JAMES BLAKE ASSOCIATES

Sulphur Clover Translocation and Working Method Statement

for

Phases 2-6,

Haverhill,

Suffolk

on behalf of

Persimmon Homes (Suffolk)

February 2022

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James Blake Associates Ltd have made every effort to meet the client's brief. However, no survey ensures complete and absolute assessment of the changeable natural environment. The findings in this report were based on evidence from thorough survey: It is important to remember that evidence can be limited, hard to detect or concealed by site use and disturbance. When it is stated that no evidence was found or was evident at that point in time, it does not mean that species are not present or could not be present at a later date: The survey was required because habitats are suitable for a given protected species, and such species could colonise areas following completion of the survey.

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Executive Summary

The development proposals for Phases 2-6 at Haverhill are for residential housing with associated parking, landscaping and access, with associated infrastructure.

Botanical surveys, including a sulphur clover (*Trifolium ochroleucon*) survey, were carried out for Phases 2-6 at Haverhill, Suffolk on the 12th of June and 25th June 2019 (JBA 2019).

The main extent of sulphur clover was located at the base of the hedgerow G37 on the south facing side; the species formed a dense clump about 17m long and 1m wide along the hedge base at its maximum extent.

It was recommended in the botanical survey report that hedgerow G37 be retained by the development with a buffer zone (at least 4m on each side) around the hedgerow which would encompass all the sulphur clover plants. See Appendix A for numbering of hedgerows and Appendix B for location of sulphur clover on the site.

However, a further survey in July 2021 and another in September 2021 found a small area of sulphur clover along a wide pathway through Phase 6 that cannot be retained, and it was agreed with the local planning authority that these areas would be translocated to an acceptable receptor area on the site.

1 Introduction

Background

1.1 James Blake Associates Ltd. (JBA) was commissioned by Persimmon Homes (Suffolk) to prepare a sulphur clover (*Trifolium ochroleucon*) translocation and working method statement for the proposed development site at Phases 2-6 Haverhill, Suffolk, particularly in relation to Phases 3A (and associated POS/NEAP) and 6.

1.2 Sulphur clover is a nationally scarce plant that grows in meadows, roadside verges, grasslands, woodland margins. These habitats are threatened by the conversion of old meadows to arable farming. Poor management, such as lack of grass cutting, encroachment of scrub, eutrophication from run-off and roadside development schemes have also contributed to declines. It is mostly found in East Anglia, predominantly in Norfolk and Suffolk.

1.3 During botanical surveys in June 2019 (JBA 2019), sulphur clover was found on the site. The main extent of sulphur clover is located at the base of the hedgerow G37 on the south facing side. The majority of the sulphur clover on site is protected through retention of hedgerow G37.

1.4 Subsequently, a small areas of sulphur clover were also found on Phase 6 in September 2021. The area of sulphur clover on Phase 6 could not be retained and would need to be translocated to a suitable receptor site.

1.5 In the **absence** of management of the main area of retained sulphur clover and mitigation for the small number of plants outside that area, it is likely that the overall amount of sulphur clover would be reduced by the proposed development.

