
Camera 2	2 (1%)	3 (1%)	5 (1%)
Camera 2b	3 (1%)	4 (1%)	7 (1%)
Camera 4	0 (0%)	0 (0%)	0 (0%)
Camera 5	2 (1%)	2 (1%)	4 (1%)
Camera 6	7 (3%)	3 (1%)	10 (2%)
Camera 7	49 (20%)	75 (19%)	124 (19%)
Total	251	388	639

- 8.7 The camera positions which were most similar to those used in the earlier part of the project (positions 1, 1b, 2 and 2b) captured a total of 27 people on the firing day and 36 on the non-firing day. This compares with an average of 39 people per term-time firing weekday and 47 per term-time non-firing weekday from the camera observations in June and July in the earlier part of the project. However, many of those captured in June and July may well have passed the cameras on two occasions, or may not have entered the Common at that point, so it is probably unsurprising that lower figures were recorded by the later research.
- 8.8 The busiest time of day in terms of visitor numbers based on the latest work was the early morning between 7am and 9am, when an average of 39 people per hour were recorded at one or other of the observation points. The quietest period was 12 noon – 3pm when an average of 18 people per hour was recorded. The pattern varied between the two days, however. On the firing day, there was relatively little difference in the number of people entering the Common per hour, except that 12 noon was the quietest period. On the non-firing day, differences were much more marked, with the period between 7am and 9am and, to a lesser extent 3pm-6.30pm, much busier than any other times of day.

9. Visitor Number Extrapolations

- 9.1 An estimate of the total number of visitors to the Common in a 12-month period has been made based on an extrapolation of the counts made across all entry points to the Common and reference back to the findings from the main study in the summer.
- 9.2 It is noted that the estimates are based on just a few days' interviewing / observation and at certain times of year only (summer for the main results, autumn for the additional counts at all entry points to the Common). Therefore assumptions have needed to be made about the typicality of the days when the work took place and the accuracy of the comments made by the respondents giving an interview.
- 9.3 The procedure used to make the estimate can be summarised as follows:
- The data reported above were used to derive an estimate of the total number of visitors to the Common for each of the following circumstances:
 - A firing weekday in term time in each of the four seasons;
 - A firing weekend in term time in each of the four seasons;
 - A firing weekday in school holidays in each of the four seasons;
 - A firing weekend in school holidays in each of the four seasons;
 - A non-firing weekday in term time in each of the four seasons;
 - A non-firing weekend in term time in each of the four seasons;
 - A non-firing weekday in school holidays in each of the four seasons;
 - A non-firing weekend in school holidays in each of the four seasons.
- 9.4 Each of these estimates was then multiplied by the total number of days in 2019 for which that condition applied. The sum of these figures represented the estimated total number of visitors in 2019.
- The starting point was the estimate of the total number of visitors to the Common on one firing weekday in term time in Autumn and one non-firing weekday in term time in Autumn between the hours of 7am and 6.30 pm

(i.e. essentially all daylight hours). These estimates are described in Section 8 above and, for the reasons stated, are believed to represent a reasonable estimate of the total number of visitors to the Common on such days.

- The next stage was to add on an estimate for the number of visitors outside the hours covered by the counts made across all entry points to the Common. This estimate was developed using the number of observations from the cameras in the summer period between the hours of 9pm and 7am, as reported in Section 7.5 above. Although these cameras were in different locations, and covered all passers-by rather than simply those entering the Common, it was considered reasonable to assume that the relative importance of the hours of darkness compared with hours of daylight would be the same for the Autumn calculations.

9.5 In the summer period, there had been a significant number of visitors between the hours of 6.30pm and 9pm, a time of day not covered by the counts made across all entry points to the Common when it was essentially dark. It was in effect assumed that summer visitors between 6.30pm and 9pm would move their visit forward to the hours of daylight in Autumn, so that the 'darkness factors' from the summer work could be applied to the period 6.30pm -7am in the Autumn observations.

9.6 Separate 'darkness factors' (i.e. the estimated percentage of visitors between the hours of 6.30pm and 7am) were applied for all combinations of term time / holidays, firing / non-firing and weekdays / weekends. The factors added ranged only from 2.9% (term time firing weekend) to 8.2% (school holidays, non-firing weekday), so have relatively little impact on the final estimates derived.

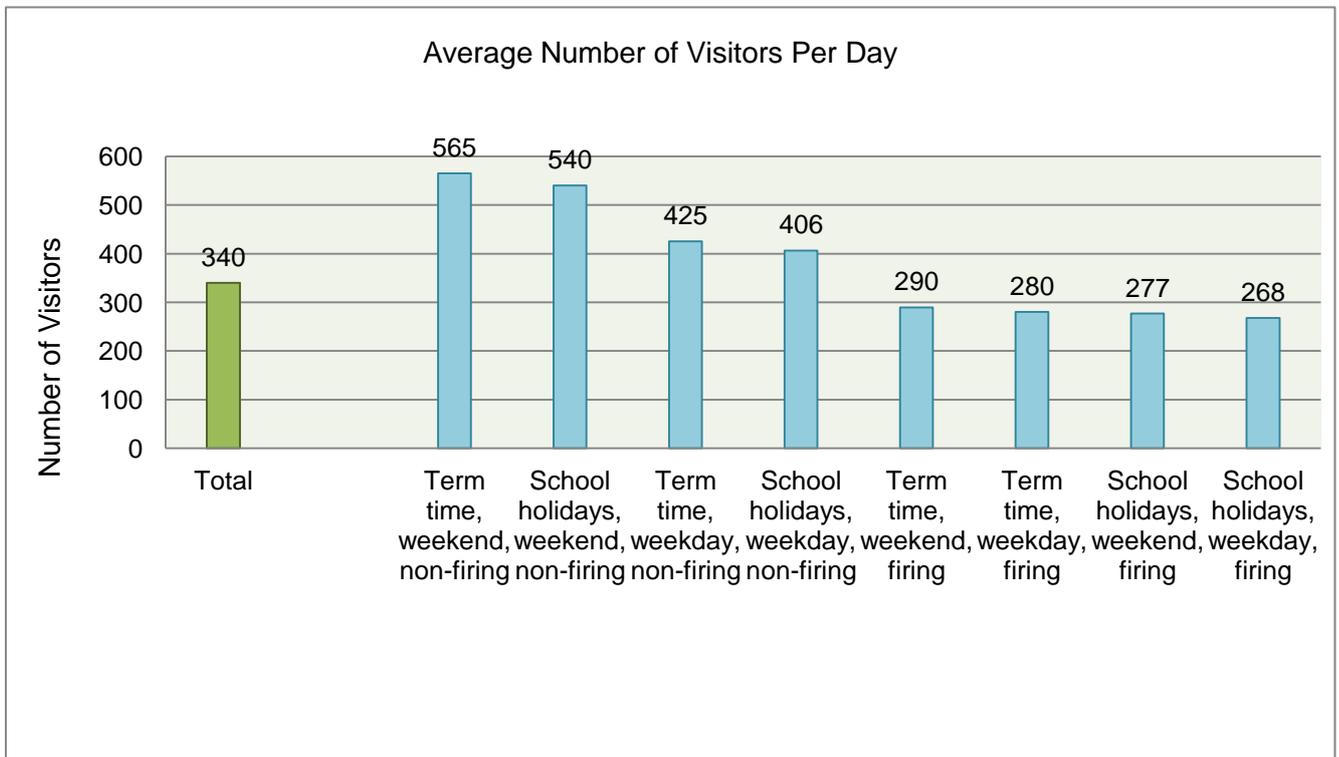
- The figures for Autumn firing and non-firing school holidays were then estimated from the term time calculations, again using the information from the camera readings in the summer period reported in Section 7.1 above (the camera readings are believed to offer the most comprehensive evidence on this point because they covered a total of 28 days; in any case the conclusion is broadly consistent with that from the direct counts). Visitors in school holidays were estimated to be 5% lower per day than in term time.
- Finally, all the estimates for Autumn were adjusted to provide estimates for other seasons. The best available information to make these estimates was Q6 from the visitor survey which asked respondents whether they tended to visit the area more at a particular time of year (Section 4.5 above). The majority of respondents (68%) stated that their visits were

spread equally across the year, suggesting that the number of visitors does not vary greatly by time of year. However, those claiming to visit more at certain times of year were most likely to mention summer, and least likely to mention winter, as the season when they made more visits. Even though this is not the same thing as stating the frequency with which respondents visit the Common at different times of year, no alternative information was available and best estimates for all seasons were made using these indicators. The resulting estimates were that summer visitors were higher than winter visitors by 18% on firing days and by 14% on non-firing days.

9.7 When the number of days in 2019 in each of the above categories was multiplied by the estimates of numbers of visitors using the procedure described above, the total number of visitors to Strensall Common in 2019 is estimated at an average of 340 people per day or around 124,000 for the year as a whole. Note that this figure will include many separate visits made on different days by the same person.

9.8 Differences in numbers by season of the year are estimated to be quite small, as shown in the chart below. Summer is estimated to attract most visitors, with 29% of the annual total, winter the least with 21%.

