Yellow Land Management Plan

Photograph: Judith Christian-Carter

Chris Redstall

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Review Date: 2015

The following 10 year management plan has been approved by:

	Signed	**Name**
Warwickshire Wildlife Trust	_____	_____
Warwickshire County Ecologist	_____	_____
Butterfly Conservation (Warwickshire)	_____	_____
Bishop's Itchington Parish Council	_____	_____

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Appendix 6: Butterfly records (2003-2009: Pam Reason & Mike Slater)

Also included within this pack:

Ball, J. (2007) *Bishop's Itchington: East side of Bishop's Hill*. Natural Connections Report

Kerr, B. (2007) *Access Audit Report: Bishop's Itchington*. Access2Audits

Warwickshire Museum Field Services, (1999) *Ecological Survey and Management Plan*

Warwickshire Museum Field Services, (2006) *Ecological Survey and Management Plan Update* and Appendices

1.0 Site Description

1.1 General information

Site Name	Yellow Land (found within an area known locally as the 'Heaps' or 'Spoils')
Grid Reference	SP 392 581
Location	Northern edge of Bishop's Itchington, off Ladbroke Road
Status	Part of designated Ecosite 19/35, of SINC quality
Area	1.11 acre
Parish	Bishop's Itchington
County	Warwickshire
Planning Authority	Stratford District Council

1.2 Summary Description

The Yellow Land is a 1.11 acre site on the northern edge of Bishop's Itchington village. It is part of a much larger area (Bishop's Hill/Bishop's Bowl) that was once a limestone quarry. The Bishop's Hill and Yellow Land were that part of the quarry used as a site for limestone waste from the nearby cement factory; the limestone-clay waste was used to infill the quarry on what is now the Yellow Land and also created Bishop's Hill spoil heap. Ownership of the Yellow Land passed from Blue Circle Group Plc who subsequently released the land to the Parish Council. The Yellow Land and Bishop's Hill have a diverse calcicolous flora that supports an equally valuable insect fauna (of regional and possibly national importance).

1.3 Tenure

The Yellow Land is owned by Bishop's Itchington Parish Council. The wider Bishop's Bowl/Lakes site is owned by Follett Property Holdings Ltd.

1.4 Access

Access is via a track off Ladbroke Road on the northern edge of the village. The entrance to the site is marked by a metal gate and kissing gate erected by the Parish Council. The Yellow Land is a public piece of land with restricted access to the land beyond (currently owned by Folletts Plc.). Folletts require that the land is fenced. Chestnut Pale fencing currently marks the land boundaries, although a desire line and vandalised section of the fence gives access to the land beyond. Many dog-walkers use this track.

Several access issues currently exist:

1) The entrance, although improved[1], is still steep leading from the metal gate and of poor quality.
2) The main desire lines are uneven and very muddy in poor weather, with many trip hazards.
3) The site is not user friendly for those with mobility, visual or other impairments.

An Access Audit was carried out on 22nd June 2007 by Barbara Kerr (National Register of Access Consultants) an auditor of Access2Audits (www.access2audits.co.uk). The main recommendations of the plan included:

I. Entrance improvements[1]:
   a. A pedestrian gate accessible by the disabled.
   b. A footpath leading into the area from the gate with the aim of achieving a gradient of 1:20 (maximum 1:12).
II. Track improvements:
   a. A single perimeter or figure of 8 path 1200mm wide.
   b. A hard surface from compacted gravel or similar, with clearly defined edges (e.g. wood boarding).
   c. Sound boxes to assist the visually impaired.
III. A permanent fence
IV. Potential rest area/educational areas/art work
   a. Seating should be 500mm high with stable arm and back rests that are smooth and not cold to the touch.
V. Signage:
   a. Interpretation board within 5m of entrance. To include tactile information. Height 850-900mm.
   b. Coloured arrow directional signage should be provided from the start and at regular intervals along the route (especially at junctions). Arrows 1000mm above ground with additional tactile arrows on the top of the post.

[1] A pedestrian kissing gate with Radar Lock and a vehicle access gate were installed by the Parish Council following the recommendation.

1.5 Physical Environment

(i) Geology and soils

The Bishop's Bowl/Bishop's Hill Quarries excavated a grey-coloured mudstone and limestone of the Blue Lias Formation (Stratford-on-Avon District Council, 2007). The limestone has a banded appearance in cross-section, due to alternating layers of shale and limestone. Aged 195-200 million years old, the rocks are noted for the presence of numerous Jurassic fossils. An ichthyosaur and Plesiosaur were discovered on the site in 1927 and 1928.