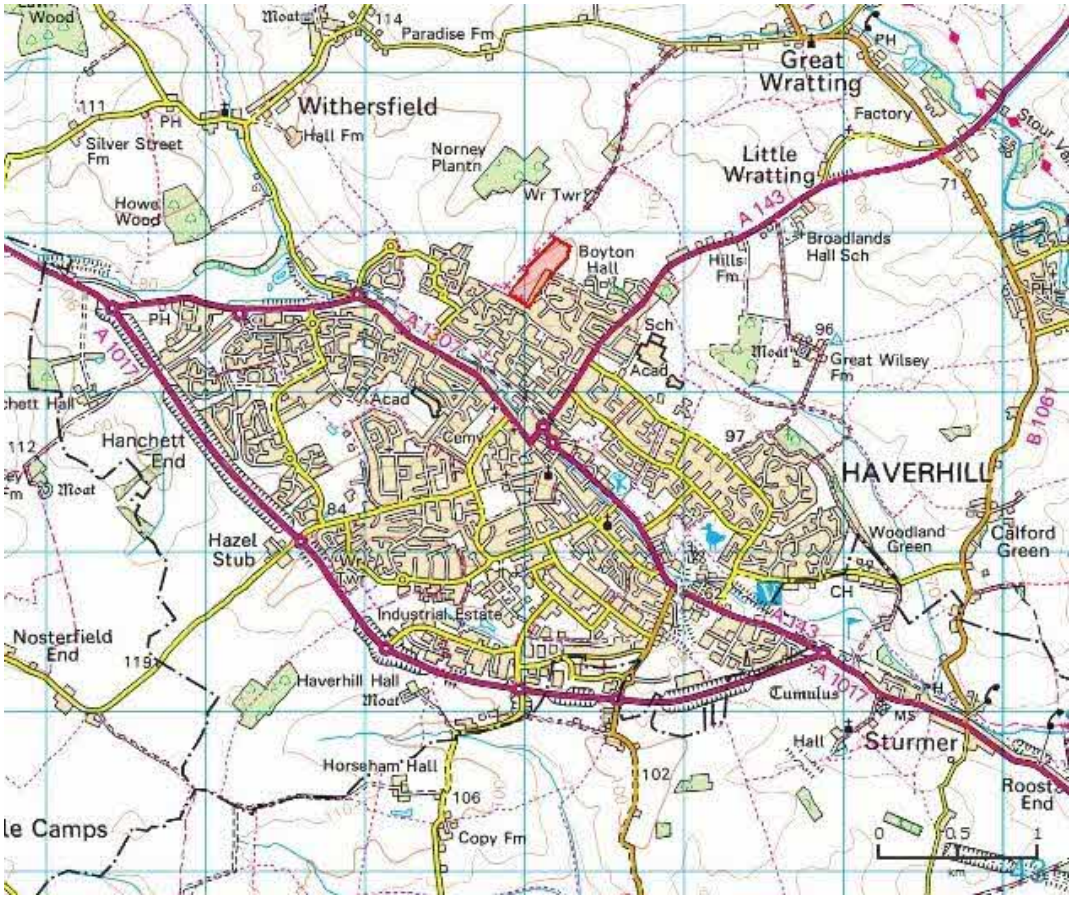
1.6 This translocation plan and working method statement aims to provide background information and details of an appropriate management strategy and working method statement for the translocation of the small area of sulphur clover from outside the retained area of G37 to a suitable receptor site on the proposed development site, to hopefully retain and increase the overall presence of the plant on the site.

Site Description

1.7 The site is located to the west of Haverhill Road (A143), adjacent to Ann Suckling Road, north of Haverhill town, Suffolk. Ordnance Survey National Grid reference: TL TL670467 (take from the centre of Phase 3A and 6).

1.8 The site as a whole is comprised of numerous former arable fields separated by hedgerows. Trees and shrubs border the residential properties on the southern and western boundaries of the site. Phase 3A (and associated POS/NEAP) currently comprise unmanaged tall ruderal vegetation, some scrub and former field margins. Phase 6 is predominantly mixed scrub habitat. A public right of way runs through the middle of the site from northeast to southwest adjacent to a hedgerow currently. See Figure 1 for site location (showing Phases 3A (and associated POS/NEAP) and 6).

Figure 1: Site location



2 Sulphur clover

2.1 Sulphur clover is a member of the legume family (Fabaceae) and is a clump-forming perennial species of grassy places, primarily on chalky boulder-clay or more rarely

chalk. It can be found in grassland, meadows and on road verges, trackways and wood-borders. See Figures 2 and 3 for photograph of sulphur clover on site in winter and summer.

Figure 2: Sulphur clover on site in winter

Figure 3: Sulphur clover on site in summer

2.2 Similar to white clover (*Trifolium repens*) but the individual flowers are narrower and have a distinct yellowish tint to them. It is characterised by its rather tall upright heads of pale, yellow flowers. In bright sunlight its flowers appear a sulphurous yellow, hence the English name. The grey-green trifoliate leaflets are relatively narrow and the whole plant is distinctly hairy. The leaf stipules are narrow and bristle-like.

2.3 The peak flowering time is between mid-June and mid-July, but the species can flower between May and August depending on weather conditions. The seed is probably dispersed very locally, with perhaps more distant movement assisted by machinery or livestock. Regeneration is most probably by seed as colonisation of 'new' habitats, such as railway cuttings, is common. There is no information on seed bank longevity, but sulphur clover is able to regenerate following disturbance suggesting that some seed likely persists in the soil for long periods.

2.4 It was formerly a much more common plant within its range of the calcareous clay soils of Eastern England. It was likely most widespread in the grazed medieval landscapes of East Anglia but subsequently declined due to ploughing or improvement of meadows and pastures which started with enclosure in the eighteenth century. In the twentieth century, especially since the 1960's the realignment and widening of roads and more intensive management of roadsides has seen a significant decline so that this once locally abundant species is now a nationally scarce species and listed as 'near-threatened' on the current red data list for vascular plants in Great Britain.