Chart 31

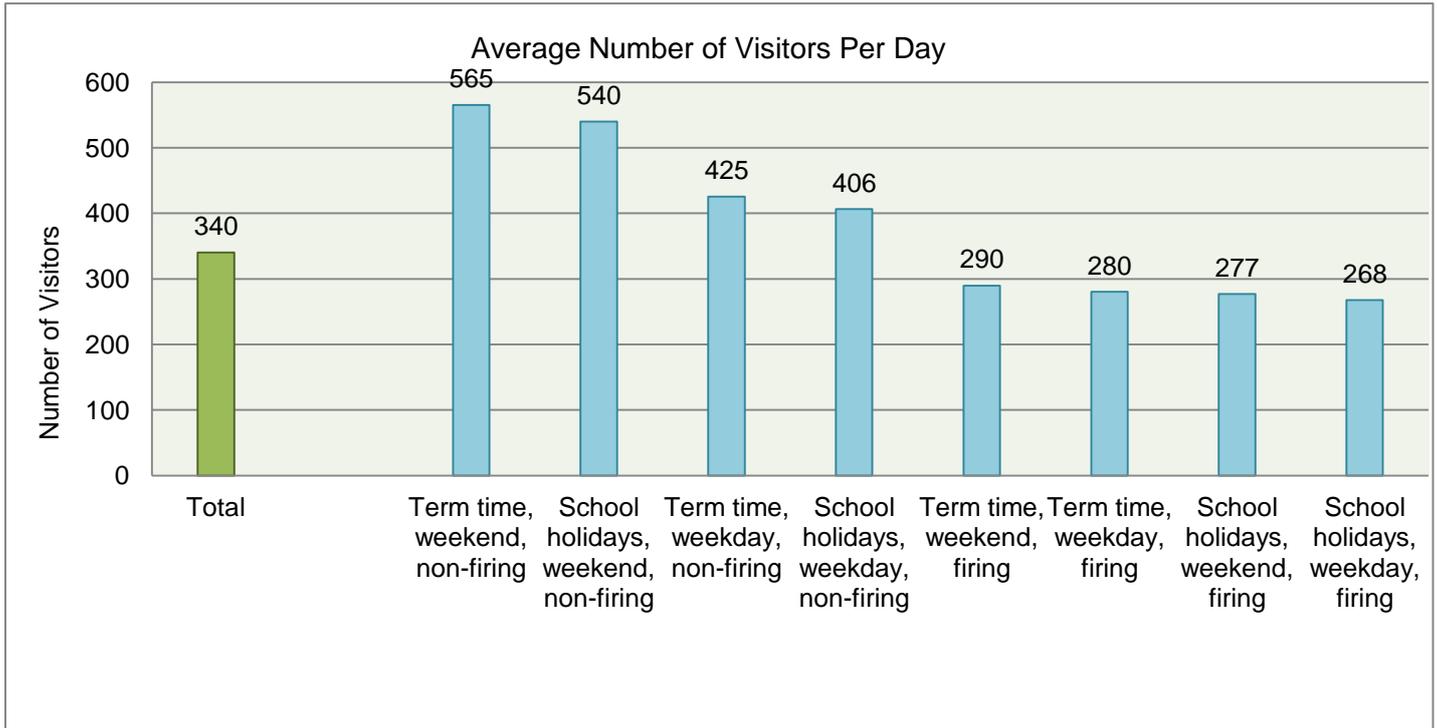


9.9 Estimated differences in numbers of visitors by term time versus school holiday, weekend versus weekday and non-firing day versus firing day can be summarised as follows:

- The number of visitors is estimated to be 5% higher on a typical weekday or weekend in term time compared with a typical weekday or weekend in school holidays.
- The number of visitors is estimated to be 33% higher on a non-firing weekend compared with a non-firing weekday, but only 4% higher on a firing weekend compared with a non-firing weekend. The reason for this difference may be that visitors are generally aware of the weekdays on which firing takes place, but may have less prior knowledge of when firing will take place on a weekend.
- The number of visitors is estimated to be 95% higher on a non-firing weekday compared with a firing weekday, but 'only' 52% higher on a non-firing weekend compared with a firing weekend. This difference is also likely to be explained by the level of prior knowledge of firing days by visitors.

9.10 These estimates lead to a conclusion that the busiest days (weekends in term time when no firing is taking place) attract an average of 565 visitors, more than twice the average number (268) attracted on the quietest days (weekday school holidays when firing is taking place). This is illustrated in the chart below.

Chart 32



9.11 When the number of weekends, firing days and term time days are taken into consideration, the above estimates suggest that:

- 59% of all visits in 2019 will be made on days when firing is taking place.
- Two thirds (66%) of visits will be made on weekdays.
- Two thirds (69%) of visits will be made in term time.

10. Summary and Conclusions

- 10.1 Whilst there is considerable variation depending on which of the various sources of information from this research is used, the most reasonable estimate that can be made is that a total of 124,000 people, or 340 people per day, will visit the Common in 2019 for recreational purposes. In addition, 200 dogs, 14 bicycles and 30 vehicles will enter the Common and pass beyond the car parks every day on average over the year.
- 10.2 Most of the vehicles (19 of the 30) encountered use the Foss Walk area of the Common; the remainder are military vehicles entering via Towthorpe Road. No attempt was made to record the number of military vehicles travelling to the main DIO buildings and passing Car Park One on Scott Moncrieff Road and.
- 10.3 The majority of visitors enter via either the Scott Moncrieff road Car Park (37%) or the Galtres Car Park Two (30%). However, Camera Point Seven (located on Howard Road to the west of Scott Moncrieff road) is also an important entry point, used by 19% of visitors.
- 10.4 The number of visitors does not vary greatly by time of year. However, summer attracts the greatest number of visitors (estimated at 29% of the annual total) and winter the fewest (21%).
- 10.5 The number of visitors is estimated to be 5% higher on a typical weekday or weekend in term time compared with a typical weekday or weekend in school holidays.
- 10.6 The number of visitors is estimated to be 33% higher on a non-firing weekend compared with a non-firing weekday, but only 4% higher on a firing weekend compared with a non-firing weekend. The reason for this difference may be that visitors are generally aware of the weekdays on which firing takes place, but have less prior knowledge of when firing will take place on a weekend.
- 10.7 The number of visitors is estimated to be 95% higher on a non-firing weekday compared with a firing weekday, but 'only' 52% higher on a non-firing weekend compared with a firing weekend. This difference is also likely to be explained by the level of prior knowledge of firing days by visitors.
- 10.8 These estimates of the differences in number of visitors by circumstances of the day on which the visit was made lead to a conclusion that the busiest days (weekends in term time when no firing is taking place) attract an average of 565 visitors, more than twice the average number (268) attracted on the quietest days (weekday school holidays when firing is taking place).

- 10.9 No clear pattern emerged as to the busiest time of day for visits to the Common.
- 10.10 An average of 10.7 vehicles at any one time were parked in one of the car parks or laybys allowing access to the Strensall Common site. Almost all (97%) of these vehicles were cars. Each vehicle brought an estimated 1.4 people to the Common.
- 10.11 A total of 2,464 images of people, dogs or vehicles were captured by the two cameras over the 28 days in July and August in which they were in operation. 52% of these images were of people, 28% of dogs and 20% of vehicles. No horse-riders were recorded. The images of people equated to an average of 45.9 per day. Comparing with the estimate that 340 people enter the Common on a typical day at one or other of the entry points, it is clear that the Northern part of the Common, where the two cameras were located, is used relatively little either to enter the Common or to visit once there.
- 10.12 74% of the people captured by the cameras as walking their dog had the dog off the lead. This is a much higher percentage than observed at the car park locations, when greater caution was clearly required.
- 10.13 The vast majority (92%) of respondents had travelled from their home to the site on the day of interview. Half (49%) of respondents lived in Strensall itself, a further 31% in nearby areas north of the river Ouse.
- 10.14 56% of group members were male, 44% female.
- 10.15 60% of respondents were over the age of 55; the average age was 57.
- 10.16 3% of respondents were military staff, all of whom were taking part in recreational activities. Their average age was 36.
- 10.17 The main activities on the Common were dog walking (72% of visitors) followed by general recreational walking (14%).
- 10.18 Nearly a third of respondents (32%) visited the Common daily and almost three quarters (72%) visited once a week. Dog walkers were the most frequent visitors.
- 10.19 The average time spent, or expected to be spent, on the Common was 1.0 hours. However, 71% spent less than 1 hour. Dog walkers on average spent 0.8 hours on site and travelled a distance of 3.3km. Walkers without a dog spent 1.2 hours on average on site and travelled a distance of 3.6km.
- 10.20 Distance walked was greater in school holidays (average of 3.5 kilometres) than term time (3.2 kilometres).
- 10.21 Just over two thirds (68%) reported that they visited the Common with the same frequency all year round.
- 10.22 69% of respondents interviewed had reached the site by car.

- 10.23 Respondents kept to the footpaths for much of the time, but rarely completed the whole of one of the designated routes. Parts of the yellow route, the red route close to Car Parks One and Two and the brown route close to Car Park Three were most likely to be used on non-firing days. On firing days, respondents' routes were most likely to include parts of the yellow, red and black routes closest to Car Park One, the yellow and red routes closest to Car Park Two and the brown route closest to Car Park Three.
- 10.24 Weather and previous knowledge were the greatest influencing factors on choice of route on the day.
- 10.25 The Strensall Common site was chosen in preference to other local sites because it was close to home and seen as a route liked by the respondent's dog.
- 10.26 Over half (51%) of respondents stated that 75% or more of their weekly visits for their given activity took place on the Common.
- 10.27 Over half (56%) had no suggestions for improvements to the site. The most frequently suggested changes were to add more bins (9%), for greater enforcement of clearing up dog mess (4%), better signposting (4%) and more control of adders (4%).

Appendix One: Questionnaire

Strensall Common Visitor Survey 2019

Hello, my name is _____ and I work for PCP Market Research Ltd, an independent market research company. I am conducting a visitor survey on behalf of the Defence Infrastructure Organisation. We would be grateful if you could spare a few minutes to answer some questions about your visit to Strensall Common today. The information you provide will be completely confidential under the market research society code of conduct and will help us to improve the offering for future visitors. Could you spare 5-10 minutes now?

INFORMATION IF NECESSARY: For further information about Market Research and to confirm that we are a bona fide market research company you can contact the Market Research Society on their Freephone number 0500 39 69 99.

**You can also view our listing on the Market Research Society Website:
<https://www.mrs.org.uk/researchbuyersguide-results/q/pickersgill>**

08006523740 or info@pcpmarketresearch.com

**Website to view PCP's privacy policy:
www.pcpmarketresearch.com/privacy-policy**

Q1 **Firstly, can I ask where you have travelled from today?** *READ OUT Single response only*

- I have travelled directly from home today
- I am staying away from home with friends or family
- I am staying away from home e.g. a second home, mobile home or on holiday
- None of the above - How would you describe your visit today?

