Annex 2

Stratton Audley Quarry

Notes on site restoration and management following site visit 12 October 2017.

S Lawley
Ecologist
04/01/18

1 Site description

1.1 General description

The site is a partially restored quarry / inert landfill with two remaining voids (now water filled) and naturally developed open land, scrub, tall ruderal and wetland habitats. There are considerable piles of rubble and soils together with scrap materials left in situ, plus the remains of the wheel wash. Restored habitat includes a fishing lake to southeast end and a 'limestone heath' at the northwest end.

1.2 Designations

Adjoining the site to the north is a former County Council landfill, now with scrub and open water. Part of both sites is designated as the 'Stratton Audley Quarries' Site of Special Scientific Interest, although the features of interest are now submerged below water. The two sites together are designated as Stratton Audley Quarry Local Wildlife Site (LWS) (recent survey 2014). A belt of land around the perimeter of Bicester Airfield, which adjoins the site, is also designated an LWS.

Local Wildlife Sites are recognised by NPPF (para 117), and the Oxfordshire Minerals and Waste Core Strategy 2017 -2031 Policy C7 (highlighted)

> **NPPF Para 117.** To minimise impacts on biodiversity and geodiversity, planning policies should:
> ● plan for biodiversity at a landscape-scale across local authority boundaries;
> ● identify and map components of the local ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity, wildlife corridors and stepping stones that connect them and areas identified by local partnerships for habitat restoration or creation;
>
> Policy C7: Biodiversity and geodiversity
> Minerals and waste development should conserve and, where possible, deliver a net gain in biodiversity…
>
> …In all other cases, development that would result in significant harm will not be permitted unless the harm can be avoided, adequately mitigated or, as a last resort, compensated for to result in a net gain in biodiversity (or geodiversity). In addition:…
> … (iii) Development shall ensure that no significant harm would be caused to:

- Local Nature Reserves;
- Local Wildlife Sites;
- Local Geology Sites;
- Sites of Local Importance for Nature Conservation;
- Protected, priority or notable species and habitats,

except where the need for and benefits of the development in that location clearly outweigh the harm.

1.3 Topography

The site is relatively flat overall, falling 10 metres over 1200 metres from the roadside in the northwest to the southeast boundary. The eastern boundary has a soil bund (now vegetated with scrub etc.) which is designed to contain flood water within the site. Rubble and soil piles have been left, particularly around the north of the site, while lower-lying areas are water-filled.

2 Spatial / current situation

The approved restoration plan shows restoration to a country park, with limestone heath, species-rich grassland, amenity grassland and woodland, a boating lake in the southwest corner and fishing lake to the south. This plan also shows contours, with hillocks in the northern part of the site, and footpaths throughout.

Limestone heath – this has been created in the planned location – see below.

Species-rich grassland – there does not appear to have been grassland established in the planned locations, and it is not clear that a seed mix has been introduced. The open mosaic habitat now present is an acceptable alternative, although not necessarily in the planned locations.

Amenity grassland has not been established as planned, however naturally developed rough grassland is an acceptable replacement in the site context. This is not necessarily in the planned locations and apparently of less extent than planned because of invading scrub.

Woodland – some species may have been planted, but the majority of woody species on site appear to have established naturally. Scrub does not provide the same amenity value as woodland because it is impenetrable to public access.

Boating lake – this has not been established. Two areas of open water have developed from the quarry void, although neither is suitable for boating. One of these has a geological SSSI exposure which is submerged.

Contours – these have not been shaped as planned, although the remaining rubble and soil heaps provide a degree of topographical variation. This is in keeping with the post-industrial nature of the site, but in landscape terms is unusual for the local area. The mounds are mainly around four metres above ground level and are not particularly visible from outside the site. They are also now covered with vegetation, which helps them blend in.

Fishing lake – established as planned and now occupied by a fishing club.

Footpaths – not established and parts of site are now difficult to access because of bramble etc. It appears that areas of the site can hold surface water, further restricting access at certain times.