The soils of the Yellow Land are the products of quarry activities and scrub colonisation. The soil is calcareous and very clayey throughout, drying in summer and becoming waterlogged in winter. In areas where scrub has colonised, the clay soil has become enriched to varying degrees (greatest on the southern and eastern peripheries of the site).

1.6 Ecology

The Yellow Land is composed of a mosaic of habitats comprising small areas of species-rich calcicolous grassland and larger patches of dense developing Hawthorn/Blackthorn scrub with occasional trees e.g. Ash. Less frequent scrub species include Wild Privet *Ligustrum vulgare*, Dog Rose *Rosa canina* and Cotoneaster spp. A limited ground layer community of Ivy and Wood Avens *Geum ubanum* exists beneath the scrub canopy. Scrub development has occurred at the expense of the grassland community which currently occupies a small percentage of the site, mainly around the western and northern periphery. Towards the south-eastern boundary of the site, scrub has developed into semi-mature woodland with several large Hawthorn and Ash trees present.

The Yellow Land is part of the wider Bishop's Hill/Bishop's Bowl Site of Importance for Nature Conservation (designated by Warwickshire County Council as Ecosite 19/35). Bishop's Hill, overlooking the Yellow Land, is of regional and possibly national significance for its populations of invertebrates associated with the calcareous grassland:

'198 species of fly (Diptera) and 50 species of bees and wasps (Hymenoptera) have been recorded...25 nationally scarce species have also been recorded.' (Warwickshire Museum Ecology Unit, 2006).

'Rare and uncommon species recorded include Kidney Vetch, Butterfly Orchid, Small Blue and Dingy Skipper butterflies, two Red Data Book dipteral (fly) species: *Oxyna nebulosa* – Picture Winged Fly...and *Helina concolor.*' (Warwickshire Museum Field Services, 1999).

Despite this, the area has not currently received any legally protective status.

(i) Flora

An ecological survey and management plan carried out in November 1999 by the Warwickshire Museum Field Services Ecology Unit (included with this management plan) identified a diverse range of grasses, including a typical calcicolous species *Brizia media* (Quaking Grass), together with species typical of semi-improved grassland e.g. *Cynosurus cristatus* (Crested Dog's Tail) as well as more common rank grasses. 42 herbaceous species were recorded, including Common Spotted Orchid

Dactylorrhiza fuchsia. The grassland component of the site is of high conservation value, due mainly to the lack of similar plant communities in the county and the diversity of insects it supports.

A later survey (2006) recorded only 30 herbaceous grassland species across the site, including Kidney Vetch *Anthyllis vulneria*, Self-Heal *Prunella vulgaris*, Mouse-ear Hawkweed *Pilosella officinarum* and Lady's Bedstraw *Galium verum*. Refer to the associated Warwickshire Museum Ecological Survey for the full list of species (Warwickshire Museum Ecology Unit, 2006).

It is likely that scrub development between the two surveys has had some negative impact on species composition and extent of the calcicolous grassland, although the exact details are not clear. A notable absence from the 2006 survey was the Common Spotted Orchid *Dactylorrhiza fuchsia.*

The scrub component is not devoid of ecological value – a Spurge Laurel specimen was recorded in 2009 (Anton Irvin, Natural England, personal communication), and patches of scrub are important for stages of the life cycle for many insects and represent a valuable resource for the significant populations of birds present.

(ii) Fauna.

To date, no formal surveys of fauna have been carried out for the Yellow Land, although local enthusiast Pam Reason has kept regular records of butterfly species abundance since 2003 (see Appendix 6). The nearby Bishop's Hill site *has* been surveyed extensively (Falk, 2006) and it is probable that at least some insect species present on Bishop's Hill would be found on the Yellow Land. In particular, 103 species of bee and wasp were recorded at this site, of which 10 were regionally scarce. Comparisons with other designated calcicolous site nearby such as Ufton Fields, revealed a much more diverse and significant aculeate assemblage on Bishop's Hill (Falk, 2006).

The high insect species diversity of the wider Ecosite 19/35 is documented in the Warwickshire Museum Ecology Unit report (2006); notable is the presence of many locally and nationally rare Hymenoptera (saw flies, wasps, bees and ants), Diptera (true flies), Coleoptera (beetles), Lepidoptera (butterflies) and Odonata (dragonflies). Ant hills by the Yellow Ant *Lasius flavus* are a feature of Yellow Land.