2.5 Sulphur clover is now rare in pastures, as large areas of suitable grassland have been converted to arable. Even in surviving grasslands there have been marked declines due to eutrophication, lack of grass cutting and encroachment of scrub. Many of its old roadside sites have been destroyed by road-widening and re-routing schemes.

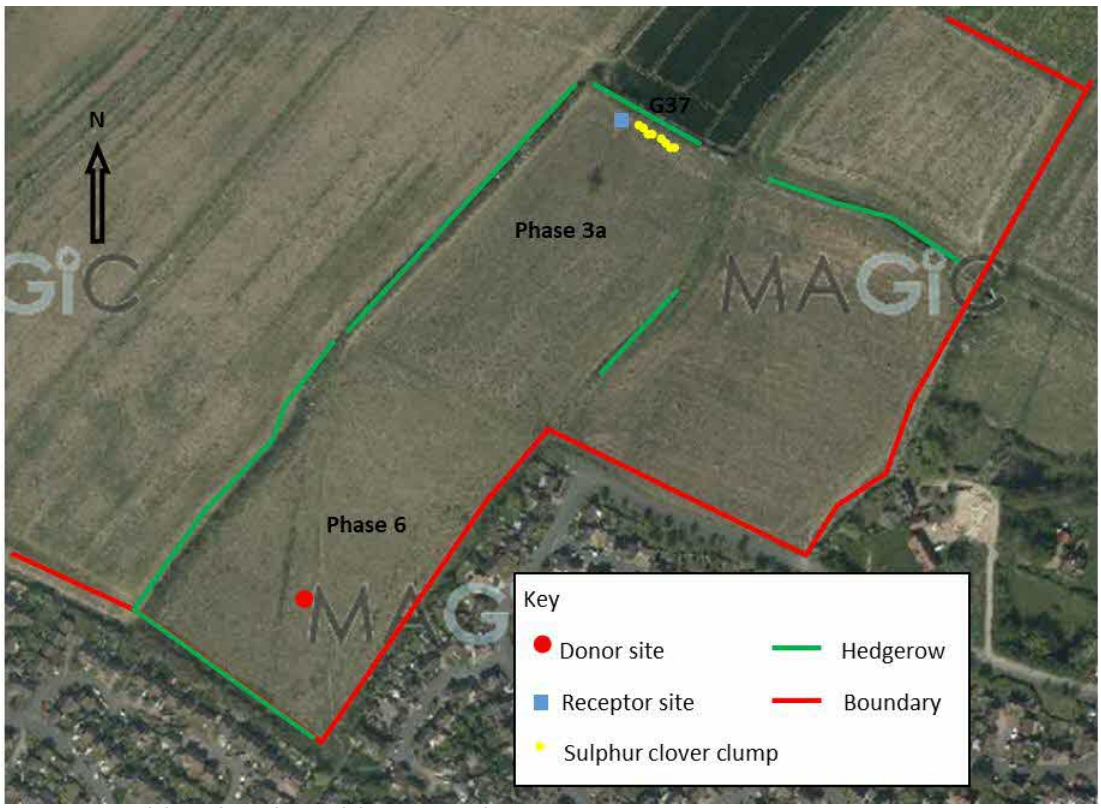
3 Working method statement

3.1 The methods described are for the removal and translocation of turf with sulphur clover to a suitable receptor area on the current site.

3.2 As illustrated in Figure 3, at the time of the botanical surveys in June 2019 (JBA 2019), sulphur clover was confined to the margins of the G37 hedgerow. This hedgerow and 4m metre margins are being retained and used as the primary receptor site.

3.3 The small area in Phase 6 that is not being retained is referred to as the donor site and the turf including the sulphur clover plants will be translocated to the receptor site which is to the west of hedgerow G37 and north of the largest area of remaining sulphur clover. The donor and receptor sites are shown below in Figure 4.

Figure 4: Donor and receptor sites



3.4 It is important that the conditions at the receptor site, e.g. aspect, slope, soil drainage, soil nutrient status and hydrology are similar to the donor site. As the receptor site is within the area of main habitat for sulphur clover on the site, there should not be significant differences in soil type or historical management. The relatively short distance between the donor and receptor area should help in the execution of translocation.

3.5 The soils on site consist of lime-rich loamy and clayey soils with impeded drainage (Soilscapes 2021). Turfs need to be laid during the winter season or early spring before the soil dries out and makes the soil in the turf too brittle to translocate.

3.6 The translocation involves the removal of the turf with sulphur clover in it and an area of roughly 1m surrounding the plants. The dispersal of seed in this species is very local with this species and despite disturbance any viable seedbank will likely be

relatively shallow and be housed predominantly in the top few centimetres of soil surrounding the mature plants.