Country park – this use has not materialised, with the site remaining security fenced. Some trespass access, mainly for dog walking, occurs. Local councillors wish to see the site used for public amenity, with car park and footpaths maintained. It is apparent that community use and management would be desirable, but more intensive use as a country park could now compromise the biodiversity value that has developed. Public funding or infrastructure for country park management is now not available.

Current situation summary table

Restoration plan	Current situation	Comment
Limestone heath	Completed	As planned
Species-rich grassland	Open mosaic habitat	Not as planned, but a desirable outcome
Amenity grassland	Rough grassland	Not as planned but reasonable, however management will be an issue.
Woodland	Naturally developing scrub	Not as planned, however species are suited to site. Scrub is not ideal for amenity access.
Boating lake	One large pool and a smaller pool have established; not in planned location.	Retain as wildlife features
Contours	Contours not as planned.	Spoil mounds do add topographical variation
Fishing lake	Completed	As planned
Footpaths	Not done	Access difficult in places.
Country park	Security fence, some public access, no public proprietorship of site	Ideally, some form of low-key public or charity management and appropriate levels of access.

3 Habitats and species

The site has a wide range of habitats, which together with the unusual topography have attracted many species. A list provided by TVERC (Jan 2018) lists 762 species. Of particular note are:

12 species of dragonfly

53 species of hymenoptera (bees, wasps and ants)

300 flowering plants, including several county rarities

Limestone heath – this is developing an interesting range of less common plant species, some of which are typical of limestone conditions.

Open mosaic habitat– these are areas of typical post-industrial vegetation with bare ground and small annual plants such as common centaury. The site was predominantly covered by this type of vegetation around 2010. Since then introduction of topsoil or the build-up of soil nutrients has caused most of this habitat to change to rough grassland or scrub / weeds.

Insects- various studies have identified this site as important for invertebrates. Future site management should take account of the features etc., which have been noted as important for these species. Briefly it can be said that bare ground for nesting and a range of flowering plants for nectar are the critical factors and these should be mainly available in warm, sheltered, sunny aspects. As such the limestone heath and open mosaic areas will be very important.

Rough grassland - areas with lower levels of soil nutrients have developed species-poor rough grassland that is ideal for recreational use or could in time be made more species-rich and closer in type to meadow vegetation. Meadow habitat would support a range of insect species including butterflies.

Scrub / tall weedy vegetation - soil and rubble mounds, plus areas where topsoil / nutrient enrichment is apparent have mostly developed scrub / tall weedy vegetation including blackthorn scrub on the bund to the east of the site, and willow scrub to the north of the fishing lake. Scrub and weedy vegetation are now apparent across around 50% of the site and in some areas includes fairly invasive species such as Michaelmas daisy. It is important to note that these areas are likely to provide nectar and shelter for a range of insects.

Open water in both quarry voids and the fishing lake appears to be relatively low in nutrients with a range of marginal and aquatic plants. Considerable dragonfly and damselfly activity was noted on the site visit. The pool under the wheelwash has developed interest as an open water habitat.

Wetland /grassland to north of fishing lake. Previous surveys have recorded several county rare plants from this area. It was not examined in any detail during the site visit but is in good condition and clearly remains important.

4 Habitat management / restoration

These are initial thoughts on management which may change subject to detailed survey and / or expert opinions on key species.

Limestone heath – this is very low in soil nutrients and requires very little input in terms of management or other intervention, in the medium to long term.

Open mosaic - Where open mosaic vegetation remains it should be retained, possibly requiring scraping back to bare substrate on a rotational basis. This technique could be used to reinstate open mosaic habitat in weedy areas although disposal of the scraped material would be an issue.

Rough grassland on flat ground on majority of site – the main issue with this is its unevenness, with boulders and other debris now partly concealed in vegetation, making it difficult or impossible to mow. Ideally, these obstructions should be removed and these areas levelled, so that open rough grassland can be maintained by management. Management by grazing might be possible if the site could be made safe for livestock (boundary fences, fencing steep slopes, and removal of harmful rubble / ironwork).