Please record further details:

Q1b **Are you a member of the public or military staff?**

- Member of the public
- Military staff
- Prefer not to say

Q1c **Are you normally resident at QEB, or Strensall/nearby, or are you visiting for a set period for training?**

- Resident at QEB
- Resident at Strensall/nearby
- Visiting QEB for training

Q1d **Is your visit on to Strensall Common today to undertake a training exercise or off-duty recreation?**

- Training exercise
- Off-duty recreation
- Other

Other please specify

Q2 **What is the main activity you are undertaking today?** Please select the single closest answer ***DO NOT PROMPT***

- Dog walking
- Walking
- Jogging/ power walking / running
- Outing with family
- Cycling / Mountain biking
- Bird / Wildlife watching
- Enjoying scenery / fresh air
- Photography
- Meeting up with friends
- Picnic
- Horse riding
- Other (please record details)

Record details of other:

Q3 **Over the past 12 months, roughly how often have you visited this site?** Please select the single closest answer **PROMPT ONLY IF RESPONDENTS STRUGGLES**

- Daily
- Most days (180+ visits)
- 1 to 3 times a week (40-80 visits)
- 2 to 3 times per month (15-40 visits)
- Once a month (6-15 visits)
- Less than once a month (2-5 visits)
- Don't know
- First visit
- Other (please record details)

Record details of other:

Q4 **How long have you spent/will you spend at this site today?** *Single response only*

- Less than 30 minutes
- Between 30 minutes and 1 hour
- 1-2 hours
- 2-3 hours
- 3-4 hours
- 4 hours +

Q5 **Do you tend to visit this area at a certain time of day?** *Select closest answers*

- Early morning (before 7am)
- Late morning (between 7am and 10am)
- Midday (between 10am and 2pm)
- Early afternoon (between 2pm and 4pm)
- Evening (after 6pm)
- Varies
- Don't know
- First visit

Q6. Do you tend to visit this area more at a particular time of year for {Q2}?

Q6. Do you tend to visit this area more at a particular time of year for {Q2a}?

- Spring (Mar- May)
- Summer (June - Aug)
- Autumn (Sept - Nov)
- Winter (Dec - Feb)
- Equally all year
- Don't know
- First visit

Q7 **How long have you been visiting this site?** ***DO NOT PROMPT** Single response only*

- Less than or approximately 6 months
- Less than or approximately 1 year
- Less than or approximately 3 years
- Less than or approximately 5 years
- Less than or approximately 10 years
- More than 10 years
- Don't know
- First visit

Q8 **How did you get here today?** *If necessary prompt with - what form of transport did you use? Single response only*

- Car/Van
- On foot
- Bus
- Bicycle
- Other

Please record other:

Now I'd like to ask you about your route today. Looking at the area shown on this map, can you show me where you started your visit today, the finish point and your route please?

Probe to ensure route is accurately documented. Use P to indicate where the visitor parked, E to indicate the start point and X to indicate the exit. Mark the route with a line; a solid route for the actual route and a dotted line for the expected or remaining route.

Q9 **Is / was your route today the normal length when you visit here for [activity from Q2]?**
DO NOT PROMPT *Single response only*

- Yes, normal
- Much longer than normal
- Much shorter than normal
- Not sure/no typical visit
- First visit

Q10 **Were you following a marked route or signposted route?**

- Yes
- No
- Not sure/Don't know

Q11 **What was the name or colour of the route that you were following?**

Q12 **What, if anything, influenced your choice of route here today?** ***DO NOT PROMPT*** Select closest answers

- Weather
- Daylight
- Time
- Other users (avoiding crowds etc)
- Group members (e.g. children, less able)
- To go down a muddy track/path
- To avoid muddy tracks / paths
- Followed a marked trail
- Followed a specific route as I only wanted to go a specific distance/be back in a certain amount of time
- Previous knowledge of area / experience
- Activity undertaken (e.g. presence of a dog)
- Interpretation/leaflets/promotion
- Viewpoint / Feature
- Specific habitat e.g. open land or woodland
- Avoiding livestock
- Other (please record)

Please record other:

Q13i Why did you choose to visit this specific location today, rather than another local site? **DO NOT PROMPT**

- Close to home
- No need to use a car
- Quick and easy travel route
- Good / easy parking
- Particular features
- Refreshments / cafe / pub
- Choice of routes
- Feels safe here
- Quiet, with no traffic noise
- Not many people
- Scenery / variety of views
- Rural feel / wild landscape
- Particular wildlife interest (including trees)
- Habit / Familiarity
- Good for dog / dog enjoys it
- Ability to let the dog off the lead
- Closest place to take a dog
- Closest place to let dog safely off the lead
- Appropriate place for activity
- Suitability of area in given weather conditions
- Presence of water
- Presence of trees or sense of a woodland
- Other

Please record other details:

Q13ii **And which single reason would you say had the most influence over your choice of site to visit today? *DO NOT PROMPT* Single response only**

- Close to home
- No need to use a car
- Quick and easy travel route
- Good / easy parking
- Particular features
- Refreshments / cafe / pub
- Choice of routes
- Feels safe here
- Quiet, with no traffic noise
- Not many people
- Scenery / variety of views
- Rural feel / wild landscape
- Particular wildlife interest (including trees)
- Habit / Familiarity
- Good for dog / dog enjoys it
- Ability to let the dog off the lead
- Closest place to take a dog
- Closest place to let dog safely off the lead
- Appropriate place for activity
- Suitability of area in given weather conditions
- Presence of water
- Presence of trees or sense of a woodland
- Other

Please record other details:

Q14. I would now like to ask you about other local sites that you visit for {Q2}. What proportion of your weekly visits for {Q2} take place at here compared to other sites? Can you give a rough percentage? *DO NOT PROMPT*

Q14. I would now like to ask you about other local sites that you visit for {Q2a}. What proportion of your weekly visits for {Q2a} take place at here compared to other sites? Can you give a rough percentage? *DO NOT PROMPT*

- All take place here
- 75% or more
- 50 - 74%
- 25 - 49%
- Less than 25%
- Not sure/don't know/first visit

Q15 **Which one location would you have visited today if you could not visit here? *DO NOT PROMPT***

- Site named (record below)
- Nowhere/wouldn't have visited anywhere
- Not sure/Don't know

Record site name:

Q16 **Are there any changes you would like to see here with regards to how this area is managed for recreation and people? *DO NOT PROMPT***

Q17 **Do you have any further comments or general feedback about your visit and access to this area? *DO NOT PROMPT***

Q18 **Please can I take your full home postcode? *Please note we are using this information to map how far people have travelled to come to the site today and it will not be used for any other purposes***

- Happy to give postcode - record below
- Refused

Record postcode:

Q19 **What is the name of the town or the village where you live?**

Q20 **Which town or village are you staying in?**

Q21 **Finally, into which of the following age groups do you fall?**

- 18 to 24
- 25 to 34
- 35 to 44
- 45 to 54
- 55 to 64
- 65 to 74
- 75 or over
- Prefer not to say

Thank you very much for your time today

Appendix Two: Responses to Q16 – Are there any changes you would like to see here with regards to how this area is managed for recreation and people?

Only responses where a comment was given are listed below. These were typed as part of the interview and often it was necessary to paraphrase, as such the comments do not necessarily reflect the precise words stated by the respondent.

Q16: Are there any changes you would like to see here with regards to how this area is managed for recreation and for people?
A cafe. More poo bins needed.
A few benches.
A few more benches and a few more bins.
Adders. Conservationists bring adder and dogs get bitten. Need contact number if sheep in distress or road incidence.
Another litter bin and more for both litter and dog waste.
Army close in 2021. What will happen with housing? Ruining whole site for insect interest.
Benches to sit down.
Better signposted. More for wildlife, bird boxes. Information about safety where there are adder. Signposts warning about litter. A buffalo trail for kids with picnic tables and activity area.
Better signposting.
Better signposts.
Bins for dog mess too many filled bags just abandoned.
Bit overgrown.
Bring back sheep to cut grass down. Remove fencing cut less trees down.
Car park surface.
Closed off but lots more pine trees growing now is it because of sheep not grazing. Heather needs to be maintained and not overturning pine trees.
Decking in boggy areas near green line on map.
Dog bins people picking it up.
Dog muck needs to be picked up and leaving bags of poo stopped. Litter in general is an issue.
Don't like changes don't want gates. Don't want picnic tables they just encourage the young ones to come down drinking. Don't want them coming causing trouble.
Don't like the boardwalks, paths are not clear near railway.
Don't like them cutting trees down.

Q16: Are there any changes you would like to see here with regards to how this area is managed for recreation and for people?
Don't use the meadows for grazing sheep and let it grow naturally. The sheep flatten the area which in turn loses the natural flora and fauna.
Encourage people to pick up litter.
Encourage people to stick to the marked trail. Encourage people to keep their dogs on leads or close control.
Enforce dog rules.
Few more dog bins, army leave lots rubbish and strong on trees.
Footpath that's available all the time where I can take pram.
Get rid of the snakes.
Global plan is more access for cyclists especially connected to the city. Cycle path along river. Big asset to area well away from traffic good for families. Gateway for cyclists to wider Yorkshire.
Grass is unkempt in certain areas.
Grasscutting.
Help for wildlife .e.g. The ponds dry out when froglets are growing then die. The MOD should dig a ditch into the pond to enable more water supply and therefore chance for the wildlife to thrive.
Holes filled up in car park.
I think a few benches and tables could have a picnic.
I used to cut through wood the style is gone and they have barbed wire it unable to enjoy that walk.
I would love to see something about the sheep. Maybe sign posted. Restricted areas.
I'd like to see the sheep back here.
I'll like to see more enforcement of the rules.
It should be run by a body like a National Park.
It would be good to access shooting schedule on line.
Just nice as it is.
Just with the kids. Younger people pull up and take drugs and alcohol. Needs to be policed. People not picking up dog poo.
Keep campers off. Small vans empty excrement.
Keep it natural.
Keep it the way it is.
Leave it as it is.
Leave it wild.
Left alone totally. No increase of housing which would be a detriment to the environment.
Less litter, get rid of broken glass.
Less litter. Stop kids doing drugs at night.
Less sheep on site.
Less sheep.