Of particular interest are breeding populations of several priority butterfly species (as identified in the UK Biodiversity Action Plan). These include: Small Blue *Cupido minimus*; Grizzled Skipper *Pyrgus malvae* and Dingy Skipper *Erynnis tages*. Informal observations have confirmed the presence of these species on the Yellow Land.

A breeding-birds survey within the Ecology Unit Report (dated June, 2003) reveals the presence on Bishop's Hill of a wide variety of species, including Red List species such as the Turtle Dove, Skylark, Spotted Flycatcher, Marsh and Willow Tits.

Figure 1.1 Kidney Vetch and the Small Blue Butterfly, both present on the Yellow Land

1.7 Warwickshire Biodiversity Action Plan

The Warwickshire Local Biodiversity Action Plan (LBAP) for calcareous grassland, recognises both the importance and scarcity of limestone grassland communities nationally and in Warwickshire.

> *'Nationally, the cover of calcareous grassland has suffered a sharp decline over the last 50 years. Such grasslands are highly susceptible to changes in, or cessation of, management. It is estimated that before 1935, unimproved limestone grassland covered over 40% of the Cotswolds, this has sharply declined to around 1.5% today.'* (Irving, 2004).

Whilst Warwickshire, Coventry and Solihull contain only 62.9Ha of calcicolous grassland, nonetheless:

> *'Calcareous grassland is ... extremely important for invertebrates, with perhaps in excess of 500 strongly calcicolous Warwickshire species.'* (Irving, 2004).

In Warwickshire, these sites are now largely confined to the south and east of the county in old quarries or along railway and canal cuttings (see Map 1). The Bishop's Hill – Bishop's Bowl complex, including as it does the Yellow Land, is recognised as one of several important sites in Warwickshire not designated as a Site of Special Scientific Interest (SSSI):

> *'Recent entomological surveys have shown that the two most important sites for calcicolous insects are the Bishops Bowl – Bishops Hill complex and Southam quarry, not currently SSSIs but appear to support considerable national significance (the latter is the richest bumblebee site in the Midlands today).*

The LBAP also notes the importance of limestone grassland for dozens of declining insect species and several declining butterfly species e.g. The Small Blue and Grizzled Skipper, both of which are present on site. The importance of scrub edge habitat within limestone grassland is also noted, in particular for insects such as the Chalk Carpet moth, present on the Bishop's Hill site.

LBAP Objectives and Targets

Several LBAP targets apply directly to the Yellow Land project. These include:

B. To improve the condition of all lowland calcareous grassland above 0.25ha, that is currently in unfavourable condition to favourable or improving by 2006

C. To increase the extent of the habitat by creating an additional 1Oha of lowland calcareous grassland, including one site of at least 5ha by 2015

E. To enhance public appreciation of lowland calcareous grassland 2004-2015

Threats

Possible threats to the limestone grassland on the Yellow Land identified by the Warwickshire LBAP include:

1) Scrub encroachment
2) Fragmentation and isolation of sites
3) Lack of active management

1.8 Cultural

(i) Past Land Use

The Yellow Land is part of an old limestone quarry complex that has been in-filled with clay waste from the nearby cement factory, now dismantled. The quarry was in operation from the mid-late 19th century until the 1970s, although parts of the wider site were used for storage and distribution until 1994. The quarry complex was acquired by Follett Property Holdings Ltd in 1994 (Stratford-on-Avon District, 2008). The spoil heap overlooking the Yellow Land was re-graded by the land-owner.

(ii) Public Use

The entrance to the Yellow Land was traditionally used as an access point to/from the village of Bishop's Itchington onto the old quarry workings. Bishop's Itchington itself grew up as a result of employment generated by the quarry workings.

The Yellow Land is now used mainly by dog-walkers, who use the land as access to the Bishop's Hill complex beyond. The area has great potential to be used by a variety of user groups from the nearby village e.g. Mums and toddlers; Women's Institute; Primary School; Cubs and Scouts.

(iii) Education

In the period September –December 2009, school groups from the local primary school have visited the site. More trips and activities are planned for 2010.

1.9 Ecological relationships and implications for management

The Yellow Land is noted primarily for its rare insect species, especially the Small Blue and Grizzled and Dingy Skippers. The grassland habitat has declined in extent on the Yellow Land over the last 10 years and should be restored as the focus of any conservation efforts. However, the site also contains significant populations of birds and habitat management should aim to maintain suitable scrub habitat. A balance must be struck between scrub development (a vital resource for birds and for the life-cycle of many insect species) and limestone grassland. Scrub edge (the boundary between scrub and grassland) is of particular value.