Rubble piles – Should be left in situ as these are not vegetating as rapidly as soil mounds. The rubble itself has formed small voids and cavities that are probably ideal for hibernating reptile and amphibian species. Longer term - consider control of scrub in areas to prevent becoming too shaded / keep access for wildlife open.

Soil mounds – these will develop poor quality scrubby woodland in time. It would probably be more damaging to remove these or spread them than leaving them as they are, although some careful re-profiling could be carried out. Exposing bare soil on slopes, especially south-facing ones, would provide opportunities for ground-nesting insects.

Open water – should be managed as wildlife ponds with no recreational activity or fishing. The pool under the wheelwash may require bank profiling and removal of metalwork for safety, but this should be done carefully with as little disturbance to the pool itself as possible.

Wetland /grassland to north of fishing lake – maintain as open habitat by controlling scrub.

Summary table habitat

Habitat	Importance	Important for?	Condition	Ideal management	Minimum management
Limestone heath	County level	Invertebrates Rare plants	Good, stable	May require more intervention longer term (10yrs +)	Leave alone
Open mosaic	County	Invertebrates Plants?	Good, stable extent decreased or decreasing	Restore key lost areas	Maintain, possibly requiring scraping every few years
Rough grassland	Local	Cover for a wide range of animals, possibly ground nesting birds	Moderate, declining	Improve plant diversity	Mow or graze
Rubble	Local	Amphibia and retiles	Good, stable	Consider control of scrub in areas	Leave
Weeds (tall ruderal)	Local	Nectar and cover for invertebrates	Moderate, declining	Cut back on rotation (1/3rd every year). Control spread of invasive species (Michaelmas daisy, bramble)	Define areas for access and control weeds in these areas.
Scrub	Local	Nesting birds, cover for other species	Moderate, declining	Rotational coppice management (say, 1/10th to 1/15th every year). Introduction of additional tree species, possible introduction of ground flora (seed mix).	Rotational coppice management 1/20th every year.
Open water	Local / probably county	Dragonflies, Plants (stoneworts)	Good, stable	Maintain open water by dragging out some vegetation	Make wheelwash pool safe. Leave other pools.
Wetland /grassland to north of fishing lake	County	Plants	Good, stable	Control scrub	Monitor and control scrub

5 Recommendations

Actions – short term

Survey – as a minimum the extent of habitats described needs to be mapped, and key plant species listed for each habitat with abundance values. This needs to be done in spring and summer, preferably over different months.
Mapping – an idea is to ask at airfield for volunteer to take good resolution aerial photos to aid habitat mapping. This will aid future site monitoring. Alternatively habitat surveyor to map on ground.
Management and safety audit – the site requires public amenity and habitat management. The practicalities of achieving these need to be investigated, particularly with respect to removal of site debris to facilitate mowing. This would best be done in winter when vegetation is low.
Consultation with key parties as listed below.

Actions- medium term

Costed management plan to cover habitat management and provision of public access. Will require ecologist to lead. This should also cover habitat and species monitoring and reporting and remediation measures.

Future of site

If it is concluded that a more biodiversity focused restoration is appropriate this could represent a considerably lower investment than the current consented restoration plan. A refocusing of the investment to ensure the very best habitat outcomes would then be more appropriate. Ideally these would include:

- Ensuring that the site infrastructure is of high quality and in optimum condition, including fencing for grazing management, footpaths
- Ensuring that habitats are in optimum condition
- Endowing a fund for ongoing community management and biodiversity monitoring

Ideally some type of community interest body could be set up to manage the site, constituted in such a way as to include representatives from TVERC and BBOWT to protect the ecological interest. This could in the longer term access funding such as available from HLF, TOE2, which private owners or councils cannot access. This consideration should not be used to justify poor investment in restoration or setting up community management.