Q16: Are there any changes you would like to see here with regards to how this area is managed for recreation and for people?
Less snakes, my friend's dog died 3 weeks after being bitten.
Like the potholes filled.
Litter and dog poo can be a problem.
Maintain pathways for horse riding.
Maintenance of walkways
May be a bit more information.
Maybe a bit more maintained.
Maybe benches or picnic areas.
Maybe some of paths need cutting back.
More bins for dog waste.
More bins for dogs on the golf course route.
More bins.
More communication about military practice, use social media.
More control over adder population.
More dog bins and toilets.
More maintenance on pathways.
More poo bins are needed.
More poo bins are needed.
More poo bins. Anti venom box for adders with number to get access code.
More signposts. Extra publicity
Motor bikers off the Common train dog users to clean up.
Nice to have a seat more often.
Nice to have access to fenced off area.
No I hope it is left to be natural.
No just love it.
No leave as it is.
No maybe no sheep wandering about.
No snakes please
No some more boardwalks in winter.
Not to put the snakes on.
Online information about shooting times would help visitors plan their trip.
Other dog owners not cleaning up the poo. They also leave poo bags laid around. They need to be fined.
Overgrown in places.
People clean up dog mess.
People to stop putting 400 adders down when nature has a good balance.
Perfect as is.
Perhaps more access.
Places getting over grown.

Q16: Are there any changes you would like to see here with regards to how this area is managed for recreation and for people?
Pot holes repaired.
Probably a dog warden, to get people to clean up after the dogs.
Restoring the open air swimming pool.
Restrictions because of sheep.
Road exit next to cattlegrid needs traffic slowing implemented.
Sheep brought back to keep grass down. Tel no for emergencies. Not to put snakes near car parks.
Sheep enclosures can it can be tricky more different paths. Hard robotics sheep at times.
Signposting could be better, more orientation.
Slightly better marked footpaths if going across land.
Some better signage for different routes maybe some maps.
Stop the boy racers who come on an evening increasing number of them and increasing frequency.
Take down fences.
The amount of litter and fly tipping is a problem and fires.
The board walks nice and good how they maintain it.
The bull and sheep removed.
The grass cut. Sheep moving round to graze. Less adders.
The rare plants better protected. More location. More conservation of dragonflies and flowers.
The route markings could be better.
The snakes are a menace.
The walker infrastructure they have installed has spoiled things.
There's not enough information for nature lovers of birds etc
Timetables of shooting days more widely available
Too many beetles.
Too many people using site.
Untidy at times because of the litter. Lots of holes. Motor overseas visitors homes stay in this site overnight and there is a web site tells them they can.
Useful if firing times were online.
We like it as it is.
Wish they would stop chopping trees down, feel sorry for them.
Yes I can't find the man in the box with the maps. Would like to get a map to carry and not available in the internet.
Yes I pick up plastic. Plastic should be banned, litter in general an issue. More bins needed.

Appendix Three: Responses to Q17 – Do you have any further comments or general feedback about your visit and access to this area?

Only responses where a comment was given are listed below. These were typed as part of the interview and often it was necessary to paraphrase, as such the comments do not necessarily reflect the precise words stated by the respondent.

Q17: Do you have any further comments or general feedback about your visit and access to this area?
A real value asset to us.
Annual burn right time of year i.e. November.
Cattle grid with rusty gate is dangerous.
Don't get rid of it.
Don't let them change anything.
Fence near cattlegrid at Flaxton end restricts access for horses. Use resources to make horse friendly with clay ditches and use the available logs to make jumps, this would make more use of land especially for horses and safer too. Would encourage more users.
Few more dog bind cattlegrid up to Flaxton off the Common.
Fix pot holes.
Grass is getting long need the sheep on.
Grass shorter.
Great area.
Helpful if the flag was put up near car park so know which way you can go.
I enjoy coming and hope it continues.
I hope they put houses on it.
I think the site is now over used.
I wish. People would pick up dog bags and put them in bins.
It's lovely and clean.
It's asking a lot of the army people to clean up after their visitors.
It's getting too busy here now.
It's lovely we enjoyed it a lot appreciate being to go into military area.
It's really accessible, really friendly.
Just like it. Don't want to change anything. Really nice.
Just love the nature here.
Just nice peaceful. Clean area and safe. Other people respect it.
Just quiet. Like it that way I when going other places you get run over by bikes.
Keep it unique, wooden boards is bridge to get over wet ground is a good idea.
Keep the campers off. Defacing this area.
Kids leaving litter in bushes, cans bottles in woods.
Less adders.
Litter too much left about at ranges especially.
Lucky to be able to come here even with the army they are very obliging.

Q17: Do you have any further comments or general feedback about your visit and access to this area?
Maybe a loo.
Most enjoyable. It's sociable meet up with friends.
Needs people cleaning up the dog mess.
Nice for the birds, it is quiet.
Nice pleasant walk, good under foot.
No great place.
No Greenpeace, more information.
No indication from road to site, better dog walks.
No it's great.
No just a beautiful place.
No lovely area.
No we're lucky to have it.
None not aware of closed off Thurs.
No stay protected forever.
You can walk here but dangerous so would like a footpath.
Only enough food for what is here it's causing an imbalance.
Paths are getting a bit overgrown, need to be cleared.
Publishing shooting scheduled online would help people plan visits.
Really grateful military support site and lucky its on my doorstep. Should also have traffic calming speed restrictions.
Really nice to have on doorstep. Could you put firing on times on website please?
See more people clean up dog mess.
Strensall all is overcrowded.
Stupid idea to introduce 400 adders to SSSI upsets balance of nature. Food supply going to be poor for other animals. This year 2 dogs died due to Adder bites causing grief to their owners. Their dogs their only companions. Brining their dogs here for their only social interaction.
The odd time you get camper vans. Just seem to leave rubbish sometimes.
The planned increase of housing not wanted.
There's a social side to this, people know each other.
There was to be a guide or MOD wander to encourage people do things rightly and distribute their leaflets on the walks. The leaflets are not been distributed to visitors.
Too many nettles. Like a seating area especially for disabled.
Too many people.
Valuable resource for country needs to be looked after if army move out.
Very enjoyable.
Well we come every year it is very nice.
Where the butts are possibly taken too much up as it now floods.
Wish people would take their waste home.
Wonderful area.



Appendix F

Case Studies Chapter 5 from report on Mitigation Measures for the City of York Local Plan (Avison Young, 2019)



5. Mitigation Measures Used Elsewhere

5.1 Numerous sites supporting nationally and internationally important habitats and species, and designated as SACs, SPAs and Ramsar sites, are accessible to the public. The pressures associated with recreational use of accessible sites are well known and, as a consequence, there are numerous examples of where management and mitigation strategies have been designed and implemented to address harmful effects already occurring, and minimise the risks of adverse effects arising in the future. For the purposes of this Report, we have looked at how recreational pressures are being dealt with at four major protected sites in other parts of the Country where significant housing growth is planned / being delivered and is expected to give rise to increased recreational pressure. These are: Dorset Heathlands SAC/SPA, Thames Basins Heath SPA (Hants/Surrey), Cannock Chase SAC (Staffs) and New Forest (includes several SAC and SPAs in Hants and Dorset). For each, we provide below a short description of its location and its special features before summarising how these are being safeguarded through the application of planning policy and guidance.

Dorset Heathlands SAC/SPA

Location, Extent and Special Features

5.2 The Dorset Heathlands SAC/SPA is located at the western edge of the Hampshire Basin in southern England, close to the Bournemouth and Poole urban areas. The Heathlands SAC covers an extensive complex of heathland sites amounting to some 5,700ha. The SPA was classified on 1 August 1998. Its special features include: Dartford Warbler, Nightjar, Woodlark, Hen Harrier, Merlin, Southern Damselfly and Great Crested Newt, wet heath, dry heath, peat, calcareous and alkaline fen meadow, Molinia grassland, old oak wood on sandy plains habitats. In addition, the SPA contains approximately 30 component SSSIs which are likely to have additional notified features.

Growth Context³

The five local planning authorities in the immediate vicinity of the Heathlands (Bournemouth, Christchurch, East Dorset, Poole and Purbeck) are planning between them to deliver some 35,000 new homes in the period to 2028⁴. The Authorities, their advisers and consultees (including Natural England) have noted that the Heathlands are under significant pressure from urban development, including pressures relating to: scrub encroachment, under-grazing, forestry and woodland management, drainage, water pollution, invasive species, habitat fragmentation, conflicting conservation objectives, air pollution (eutrophication), fire risk. Natural England has advised the authorities that development should be restricted within 400m of a designated heathland (primarily because of concerns about cat predation) and that no development should be allowed within 5KM of a designated heathland unless the effects of it are suitably mitigated. This, immediately, distinguishes the Heathlands from Strensall Common where no such advice has been given (notwithstanding Footprint's conclusions in respect of visitor isochrones), suggesting that the Common under less pressure from planned growth than the Heathlands are.

³ Source of pressures and measures information: The Dorset Heathlands Planning Framework 2015-2020, Supplementary Planning Document (January 2016), Visitor Access Patterns on Dorset Heathlands, ENRR 683 (Clarke et al, 2005), Heathland Mitigation Delivery Report April 2017-March 2018 (Urban Heaths Partnership, 2018), Analysis and Presentation of IPF

⁴ Dorset Heathland SPD identified housing numbers as follows: Bournemouth 14,600 with 6,815 remaining (2006-2026); Christchurch East Dorset 8,490 with 8,024 remaining (2013-2028); Poole 10,000 with 5,715 remaining (2006-2026); Purbeck 2,520 with 1,432 remaining (2006-2027).

Development Plan Policy

- 5.3 The adopted Local Plans for the authorities referred to above each contain policies that are designed to protect the SAC / SPA. By way of example, Policy PP32 of the Poole Local Plan⁵ (adopted November 2018) reads as follows:

Development will only be permitted where it would not lead to an adverse effect upon the integrity, either alone or in-combination, directly or indirectly, on nationally, European and internationally important sites. The Council will determine applications adversely affecting these sites in accordance with the recommendations of relevant Habitats Regulations Assessments and Supplementary Planning Documents....