2.0 Evaluation of the site

Size: The Yellow Land itself is a relatively small size (1.11 acres). If the entire area were calcicolous grassland it would represent less than 1% of the total area of calcicolous grassland within Warwickshire.

Diversity: 30-40 herbaceous plant species have been recorded within the grassland community, together with 12 grass species and 11 scrub species. Whilst plant species numbers are relatively high for the site as a whole, the dominance of Hawthorn and Blackthorn scrub restricts much of this diversity to small patches within the overall site.

Naturalness: The current vegetation community is a result of significant historical intervention; quarrying was followed by infill and then regrading. The current plant community has developed on limestone waste and, since the cessation of significant disturbance over the last 10-15 years, has developed successionally from calcicolous grassland through to scrub/woodland with grassland elements. The plant community now present, may have descended from older, pre-industrial calcicolous meadows (Steven Falk, personal communication).

Rarity: The percentage cover of the UK by calcicolous grassland communities has declined significantly over the last 50 years. In Warwickshire, only 62.9 Ha remain. The presence of this plant community on the Yellow Land represents a very scarce habitat. Kidney Vetch *Anthyllis vulneria* is also present on site, rare due to its role as a coloniser of newly disturbed calcareous sites.

Fragility: The site is vulnerable to trampling, inappropriate management (including grassland cutting at the wrong time of year and lack of scrub clearance) and successional process i.e. competition from course grasses and scrub development. Kidney Vetch flowers should be protected wherever possible, as the sole food source of the Small Blue butterfly larvae.

Typicalness: The site is representative of old limestone quarry workings in Warwickshire but as such, is not typical of the region in general.

Position in an ecological unit: the significance of the Yellow Land lies in the connection to the surrounding landscape, in particular Bishop's Hill (see map 2, Appendix 1), a calcicolous grassland community of high conservation importance, and the nearby Bishop's Bowl Lakes, previously a Warwickshire Trust Nature Reserve. Any grassland restoration on the Yellow Land is effectively increasing the total extent of grassland present on Ecosite 19/35.

3.0 Public Consultation Results

3.1 Techniques

In order to assess public opinion as regards design and habitat improvements to the Yellow Land, a public consultation was carried out between September and December 2009. Public opinion was carried out in the following ways:

1. Open evenings: two evenings were booked to allow any resident to share their views. The first was held on 8th October and was planned to allow open ended suggestions using a variety of techniques. Unfortunately only one person attended. The second event was held in December and was planned to allow comment on a draft design of the site. 8 people attended.

2. Questionnaire: A questionnaire was designed to be used at any consultation event (see Appendix 5). The design gave opportunity for simple ticking of choices as well as prompts for more open ended suggestions and comments. It also asked questions on site usage and gave an opportunity to become more involved in the project. **47 questionnaires were completed and returned.**

3. Attending various community meetings: in order to interview a wide range of people within the community, various meetings/events were attended and questionnaires together with information boards used to generate ideas and discussion. Events attended included:
    a. Primary School parent's evening
    b. Crafty Cuppa: local coffee and craft morning in the Memorial Hall
    c. Christmas Fayre (Primary School) and Memorial Hall
    d. Christmas Tree Festival (Parish church).
    e. Senior resident's coffee morning

4. Interviews with local organisations: these included the Headmaster of the local primary school; key members of the women's Institute; the vicar of the local Parish Church; the manager of the local social club (The Greaves Club); Busy-Bees Preschool group.

5. Resident's Focus Group: A focus group of residents from the Bishop's Gate Road resulted in input from 9 local residents who live very close to the Yellow Land.

6. Individuals: four households were visited of people who had expressed an extra interest in the outcome of the project. A Saturday morning was also spent outside the local newsagents canvassing opinion.

3.2 Questionnaire results

Site Usage

The responses of interviewees to how often they use the Yellow Land are shown in figure 3.1 below. Responses seem to indicate that the Yellow Land is currently under-used.

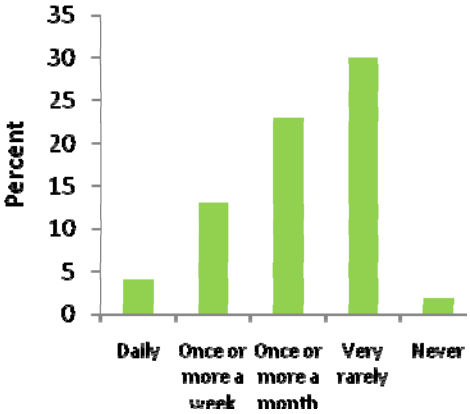

Figure 3.1 Percentage of 'visiting frequencies' to the Yellow Land.