3.7 There should be an Ecological Clerk of Works (ECoW) supervising all elements of the translocation.

Donor site

3.8 A programme of works is presented in Appendix A.

3.9 Translocation work should be carried out in early spring (April-May) before the plant flowers, but during a period when it can be differentiated from other clover species on site by its hairy stalks and grey-green trifoliate leaflets. The turf in a 1m area around the plants should be removed to a minimum depth of 150mm, placed on a suitable vehicle for transportation e.g., flatbed trolley and taken to the receptor site.

3.10 To prevent accidental eradication during the translocation works, all plants found during the spring will be clearly delineated with canes and red and white tape and cordoned off with suitable fencing and remain undisturbed (see Figure 5).

Figure 5: Donor site with canes and red/white tape

Receptor site

3.11 The receptor site will be within the retained 4m buffer zone on the west side of the G37 hedgerow, to the north of the largest area of remaining sulphur clover. The receptor site is in an area that is within the retained corridor that does not currently have clumps of sulphur clover. The retained corridor is open and away from heavy shading in what is presently a semi-neutral grassland field margin.

3.12 Preparation of the reception site should occur in advance of the translocation, with the turf removed from the areas for translocation within the receptor site and replaced with the turf from the donor site. There is no need to rotovate the soil in the receptor site and no organic matter needs to be added. However, moisture should be retained where possible and the soil should be watered if it is dry. The ECoW should advise if this is necessary.

3.13 Vehicle tracking over prepared soil on the receptor site should be avoided as this can lead to excessive compaction.

Post-location monitoring and management

3.14 Post-translocation monitoring should be carried out by an appropriately skilled ecological consultant with knowledge of the species (hereafter referred to as the 'Ecologist').

3.15 Management will be carried out by the appointed landscape management contractor following guidance from the Ecologist.

3.16 In the first season after translocation, establishment of the plant within the receptor site should be monitored by the Ecologist, using a walkover of the receptor area at least twice following translocation. The initial positions of translocated plants should be recorded during the translocation. Two further surveys will be required in June/July and August after translocation when flowering is at its peak and once the seed heads are produced to see if the translocated plants have prospered and gone to seed.

3.17 The surveys should be completed by an ecologist to locate and accurately map the plants. The distinctive flower heads and grey-green leaflets will aid identification between mid-June and mid-July, but during August the survey should concentrate on the orangey-brown seed heads and grey-green leaflets.

3.18 Subsequently the receptor site should ideally be visited at least once, but preferably three times a season for the next four years. The three visits would preferably be between mid-April and mid-May when plants are just beginning their spring growth, then again mid-June to mid-July when flowers are most visible, and finally between mid-July and mid-August when they will have produced seed heads. If three visits are not possible, then a single visit during mid-June and mid-July should at least confirm the continued presence and number of mature plants. All plants should be counted and carefully mapped, and their maturity recorded (young plant; mature flowering plant; plant in seed) following the translocation to see whether they survive and prosper.

3.19 The seed could also be collected each season and then sown late winter/early spring over the whole receptor site or retained and used to populate any future areas of wildflower meadow on the site.

3.20 The receptor site should be cut twice a year for the optimum effect, as cutting twice a year results in improved flowering for sulphur clover, though not necessarily more plants. The first cut should be in April and the second in September/October. The first cut in April helps the sulphur clover to compete more effectively against competing species by reducing their height. The second cut in the autumn allows the plants to set seed. All cuttings should be removed from the receptor site to reduce nutrients in the soil, as sulphur clover thrives in nutrient-poor soils.

3.21 The works could be shared with the County Flora Recorder for Suffolk Naturalists Society with details of the success of the translocation, in order to inform similar translocations in the future.

4 References

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Norfolk Wildlife Trust: Sulphur Clover - Norfolk Wildlife Trust

Plantlife:https://www.plantlife.org.uk/uk/discover-wild-plants-nature/plant-fungi-species/sulphur-clover

Soilscapes: http://www.landis.org.uk/soilscapes/#

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Suffolk Wildlife Trust: Sulphur Clover | Suffolk Wildlife Trust

Webidguides: http://webidguides.com/_templates/group_pearedtrifoliate2.html

5 Appendices

Appendix A: Programme of works

Activity	Year				
	1	2	3	4	5
Preparation of receptor site	April/May				
Translocation of turf	April/May				
Monitoring of receptor site	April-Aug	April-Aug	April-Aug	April-Aug	April-Aug
Cutting of retained area of G37	Sept/Oct	April and Sept/Oct	April and Sept/Oct	April and Sept/Oct	April and Sept/Oct