To ensure that heathland sites are not harmed, residential development involving a net increase in dwellings or other uses such as tourist accommodation:

(a) will not be permitted within 400 metres of heathland as shown on the Policies Map, unless, as an exception, the type and occupier of residential development would not have an adverse effect upon the sites' integrity (e.g. nursing homes such as those limited to advanced dementia and physical nursing needs); and

(b) between 400 metres and 5 km of a heathland (everywhere else in Poole), will provide mitigation in accordance with the advice set out in the Dorset Heathlands Planning Framework SPD or appropriate to the adverse effects identified....

The Council will ensure that adequate mitigation is secured through the use of Strategic Access Management and Monitoring (SAMM) contributions and CIL/S106. Some developments will also be required to implement other mitigation measures, determined on a case by case basis. The Council will work with neighbouring Councils, statutory bodies and landowners to implement the mitigation measures and secure them in perpetuity. The mitigation strategy includes the provision of:

(a) Upton Country Park SANGs;

(b) SANGs within the concept of the Stour Valley Park, linked to housing sites UE1 North of Merley, UE2 North of Bearwood and U2 West of Bearwood; and

(c) other SANGs and Heathland Infrastructure Projects (HIPs) identified through updates of the Heathlands Planning Framework SPD.

The Council will review the Poole Local Plan by 2023. The review will need to assess whether the growth planned for 2023-2033 can be successfully mitigated. A study into the success of mitigation measures since 2007 will be a fundamental part of the evidence base. If there is no certainty that development will not have an adverse impact upon protected wildlife, the Council may not be able to grant planning permission for certain types of harmful development, such as housing.

Planning Guidance

- 5.4 The Joint Dorset Heathlands Planning Framework 2015-2020 established a charging regime in respect residential development proposed within 5km of the heathlands. In other words, it provided that the developers of such schemes would be expected to make financial contributions towards the delivery of mitigation measures, rather than carry out mitigation themselves. The financial obligation quoted in the SPD (in Appendix K) varies from £242-£355 per dwelling or £164-£241 per flat in Christchurch Borough Council (CBC)/ East Dorset District Council (EDDC) to Poole and Bournemouth respectively. These figures incorporate an upward adjustment to provide the certainty required by the Habitat Regulations and Natural England in respect of the efficacy of specified mitigation measures

⁵ Dorset Council is now the local authority for the Dorset unitary authority, created on 1 April 2019, and includes Purbeck and East Dorset.

- 5.5 Funds secured in accordance with the SPD (via Planning Agreements entered into under s106 of the Town and County Planning Act 1990) were then pooled by the authorities before being spent on Strategic Access Management and Monitoring (SAMM) and Heathland Infrastructure Projects (HIPs) which included the development of Suitable Alternative Natural Greenspaces (SANGs).
- 5.6 The Dorset Heathlands SPD has been agreed by all the local authorities in South East Dorset (i.e. Borough of Poole, Bournemouth Borough Council, Christchurch Borough Council, East Dorset District Council and Purbeck District Council). Dorset County Council is also signed up to the document in the light of its roles as delivery body.

Mitigation Measures and their Implementation

- 5.7 Mitigation measures funded on the back of new housing are implemented through the Urban Heaths Partnership (UHP). The UHP delivers mitigation on behalf of 14 partners, including NE, National Trust, Wildlife Trust, local councils, and the RSPB. Measures implemented include:
- education - including work with schools offering heathland related activities, increasing awareness of the importance of heathlands due to their wildlife and biodiversity, increased awareness of the consequences of fires and encouraging individual and community responsibility for heathland protection;
 - oversight of the Dorset Dogs Project - promoting awareness of heathland issues in respect of dogs, providing information, promoting non-sensitive sites and areas where dogs are allowed off leads and supporting land managers in providing positive access management for dog owners;
 - oversight of wardening services - overseeing those provided by local authority partners; and
 - monitoring - of recreational use of heathland sites and SANG, and of the occurrence of incidents (such as fires).
- 5.8 Additionally UHP also hosts a Grazing co-ordinator post which oversees grazing issues for the heathlands. In addition it oversees the Firewise Communities Project - a network of community groups building resilience against wildfire damage to residential properties (jointly funded, including by the Police and fire services).

Effectiveness of Mitigation Measures

- 5.9 An interim monitoring report by Footprint Ecology (Fearnley & Liley, 2011) reflected on the effectiveness of measures implemented following the introduction of the Interim Planning Framework 2006-2009. The Report states that:
- a) bird numbers have been increasing, but there have been fluctuations in recorded numbers;
 - b) studies in Dorset and across the Country show that mitigation measures should be tailored and site specific;
 - c) household survey information shows that different sites have different draws in relation to car and pedestrian borne visitors;

- d) capital projects to improve accessibility to areas of non-heathland adjacent and near to heathlands have been effective. However, it is still unclear as to whether this increased usage has diverted people from using the heaths;
- e) with no major SANGs delivered in South East Dorset it is not possible to establish how successful they will be;
- f) the management of heathland and SANGs offers the opportunity to divert harmful recreation activities from the heaths. However, monitoring has not yet been able to definitively prove that provision of SANG will necessarily intercept and deflect people who would otherwise visit the heaths. It is therefore important to continue to provide a range of mitigation measures besides SANGs;
- g) some studies of dog walkers have highlighted the benefits of and need for good communication and direct involvement with the dog walking community. Consistent signage and communication to all users is important; and
- h) mitigation measures for potentially damaging activities (e.g. dog walking, off road cycling, den building and unstructured play) need to be designed to improve site provision and make open spaces more naturalistic and multifunctional.

Thames Basins Heath SPA (Hants/Surrey)

Location, Extent and Special Features

- 5.10 The Thames Basins Heath SPA covers parts of Surrey, Hampshire and Berkshire. The designated area extends to some 8,300ha of heathland. The SPA has been designated in the light of the presence of three protected species of ground-nesting birds: the Dartford Warbler, Nightjar and Woodlark. The Heaths "complex" comprises 14 component SSSIs and includes the Thames Basin Heaths SPA, Thursley, Ash, Pirbright and Chobham SAC and Thursley, Hankley and Frensham Commons SPA.

Growth Context⁶

- 5.11 A significant number of new homes are planned to be delivered within the 11 local authority areas that fall within 5-7km of the SPA; over 11,000 dwellings proposed between 2006 and 2026 in Bracknell Forest alone. The various local planning authorities have noted recreational pressure arising from housing growth as a major concern. Particular risk and threats noted by the authorities include those relating to: under-grazing, forestry and woodland management, hydrological changes, inappropriate scrub control, invasive species, fire, air pollution (the impact of atmospheric nitrogen deposition), military use, and habitat fragmentation.

⁶ Source of pressures and measures information: A suite of relevant documents are available in respect of development and the Thames Basin Heaths SPA, for example Thames Basin Heaths SPA Supplementary Planning Document (Bracknell-Forest Council, April 2018), <https://www.surreyheath.gov.uk/residents/planning/planning-policy/thames-basin-heaths-special-protection-area-avoidance-measures>, and Thames Basin Heaths SPA Avoidance Strategy PSD, (Guildford Borough Council, 2017).

Development Plan Policy

- 5.12 An 'area wide' Policy for the protection for the SPA was first developed within the South East Plan (Policy NRM6 - Thames Basin Heaths Special Protection Area). This is still referred to in some of the older Local Plans in the area, including the Royal Borough of Windsor and Maidenhead Local Plan (June 2003). The Regional Plan provided that "*new residential development which is likely to have a significant impact on the ecological integrity of the TBH SPA will be required to demonstrate adequate measures are put in place to avoid or mitigate any potential adverse impacts.*" It then went on to establish three mitigation principles as follows:
- a) a 5km zone of influence where measures must be taken to ensure the integrity of the SPA is protected;
 - b) a 400 metre exclusion zone where mitigation measures are unlikely to be to be capable of protecting the integrity of the SPA, although the Plan went on to state that, in exceptional circumstances, it may be possible to demonstrate that mitigation measures are capable of protecting the SPA, and small locally determined zones will be set out in Local Plans, subject to agreement with NE; and
 - c) mitigation would be required to be delivered prior to occupation of proposed dwellings and in perpetuity⁷. Specific mitigation measures referred to in the Policy included a combination of access management and the provision of SANGs.
- 5.13 The more recently adopted Local Plans for the area build on the framework established by the Regional Plan and all contain policies designed to guard against adverse effects and ensure that, where necessary, mitigation is delivered⁸. Of the Policy and supporting text within these Plans, it is worth noting the following:
- a) the Rushmoor Local Plan (February 2019), at paragraph 12.3, cross refers to the TBH SPA Delivery Framework (see below) and notes the role that this has to play in encouraging "*a consistent approach to ensuring that development within the boundaries of affected local authorities would not have an adverse impact upon ground nesting birds in the SPA*". At paragraph 12.10 it states that "*large residential developments will provide bespoke mitigation that provides a combination of benefits, including SANG, biodiversity enhancement and green infrastructure improvements. Where developers propose a bespoke solution, this will be assessed on its own merits under the Habitats Regulations and will be agreed with the Council in consultation with Natural England*";
 - b) paragraph 4.41 of the Wokingham Core Strategy (January 2010) notes that "*Within 400m (linear) of the TBH SPA, the authority and Natural England do not consider it is generally possible to avoid impact from development. Therefore, no proposal for residential development will be allowed due to the risks of fires, fly-tipping, cat predation and other impacts. This view has been accepted by the Assessor who considered the validity of Natural England's evidence on the matter as part of the examination into the SEP. This approach is also consistent with the Appropriate Assessment and SEP Policy NRM6.*" The

⁷ These 'implementation' requirements are picked up in a number of local plan policies for example the Rushmoor Local Plan (February 2019) at para 12.4 "*Two forms of Mitigation SANG and SAMM are required in perpetuity and must be operational prior to first occupation of units to ensure SPA interests are not harmed.*"

⁸ Specific Local Policies for Thames Basin Heath SPA include Policy CS14 Bracknell Core Strategy DPD – Adopted February 2008; Policy CS13 in Elmbridge Core Strategy, Adopted 2011; Policy P5 in Guildford Borough Local Plan Adopted 25 April 2019; Policy NE1 in Rushmoor Local Plan, Adopted February 2019; Policy CP14B in Surrey Heath Core Strategy Adopted February 2012; Policy NE3 in Waverley Borough Local Plan Part 1, Adopted February 2018; Policy CS8 in Woking Core Strategy, Adopted November 2012; Policy CP8 of the Wokingham Borough Core Strategy, Adopted January 2010; Policy CSWB9 of the East Hampshire and South Downs Local Plan: Joint Core Strategy – Adopted June 2014.