The purposes given for visiting the Yellow Land are shown in figure 3.2 below:

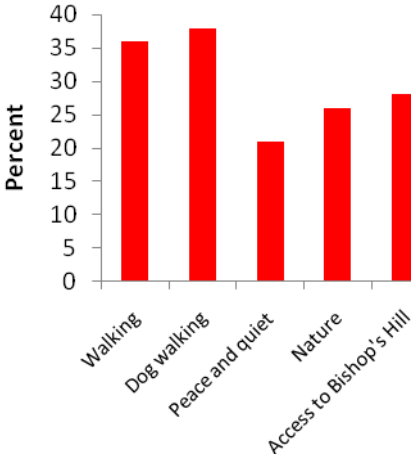

Figure 3.2 Percentage values of reasons given for visiting the Yellow Land

General likes and dislikes

The full list of comments is given in Appendix 5. In general, negative perceptions of the site included its level of untidiness and the presence of rubbish, overgrown vegetation and dog mess. Positive perceptions generally revolved around the sense of peace and quiet and 'naturalness' of the site. Many people commented that they would like the site to remain relatively unspoilt, or designed 'simply'.

Specific improvements

The total positive response to each specific design feature is shown in figure 3.3 below:

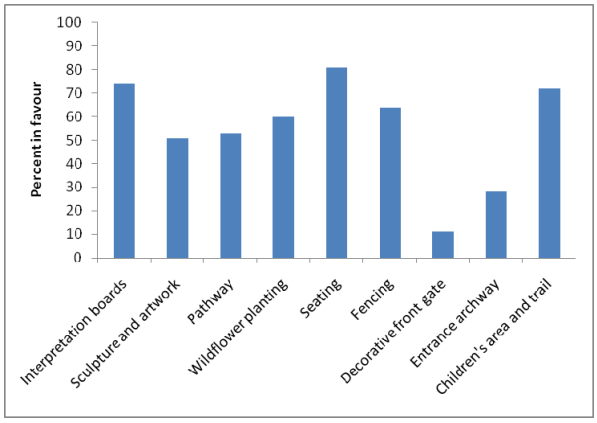

Figure 3.3 Percent in favour of specific design suggestions, expressed as a percentage of the total returned questionnaires (47 people responded).

If the figure of >50% is taken as an overall positive response to a design feature, then most features could be included in the final design. The notable exceptions are a decorative front gate (only 11% of respondents voted in favour) and an entrance archway (28%). The most popular options were: interpretation boards (74%); seating (81%) and a children's area and nature trail (72%).

Respondents were then given further choices as to the specific nature of some of the design features. For example, having chosen seating, four specific design options were then available (metal, wooden, recycled and picnic bench). The results of these choices are shown in figure 3.2 below:

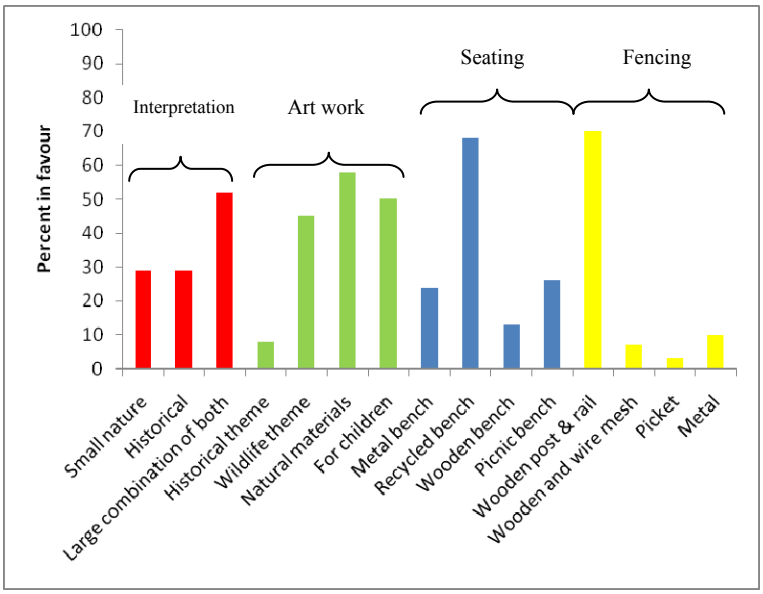

Figure 3.4 Positive responses to different types of each design feature. Figures are given as a percentage of total respondents to the main feature e.g. for seating, 68% of those who wanted seating ticked the recycled bench option. Questionnaire design allowed for more than one choice.

The main indications from the questionnaire results are that:

- The vast majority of respondents wanted some form of interpretation (of which a large combination interpretation board detailing the history and wildlife of the site is the most popular choice), seating (of which a seat made out of recycled materials is most popular) and fencing around the site (wooden post and rail fence is overwhelmingly the most popular choice).
- Art work (sculpture) and an improved pathway are only marginally supported. In particular, sculpture based on an historical theme is very unpopular.
- A dedicated children's area and nature trail received strong support.
- The inclusion of a decorative front gate and archway is not supported.

3.3 Additional input

A variety of organisations in Bishop's Itchington were interviewed as part of the public consultation. Comments are included below:

Pre-school group Busy-Bees (meeting):

- They would like an area of mown grass for sitting
- Having a map/stamp trail would be good (hunting for things)
- Enclose the space but leave some natural hazards (e.g. Hawthorn)

Women's Institute (via email):

- They would like the site to be managed to maximise resource for Honey and Bumble bees, in line with the national WI initiative.

Senior Residents (represented by Val Key and Anne Murphy):

- Improve the entrance (including a graded ramp for disabled and elderly and appropriate signage).
- Place benches where there is a view (one near the front would be useful)
- Could the unsafe pylons by fenced off and could car parking be improved?

Bishop's Gate focus group meeting (26th October 2009):

- Encouraging youth to congregate there could have associated problems – reduce the amount of seating
- Is it possible to have parking at the entrance?
- The existing entrance gate – is it small enough to stop motor bikes going through?
- The success at Ufton Fields was due to it being left wild with a ranger to monitor
- Site could look more appealing, more open
- How about a trail for youngsters and mothers – rubbings/treasure hunt
- On the property with Leylandii, only take down the Leylandii on the Yellowland side of the fence so that privacy is maintained
- MrWalters (No.22) would like his access maintained via a gate
- It would be good to celebrate the site history

- Sculptures will get ruined; could possibly do something low key that incorporates the dinosaur theme. Prioritise (so an entrance archway is a low priority).
- Incorporate the Yellow Land into existing walks – put in the Scene
- Need dog bins on site
- The access to the site is poor from the Bishop's Gate road – particularly along Ladbroke Road. Could this be improved?

Statutory organisations

Natural England (Anton Irving) via email and visit to the Yellow land on December 10th 2009:

- Limestone chippings are ideal as you do not want to alter the acidity of the soil.
- 'In view of the heavy clay nature of the site and its position at the foot of the mound (Bishop's Hill) being liable to runoff, you may...require some crushed stone as a sub-base.
- Having a bund as a path edge is liable to cause water run-off problems.
- Allow the grassland from cut areas of scrub to self-seed (minimal wildflower planting).

Eon (Energy company) site visit December 8th 2009:

- High and low voltage electricity cables run under the site at the entrance. Any regrading works would need to take this into account.
- Health and Safety Executive Guidlines should be followed.

Warwickshire Museum Ecology Unit via email.

- (Anna Swift) A children's formal area would be better located closer to the road and the area currently covered in nettles; the ecological interest is lower here. Keep the approach simple and avoid very short mown formal grass.
- Obtain baseline data on agreed groups (insects, birds, bats, rare plants etc) then review at the end of the year how often to gather more data (annually or less often) and who might be able to do this. This might depend on the volunteer group. WCC Ecology Unit involvement requires a charge for our time.
- (Steven Falk) Yellow land should not be over-formalised - crushed stone paths are not as ecologically sound as adopting the trodden clay paths that already exist - no bees and wasps are going to nest in crushed rock for instance. Avoid grassy circle with benches as this will intensify/concentrate disturbance of the Yellow land in a new way and could affect the ecology of the land quite drastically.
- Manage the yellow land for its ecology with simple straightforward access. If and when the rest of Bishops Hill enters the equation, there will be much more scope for educational features, seating etc. across the site as a whole with nicer views across the countryside.
- No need to increase scrub edge, because that implies increasing the amount of scrub (and every bit of scrub edge is a potential source of scrub invasion that requires more resources to control. 30% max scrub plus flowery open areas with lots of the key flowers (Kidney Vetch, Oxe-eye Daisy, BF Trefoil etc), non-surfaced footpaths that use the existing network, a couple of benches. It is a tiny area, so ecologically sensitive to landscaping and concentrated disturbance.