Assessor noted at para 4.7.19 of his report that *"I conclude that the boundaries of the zones should be defined by travel distance rather than by linear distance. I find the 400 metre boundary for Zone A is robust and does not need to be modified, except to take into account any permanent barrier to the movement of cats"*⁹;

- c) Hart District Council has a Plan that is currently being examined (at Main Modifications stage). Emerging Policy NBE4 (which is not proposed to be amended) states that *"permission will not be granted for development that results in a net increase in residential units within this zone [400m] unless it can be demonstrated through an Appropriate Assessment that there will be no adverse effect on the integrity of the TBHSPA... Where further evidence demonstrates that the integrity of the TBHSPA can be protected using different linear thresholds or with alternative mitigation measures these must be agreed with the Council and Natural England."* Para 287 of the Plan states: *"It is not considered possible to mitigate impacts from the development of new homes within the exclusion zone up to 400m (linear) from the SPA due to the risks of fires, fly tipping, cat predation and other impacts. Therefore, proposals that would result in a net increase in the number of homes within the exclusion zone will not be supported. In exceptional circumstances this may vary with the provision of evidence that demonstrates that mitigation measures will be capable of protecting the integrity of the SPA. Any such proposals will be subject to Appropriate Assessment"*;
- d) The Guildford Borough Local Plan (25 April 2019) notes that 80 per cent of SPA visitors come from within 7KM of the heaths. To illustrate that mitigation measures are also required from beyond 5km we note, Policy P5 of Plan states that *"developments above 50 dwellings between 5 and 7 km of the SPA may be required to provide avoidance and mitigation measures."* also *"Where one or more adverse effects on the integrity of the SPA will arise, measures to avoid and mitigate these effects must be delivered and secured in perpetuity."* Similar policy provisions are made in the Waverley Borough Local Plan Part 1 (February 2018). That Plan goes on to state that *"On the basis of a grading, sites closest to the SAC will have greatest impact and a mitigation strategy should be tailored to address the impacts"*;
- e) the Bracknell Site Allocations Plan (July 2013) made allocations for housing which include site specific requirements for mitigation. For example, Policy SA4 stated that a particular 210 home scheme required *"in perpetuity provision of on-site bespoke SANG; financial contributions towards SAMM and any other measures to satisfy Habitat Regulations the Thames Basin Heaths SPA Avoidance and Mitigation Strategy and relevant guidance."* The supporting text to Policy CSWB4 of the East Hampshire and South Downs Local Plan: Joint Core Strategy (June 2014) makes similar provisions in respect of a 4,000 homes scheme. It states *"the proposed SANGs in the draft Masterplan can accommodate phases 1 and 2 of the proposed development.....based on locally-derived assessment criteria and the Thames Basin Heath's standard for the provision of SANGs (8 hectares per 1,000 head of population"*;

Planning Guidance

- 5.14 There have been Supplementary Planning Documents (SPDs) operating in support of the above mentioned development plan policies since 2009.¹⁰ Amongst other things, these provide details of the various mitigation

⁹ See paragraphs 4.7.19 and 10A(ii)(b) of the Assessor's Report on the Thames Basin Heaths Delivery Plan, published 19 Feb 2007. The Assessor's Report is available at https://www.lewes-eastbourne.gov.uk/_resources/assets/inline/full/0/256995.pdf.

¹⁰ Thames Basin Heaths Special Protection Area Supplementary Planning Documents - Runnymede SPG (Amended November 2009); Woking Borough Avoidance Strategy 2010-2015; Wokingham Avoidance Strategy (April 2010); Windsor and Maidenhead

measures in respect of which developer contributions will be sought and the rates at which these will be requested. The measures referenced within the documents include management and monitoring regimes and SANGs. A SANGs tariff is also included which outlines specific contributions for residential units depending on bedroom size¹¹.

- 5.15 In addition to the SPA specific SPDs, certain of the local planning authorities have introduced other forms of guidance that has the potential to limit the external effects of new housing proposals. For example, Hampshire County Council has produced guidance on "Planning for dog ownership in new developments"¹² in connection with the proposed redevelopment of the former Bordon Garrison. This notes that 27% of new home owners are likely to have a dog and to minimise the effects of dogs on the SPA it will be important to provide attractive, safe, accessible, and convenient off-lead spaces close to planned homes. The guidance includes masterplanning and landscape advice in respect of house and garden design and the provision of greenspace which not only meets SANG requirements but also delivers off-lead circular walks of around 2.7km. Greenspace design recommendations include providing a choice of open/enclosed landscapes, free draining and naturalistic paths, car parking, clear information about off-lead access and desired behaviours, separation from hazards such as roads, and seating. Management of fouling is an issue that, it states, is to be tackled through careful positioning of bins, the display of clear information about desired behaviours and ensuring there is long-term funding for bin maintenance.

Mitigation Measures and their Implementation

- 5.16 The development plans and SPDs provide a framework for securing, on the back of developments proposed within 7KM of the SPA, financial contributions (or in the case of (b) below direct provision) towards one or both of:
- a) SAMM activities, including the provision of information and education, guidance on access management, wardening and the promotion of alternative recreation sites; and
 - b) SANGs, in respect of which developers may either make a contribution towards strategic SANGs or make in-kind, bespoke provision. The policy framework provides that SANGs should be delivered at a ratio of 8ha of per 1,000 population, with SANGs of different sizes having different agreed catchments (e.g. a 2-12ha SANGs has a catchment of 2km, a 12-20ha SANGs a catchment of 4km, and SANGs over 20ha have a 5km catchment [Note: a SANG with no parking has a catchment limit of 400m]).
- 5.17 The contributions required in respect of SANGs and SAMM activities are calculated on a sliding scale based on the size of the proposed development and where it lies relative to the SPA. For SANGs, the authorities require contributions of between £3,500 and £8,000 per new dwelling and, for SAMM activities, between £400 and £1000 per dwelling. If a developer can demonstrate that the impact of his proposals can be mitigated in some other way, the framework allows for these numbers to be negotiated down or away.

(July 2010); Guildford (July 2017); Bracknell Forest (April 2018); Surrey Heath (November 2018); Rushmoor Avoidance and Mitigation Strategy (August 2019); Waverley Avoidance Strategy (November 2018).

¹¹ See Para 3.72 of the Guildford SPD (July 2017).

¹² Hants County Council (2013) Planning for dog ownership in new developments: reducing conflict – adding value. Access and greenspace design guidance for planners and developers. Guidance produced by Stephen Jenkinson, Access and Countryside Management Ltd. [documents.hants.gov.uk/ccbs/countryside/planningfordogownership.pdf – accessed April 2019]s

Cannock Chase SAC (Staffs)

Location, Extent and Special Features

The Cannock Chase SAC lies within the Cannock Chase AONB, to the south east of Stafford and to the north of Cannock. It covers approximately 1,244ha and is the most extensive designated area in the Midlands. It was designated on 1 April 2005 for its wet heath, dry heath, mire, swamp, woodland habitats and invertebrates.

Growth Context¹³

- 5.18 Some 78,000 new homes are planned to be delivered within 15km of the SAC in the period to 2026, across 10 local authority areas¹⁴. Annual visitor numbers are estimated at 1.7million, and are predicted to increase by 15% as a result of this growth. The surrounding local authorities (Stafford Borough, South Staffordshire, Lichfield, East Staffordshire and Wolverhampton City Council) have formed an SAC Partnership and have been working together for some time to understand the condition of the SAC and the effects of the recreational pressures that it faces. They have identified significant development related issues in respect of under-grazing, hydrological changes, drainage, disease, invasive species, air pollution (eutrophication) and fire. Evidence produced by Footprint to inform the preparation of the various Local Plans in the vicinity has indicated that the "in combination" impact of proposals involving a net increase of one or more dwellings within a 15KM radius of the SAC would have an adverse effect on its integrity unless avoidance and mitigation measures are deployed. This contrasts with Footprint's assessment of Strensall Common where it reached no such conclusion and has not commented at all on mitigation measures required in respect of developments beyond those at QEB. This again suggests that the Common under less pressure than other SACs are yet Cannock Chase SAC is another example where, in spite of its sensitivity to change, the surrounding local authorities have adopted mitigation over prohibition when it has come to planning for housing growth.

Development Plan Policy

- 5.19 Each of the local authorities referred to above either has adopted or emerging development plan policies that are designed to protect the SAC from adverse recreational and other effects. None imposes a ban on development as a means of safeguarding the integrity of the SAC. Instead, the authorities require the developers of housing schemes within 15KM of the SAC to make financial contributions towards the mitigation of adverse effects. By way of example, Policy CP13 of the Cannock Chase Local Plan Part 1 (adopted 2014) states that:

"Development will not be permitted where it would be likely to lead directly or indirectly to an adverse effect upon the integrity of the European Site network and the effects cannot be mitigated. To be in accordance with the Local Plan and for detailed development proposals to be permitted, the issues raised in any relevant Habitat Regulations Assessments should be taken into account by developers.

¹³ Source of pressures and measures information: Cannock Chase Visitor Impact Mitigation Strategy (Footprint Ecology, 2010), Cannock Chase SAC – Planning and Evidence Base Review (Hoskin and Liley, 2017), Site Improvement Plan Cannock Chase (Natural England, 2014).

¹⁴ See Cannock Chase SAC Visitor Survey, Footprint Ecology, 21 December 2012, see summary – Including the following Councils: Birmingham (Sutton Coldfield only), Cannock Chase, Dudley, East Staffordshire, Lichfield, Sandwell, South Staffordshire, Stafford, Wolverhampton, Walsall.