4.0 Management objectives

1. To prevent natural succession and maintain the calcicolous grassland and scrub in favourable condition such that:

- The grassland is a mosaic of tall grass with shorter areas and patches of bare earth to facilitate Kidney Vetch colonisation.
- Approximately 70% of the total area is grassland. In any compartment (see Appendix 2):
    - 30-70% is taller grassland
    - 10-30% is bare ground or short vegetation < 5cms tall
    - The frequency of Kidney Vetch is increased
- No more than 30% of the total area is covered by scrub, including bramble. The scrub should be managed to maximise structural diversity i.e. a range in shrub age within a stand achieved through selective coppicing.

2. To maintain a wide range of invertebrate species such that:

- The breeding populations of Small Blue, Grizzled and Dingy Skipper Butterflies are maintained or increased (comparisons will need to be made with historical data: see Appendix 6).
- The scores for ground-nesting Aculeate Hymenoptera (bees and wasps) are maintained or increased (see Falk, 2006: These scores could include species richness, Rarity Scores and Species Quality Index or SQI). Appropriate baseline values need to be agreed with County Recorder (currently Steven Falk). Surveys in Year 1 should provide this data.

3. To allow access onto and appreciation of the site by all sectors of the community. In particular:

- To enable access onto and around the site for special needs groups (including wheelchair, emotionally vulnerable and visually impaired users).
- To encourage use of the site by local school and pre-school groups through the development of a dedicated area and activities aimed at such users.
- To raise awareness of the location of the site through effective signage and promotion.
- To engage members of the community in consultation and implementation of site improvements and monitoring

5.0 Prescription

5.1 Actions

Refer to Appendix 2 for compartment locations

Project	***Details***	***Timing***	***Who***	***Notes***
1. Scrub control	1.1 Clear up to 70% of scrub in accordance with landscape design (see Appendix 2) 1.2 Spot treat with herbicide to prevent re-growth 1.3 Burn or chip cut material on site 1.4 Allow natural grassland colonisation to proceed on newly cut sites. Seed as necessary.	Winter Year 1 (Oct-Feb)	Volunteers and local groups BTCV Community Service group Butterfly Conservation	Leave specimen trees and shrubs (e.g. Spurge Laurel) Licensed handler is required for herbicide application (Glyphosate).
2. Scrub maintenance	2.1 Coppice and thin on 10 year rotation to maximise scrub structural diversity (compartments 1- 5). Coppice adjacent areas in sequence i.e. 1,2,3. Leave specimen trees as required. 2.2 Burn cut material on dedicated burn site 2.3 Monitor incursion of scrub into open grassland. Cut back and treat as required to maintain open grassland	Winter, years 1-5 (Oct-Feb)	Biodiversity group Friends of Group	Coppice one compartment every two years or as required. In section 5, cut selected shrubs only to promote diversity in terms of age Consult IN124 – 'The Scrub Management Handbook: Guidance on the management of scrub on nature conservation' available via the Natural England website
3. Grassland Management	3.1 Maintain a mosaic of tall and short grass patches within each compartment (30-70% tall herb grassland).Cut back coarse growth as necessary and remove cuttings (to create habitat piles or compost on southern boundary of site) *Avoid target butterfly species breeding sites where possible	Years 1-10 Late summer (August) Vary the timing of cutting	Biodiversity group Friends of Group	Rotationally cut one or several grassland compartments each year and create a mosaic in each area (i.e. don't cut entire compartment).

	3.2 Create small areas of bare ground about 0.5m^2 and a few centimetres deep (5% of area approx). 3.3 Allow natural colonisation of newly exposed ground and monitor Kidney Vetch establishment. Where needed reseeding or planting should not cover entire area (less than 50%) and should use plants of local provenance (www.butterflyconservation.org, 2009) 3.4 Assess effects of rabbit grazing to ensure that growth is patchy rather than uniformly short. Install rabbit proofing as required.	Late flowering season (May) Spring Year 1-10		Patches of bare ground with suitable food-plants growing over them represent preferred egg-laying sites for target butterfly species and offer new colonization sites for Kidney Vetch seeds.
4. Hard Landscaping	4.1 Construct stone aggregate pathway minimum 1200mm wide to form a circular walk. No wooden edging needed. 4.2 Improve wheelchair access on the path leading away from the entrance. Pathway gradient no more than 1:12 4.3 Construct permanent fence around the site perimeter 4.4 Maintain footpaths and fences 4.5 Construct school's area: to include willow tunnel, den and circular area of seating (earth bund and wooden stakes). Sow limestone grass mix of native provenance and cut regularly. 4.6 Install seating	Year 1 Year 1 Year 1 Year 2-5	Contractor Volunteers Contractor Volunteers Contractor Volunteers Biodiversity & Friends Group	• Develop specification from BTCV Footpaths Handbook and contractor advice • Stone aggregate should be in keeping with limestone sub-strata and, ideally, locally sourced. • Use contractors for works using volunteers as extra labour. Install posts early in season to avoid disturbance to Small Blue • Seat in keeping with surrounds
5. Education and access	5.1 Install and maintain interpretation boards 5.2 Install and maintain trail markers for visually impaired 5.3 Have a supply of leaflets at key locations (e.g. Local	Year 1 (then all years) Year 1 (then all years) Year 1 (then all	Contractor Volunteers	• Interpretation board at the entrance to include all site information (large board) • Small historical interpretation board to be placed in view of