In order to retain the integrity of the Cannock Chase Special Area of Conservation (SAC) all development within Cannock Chase District that leads to a net increase in dwellings will be required to mitigate adverse effects. The on-going work by relevant partner authorities will develop a Mitigation and Implementation Strategy (SPD). This may include contributions to habitat management; access management and visitor infrastructure; publicity, education and awareness raising; provision of Suitable Alternative Natural Green Space (SANGS) within development sites where they can be accommodated and where they cannot by contributions to off-site alternative green space; and measures to encourage sustainable travel.

The effective avoidance and/or mitigation of any identified adverse effects must be demonstrated and secured prior to approval of the development. This policy has jurisdiction over developments within Cannock Chase District only; however it will be implemented jointly with neighbouring authorities via the application of complementary policies in partner Local Plans as appropriate."

- 5.20 A similar Policy (Policy NE6) is also included in the Stafford Borough Local Plan, although rather than applying to all development that would result in a net increase in dwelling numbers in the Borough, it refers to proposals within the 15KM zone specified by Footprint.

Planning Guidance

- 5.21 In 2017, the SAC Partnership agreed to publish guidance on the mitigation of the impact of new residential development on the SAC. This was issued in May of that year. The Guidance¹⁵ references the Footprint work and the 15KM zone of influence mentioned above. However, it goes on to note that financial contributions towards the mitigation of adverse effects will only be sought from developers promoting housing schemes within 8KM of the SAC. It then adds the following:

"Following the production of the Footprint Ecology evidence base, additional advice has been received from Natural England. This has directed the Cannock Chase SAC Partnership authorities to consider mitigating any likely significant effects through the provision of on-site mitigation measures, such as those set out in section 3 of this guidance note. The use of measures seeking to avoid significant effects, such as offsite Suitable Alternative Natural Greenspaces (SANGs), is not being pursued at this time. This is primarily due to uncertainties regarding their effectiveness and their relatively high cost when compared to on-site mitigation measures".

- 5.22 The Guidance also notes that:

"There is also a range of existing SAC and visitor management expenditure outside of those detailed in this guidance note, much of which seeks to manage the impacts of existing visitor pressures on the SAC. These primarily arise from Staffordshire County Council in its role as a site owner and manager and include the following measures:

- *Country Park Infrastructure and Visitor Management and Maintenance (£290,000 per year) - SAC Habitat Management (£206,400 per year)*
- *Volunteer Input to Infrastructure and Habitat Management (25,000 hours per year – equivalent to £268,000 per year)*
- *Other measures within the Cannock Chase Area of Outstanding Natural Beauty (AONB) Management Plan and Visitor Mitigation Strategy*

The mitigation measures detailed in section 3 of this guidance are directly targeted at mitigating impacts arising from new planning permissions and Local Plan policies, where these increase the number of residents within the Zone of Influence. Put simply, they take account of other measures targeted towards the management of the SAC in the absence of new development (such as those set out above) and then consider what additional measures may be required as new development comes forward within the Zone of Influence."

¹⁵ Cannock Chase Special Area of Conservation (SAC) Guidance to mitigate the impact of new residential development (January 2017).

5.23 Finally, it states that: Natural England supports the use of Guidance to Mitigate the Impact of New Residential Development.

Mitigation Measures and their Implementation

5.24 Section 3 of the above mentioned Guidance, lists a range of mitigation measures that, it states, have been costed by Natural England in collaboration with the SAC Partnership. These are as follows:

- a) Project Initiation – business plan; agreement of Partner responsibilities; recruitment of project staff;
- b) Staff – one full time project manager and one full time visitor engagement officer;
- c) Engagement of three of four key sectors – walkers and dog walkers, cyclists, and horse riders via volunteering and education programmes, and promotional and interpretation material;
- d) Strategies - an overarching strategy for visitors and nested strategies for car parking, track and footpath management and each visitor sector, plus a monitoring strategy;
- e) Physical management - improvement of paths and tracks; implementation of parking plan; way marking and on-site interpretation panels; and
- f) Monitoring.

5.25 The total cost of the above measures, over the 15 year life of the various Local Plans in the area, was calculated at £1.97m. This was then divided by the number of new homes that were expected to be built within 8KM of the SAC (8495) to arrive at a cost per dwelling to be sought via Planning Agreements. In the case of Cannock Chase District, the LPA seeks a financial contribution of £221 per new dwelling to cover the cost of SAC related mitigation.

Effectiveness of Mitigation Measures

5.26 In 2017, Footprint reported to the SAC Partnership the following advice:

- a) it is very difficult to set a precise level of mitigation necessary for a defined level of growth because of the inevitable complexity of estimating the effectiveness of measures for European site habitats that are influenced by a multitude of factors over time;
- b) notwithstanding the above, in designing an avoidance and mitigation package, it should be comprehensive enough to have confidence that they adequately meet the recreation increases predicted. That confidence comes from the following:
 - a good range of measures rather than reliance on a small number,
 - at least some of the measures that are relatively flexible in terms of how much additional access they can mitigate for,
 - having evidence of their effectiveness and suitability,

- having early warning monitoring to trigger adaptations (which themselves should be known and similarly tested),
- c) formal monitoring data are not yet available to inform a view on its SAMM effectiveness as it is in its early stages of implementation; but
- d) the SAMM appears to be fit for purpose in relation to actual housing numbers being delivered against the Local Plan.

New Forest SAC/SPA/RAMSAR

Location, Extent and Special Features

- 5.27 The New Forest SAC is situated on the south coast of England and straddles Hampshire and Wiltshire. It lies immediately north of the Solent and between the settlements of Bournemouth and Southampton. The SAC covers 28,000ha and supports an extensive and complex mosaic of habitats including wet and dry heaths and associated bogs and mires, wet and dry grasslands including Molinia meadows, ancient pasture woodlands, permanent and temporary ponds and a network of streams and rivers. The SAC was designated on 1 April 2005.
- 5.28 The features of the New Forest SPA include the Dartford warbler, honey buzzard, nightjar, woodlark, hobby and wood warbler which are all breeding, with the hen harrier in winter.
- 5.29 There are a number of other designated sites in the vicinity including: New Forest SPA / Ramsar, Solent Maritime SAC, Solent and Southampton Water SPA/Ramsar site, Southampton and Isle of Wight Lagoons SAC, River Avon SAC/ SPA, Avon Valley Ramsar site, Dorset Heaths SAC, Dorset Heathlands SPA/ Ramsar site.

Growth Context¹⁶

- 5.30 The current adopted Local Plan for New Forest District provides for the development of an additional 3,920 dwellings in the period 2006-2026. This is set to increase to over 10,500 for the period to 2036. The LPA has identified numerous development related pressures that it is concerned about and the include pressures related to drainage, inappropriate scrub control, fish stocking, the deer population, air pollution, change in land management, inappropriate ditch management, forestry and woodland management, invasive species, vehicles and inappropriate cutting/mowing.

Development Plan Policy

- 5.31 Part 2 of the New Forest Local Plan (adopted April 2014) includes Policy DM3 which deals with the "mitigation of impacts on European nature conservation sites". It is more detailed than the Policies that appear in other Plans and reads as follows:

" Except as provided for in the first paragraph of Policy DM2, development will only be permitted where the Council is satisfied that any necessary mitigation is included such that, in combination with other developments, there will not be adverse effects on the integrity of:

¹⁶ Source of pressures and measures information: Site Improvement Plan New Forest (Natural England, 2014), Mitigation Strategy for European Sites, Recreational Pressure from Residential Development SPD (New Forest DC, 2014)

- *the New Forest European nature conservation sites (the New Forest SAC; New Forest SPA; the New Forest Ramsar site) or*
- *the Solent Coast European nature conservation sites (the Solent Maritime SAC; Solent and Isle of Wight Lagoons SAC; Solent and Southampton Water SPA; Solent and Southampton Water Ramsar site).*

For residential development, the required suite of mitigation measures relating to the European nature conservation sites consists of a combination of the following measures:

(a) Provision of alternative natural green spaces (SANGS) and recreational routes: new or improved open space and recreational routes of a quality and type suitable to attract residents of new development within the Plan Area who might otherwise visit the European nature conservation sites for recreation. These will be delivered by:

- *Additional areas of publicly accessible natural green space (30 to 40 ha) of SANGS quality*
- *Enhancing the character and accessibility of existing public open spaces to provide additional areas of publicly accessible natural green space of SANGS quality;*
- *Improvements to walking routes and the connectivity between local green spaces, to be more attractive to local visitors who might otherwise visit the European nature conservation sites.*

(b) Access and Visitor Management: measures to manage the number of recreational visits to the New Forest European sites and the Solent Coast European sites; and to modify visitor behaviour within those sites so as to reduce the potential for harmful recreational impacts.

(c) Monitoring of the impacts of new development on the European nature conservation sites and establishing a better evidence base: to reduce uncertainty and inform future refinement of mitigation measures. To achieve these mitigation measures, all residential developments that result in additional dwellings will be required to provide for appropriate mitigation and/or financial contributions towards off-site mitigation. This will need to be agreed and secured prior to approval of the development. The required level of contributions (to be set out in more detail in the Mitigation Strategy Supplementary Planning Document) will be based on x/y where:

x = the assessed overall cost of the package of mitigation measures set out in (a) and (b) above needed to offset potentially harmful visits to the European nature conservation sites, and

y = the number of contributing dwellings (having regard also to the size of the dwellings).

On sites of 50 or more dwellings, the full mitigation requirements should be met by provision of SANGS on-site or close to the site, based on a standard of 8ha of SANGS per 1,000 population. The details of the SANGS will need to be agreed with Natural England as part of the planning application process. This provision should be available for new occupants of the development at the time of first occupation. Informal open space required by Policy CS7 will be accepted as a part of the mitigation contribution where it is demonstrated as contributing towards SANGS requirements.

In addition, all residential developments will be required to contribute towards monitoring [measure (c)]."

5.32 The Authority is also in the process of preparing a new Local Plan and Policy 10 of the Regulation 19 version of that document reads as follows:

Except as provided for in the first paragraph of Policy 9 (saved Policy DM2): Nature Conservation, Biodiversity and Geodiversity, development will only be permitted where the Council is satisfied that any necessary mitigation, management or monitoring measures are included such that, in combination with other plans and development proposals, there will not be adverse effects on the integrity of any of the following International Nature Conservation sites:

- *the New Forest SAC, the New Forest SPA and the New Forest RAMSAR site;*
- *the Solent Maritime SAC, Solent and Isle of Wight Lagoons SAC, the Solent and Southampton Water SPA, and the Solent and Southampton Water RAMSAR site;*

- *the River Avon SAC and River Avon RAMSAR site; and*
- *The River Itchen SAC.*

For residential development adverse effects can be adequately mitigated by implementing pre-approved measures relevant to the site location, including as set out in the New Forest (outside of the National Park) Mitigation Strategy and in the Solent Recreation Mitigation Strategy, and to be set out in the forthcoming River Avon Nutrient Management Plan (2019 Update). For non-residential developments, the requirement for mitigation will be considered on case-by-case basis with regard to the nature, scale and location of the proposed use.

The pre-approved mitigation measures for residential developments currently include:

- I. For developments providing 49 or fewer net additional units of residential accommodation, a financial contributions towards the provision of mitigation measures as set out below and in the New Forest Mitigation Strategy:*
 - (a) Projects for the provision of alternative natural recreational green spaces and recreational routes: new or improved open space and recreational routes of a quality and type suitable to attract residents of new development within the Plan Area who might otherwise visit the International Nature Conservation sites for recreation; and*
 - (b) Access and Visitor Management: measures to manage the number of recreational visits to the New Forest and Southampton Water and Solent Coast International Nature Conservation sites; and to modify visitor behaviour within those sites so as to reduce the potential for harmful recreational impacts; and*
 - (c) Monitoring of the impacts of new development on the International Nature Conservation sites and establishing a better evidence base: to reduce uncertainty and inform future refinement of mitigation measures.*
- II. For developments of 50 or more net additional residential dwellings:*
 - (a) Direct provision by the developer of at least 8 hectares of natural recreational greenspace per 1,000 population located on the development site or directly adjoining and well connected to it; and*
 - (b) A financial contributions towards Access and Visitor Management and Monitoring as set out above at i(b) and i(c).*
- III. Additionally for all residential developments within 5.6km of the Solent and Southampton Water SPA, as shown on Figure 5.1, a financial contribution is required towards a Solent-wide programme of visitor management, monitoring and development mitigation projects.*
- IV. Additionally for residential developments within the catchment of the River Avon, a financial contribution or other appropriate mechanisms to achieve phosphorus-neutral development.*
- V. Additionally for all residential developments, a financial contribution towards monitoring and, if necessary (based on future monitoring outcomes) managing or mitigating air quality effects within the New Forest SPA, SAC and RAMSAR site.*

Planning Guidance

- 5.33 The local authority has adopted two guidance documents since 2014, the most recent of which is the most pertinent and is its Mitigation for Recreational Impacts on European Sites SPD. It covers not only the New Forest SAC / SPA and Ramsar sites but 10 other SACs, SPAs and Ramsar sites in the near vicinity. The SPD describes the relevant statutory provisions and the national and local policy context; describes the evidence underpinning the need and rationale for the effects of development to be mitigated (including evidence provided by Footprint – see below); the Authority's preferred approach to mitigation (that being on-site first (i.e. within development), supplemented by or replaced by financial contributions to off-site measures); its

approach to monitoring; they type and quantum of measures required; and information on how measures are to be delivered.

5.34 The Footprint work referred to above noted / recommended the following:

"The Footprint Ecology Report "Changing patterns of visitor numbers within the New Forest (Footnote 7)" emphasised the need to tailor a package of mitigation measures to the unique nature of the New Forest and its visitor patterns but also points out that, the large area of land, existing expertise in access management, and an infrastructure already geared to cope with large numbers of visitors provide a good starting point. Suggested mitigation measures comprise:

- *A monitoring strategy – detailed field work to understand low densities of the three indicator species (nightjar, woodlark and Dartford warbler); regular monitoring of other key species and locations where there are concerns about recreational pressure; annual monitoring of visitor levels; monitoring of changes in visitor patterns associated with access management measures.*
- *Refinement of visitor models – accounting for the spatial distribution of paths and points of interest within the New Forest; incorporating actual route data; exploring the spatial distribution of other species to predicted visitor pressure.*
- *Car-parking – managing car parking to re-distribute visitors.*
- *Access and visitor management measures - promotion of less sensitive areas to visitors; provision of interpretation and path enhancement in less sensitive areas; promotion of issues such as the need to keep dogs on leads.*
- *Alternative green space – the report states that any alternative green space must be very carefully considered in terms of its ability to attract people who would otherwise visit the New Forest"*

5.35 Insofar as SANGs is concerned, the SPD prefers on site (within development) provision, or provision close to planned homes (which contrasts with Footprint's work on Strensall) and notes that, to be effective, SANGs needs to extend to at 1ha in each instance.

5.36 Notwithstanding this the New Forest Mitigation Strategy for recreational pressure from Residential development SPD (2014)¹⁷ indicates, in para 2.18, that the Footprint Study (Urban development in the New Forest) found little merit in establishing a development exclusion zone around New Forest's existing settlements such as the 400m zone used for other heathland SPAs. This reflects in part the particular travel patterns of the New Forest's recreational users. Instead the report recommended resources be pooled into a strategic mitigation scheme focussed on people management and designed to complement the National Park's existing Recreation Management Strategy.

Mitigation Measures and their Implementation

5.37 In addition to SANGs, the 2018 SPD lists a large number of 'off-site' mitigation projects which it splits into deliver tranches of 2018-2025 and 2026-2036. It notes that the programme of projects will be agreed through an annual review and the implementation priorities defined in the Council's Infrastructure Delivery Plan.

5.38 There are a total of 36 mitigation projects listed in the SPD. These include schemes to:

- a) enhance existing public open spaces in the District;

¹⁷ We understand that there is now a review of this mitigation strategy, issued as a consultation draft in 2018. As far as we can see, this latter document does not suggest that a 400m buffer be introduced.

- b) create additional or enhanced walks;
- c) improve signage and interpretation boards;
- d) enhance the provision of benches and bins;
- e) improve car parking facilities;
- f) clear vegetation;
- g) improve access; and
- h) re-surfacing footways.

5.39 Each project is costed and provision made for the making of financial contributions by developers either by CIL or S106 Agreements.

Effectiveness of Mitigation Measures

5.40 The Council has been monitoring a number of projects designed to mitigate the impact of recreational pressures arising from new residential development. Early indications are that:

"where comparable data for 'before' and 'after' measurements of recreational usage is available, this is clearly indicating that the mitigation projects are accommodating/ absorbing increased levels of local recreational activity. Therefore these projects do appear to be functioning for their intended purpose and are absorbing potential increases in recreational use that may otherwise have occurred in the nearby European nature conservation sites designated in the New Forest. There is also very limited evidence that these projects may result in a decrease in activity on nearby PROWs within the National Park".

Conclusions on Case Studies

5.41 There are a number of key points that are highlighted by the cases that we have examined. These are:

- a) it is not uncommon for members of the public to have access to SACs, SPAs and other designated sites. As a consequence, many local [planning authorities are having to grapple with (and have grappled with) the pressures that come with such freedoms;
- b) many of the UKs designated sites extend over far larger areas than Strensall Common and have much more challenging and complex relationships with adjacent / nearby urban areas;
- c) the SACs / SPAs that we have examined draw visitors from very wide areas and have zones of influence that range from 5KM to 15KM and even extend across entire Districts;
- d) each of the designated areas referred to above is under significant additional pressure from planned housing growth (in most cases at levels far exceeding that envisaged in York) and in all cases the sensitivity of the designated area is such that the local planning authorities have concluded that mitigation measures must be required in all cases where development is proposed with the defined zone of influence (in other words, they cannot allow a single additional new home without also securing mitigation measures - this is not the approach being taken in York). Notwithstanding this heightened level

of sensitivity to change, each of the local planning authorities with responsibilities in respect of designated sites has concluded that it is possible to mitigate against adverse impacts by designing simple mitigation measure and securing the delivery of these through design, planning conditions and Planning Agreements;

- e) there are two cases above where buffer zones have been defined (400m zones within which most types of housing are resisted) but these are distinguishable from Strensall Common - in these instances the qualifying species include ground nesting birds that it is necessary to protect from the threats posed by pet (and particularly cat) predation. In addition, the New Forest SAC/SPA/RAMSAR includes ground nesting birds but no such buffer has been recommended. The qualifying features of the Common do not include species at risk from cat predation and so a buffer zone is not required;
- f) in most of the cases that we have examined, the local planning authorities have adopted generally worded, over-arching development plan policies and then added detailed requirements through the adoption of supplementary guidance. Notwithstanding the sensitivity and complexity of the SACs / SPAs that they are dealing with, none of these local planning authorities has found it necessary, at the plan-making stage, to make detailed provisions in respect either of the types of mitigations measures that will be required or when / how they will be delivered;
- g) each of the local planning authorities examined favours the use of a range of mitigation measures (rather than relying on one measure or a small number of measures) and, in most cases, these are paid for by developers but then delivered by either a local authority or other responsible body;
- h) in the cases that we have examined, all of the local authorities reference the same or similar mitigation measures – there is a high degree of consistency of approach and a relatively limited range of techniques used to mitigate against the effects of recreational pressure. These include: monitoring (of use and impacts); wardening; the delivery of SANGs (within developments and off-site); the enhancement of existing public open spaces elsewhere; enhanced signage and visitor information; and physical works (such as scrub clearance, the treatment of invasive species, the construction or improvement of footpaths, waymarking, the provision of bins, and habitat restoration); and
- i) Footprint has advised a number of the local planning authorities referred to above and has worked with them to define appropriate packages of mitigation measures (measures such as those described later in this Report). At Cannock Chase (where urban areas almost completely enclose the AONB), Footprint noted the difficulties associated with setting levels of mitigation relative to planned housing growth, and highlighted the importance of having confidence, nonetheless, that the proposed mitigation measures will address forecast increases in pressure, but went on to provide very clear and simple advice on how such confidence is gained and concluded that the SAMM designed for the Chase is fit for purpose. As will be seen, DIO is proposing to go further in terms of both specifying and delivering mitigation measures than the authorities have that surround Cannock Chase.

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