	cafe; Tourist information; Church) 5.4 Develop an annual programme of events for the community to be publicised locally and in Wildlife Trust and Butterfly Conservation websites/literature 5.5 Establish a set of curriculum resources for the local Primary School and pre-school including nature trail 5.6 Construct nature trail	years) Year 1 Year 1	 Project officer Project officer Primary School	spoil heaps
6. Wildlife monitoring	6.1 Agree species/group targets for assessing impacts of management work. **<u>Obtain baseline data.</u>** 6.2 Regular monitoring of key fauna (birds and butterflies transects) and flora species 6.3 Additional annual habitat survey (to include detailed insect survey)	Year 1 (June) All years	Warwickshire Ecology Unit/ Volunteers/ Butterfly Conservation	

5.2 Management prescription timings

Year 1

Project	Oct	Nov	Dec	Jan	Feb	March	April	May	June	July	Aug	Sept
Scrub Control and maintenance	1.1-1.4	1.1-1.4	1.1-1.4	1.1-1.4	1.1-1.4	1.1-1.4						
Grassland management						3.3		3.2			3.1 and 3.2	
Hard Landscaping				Clear entrance	4.5	4.5	4.1; 4.2; 4.3; 4.5	4.1; 4.2; 4.3; 4.5	4.6	4.3		
Education and access				5.4		5.5				5.1 and 5.2	5.1 and 5.2	5.3
Wildlife monitoring				6.1 and winter birds		6.2	6.2	6.2	6.1 Full survey	6.2	6.2	6.2

Years 2- 10

Project	Oct	Nov	Dec	Jan	Feb	March	April	May	June	July	Aug	Sept
Scrub Control and maintenance	2.1-2.3	2.1-2.3	2.1-2.3	2.1-2.3	2.1-2.3	2.1-2.3						
Grassland management						3.3		3.2			3.1 and 3.2	
Hard Landscaping							4.4	4.4				
Education and access										5.1 and 5.2	5.1 and 5.2	5.3
Wildlife monitoring									Full survey			

5.3 Additional Notes:

The following additional guidance is in response to a site visit by Steven Falk (January, 2010):

1. For the target insect species, the ideal grassland structure currently exists just beyond the Yellow Land fence at the base of Bishop's Hill. This area consists of a mosaic of tall and short grass patches (each with associated herbaceous species) and significant patches of bare ground, necessary for the establishment of Kidney Vetch (see figure 5.1 below).
2. The aim would be to try and encourage this plant community further onto the Yellow Land – removing scrub and scraping away the laying of moss and topsoil that has accrued under the scrub. **This will involve an element of experimentation.**
3. The scraped areas can be sown with a seed mix of local provenance. Speak to Butterfly Conservation.
4. A certain amount of experimentation will be needed in these areas in order to recreate this grassland mosaic. This could involve: selective strimming; creating patches of bare earth; monitoring scrub incursion; monitoring the effects of rabbit grazing.
5. Existing areas of Black Medick are an important component of the site mosaic – they support a rare wasp *Odynerus melanocephalus* which feeds on caterpillars of the weevil *Hypera postica* that form larval cocoons within the Black Medick.
6. Other compositae e.g. hawkbits provide a vital adult food supply.
7. Bare earth 'cliffs' are needed as nesting sites for many aculeates, but these are catered for at Bishop's Hill itself, so needn't necessarily be added on the Yellow Land.

Figure 5.1 Example of desired grassland/scrub structure for the Yellow Land.

References:

Ball, J. (2007) *Bishop's Itchington: East side of Bishop's Hill*. Natural Connections Report

Kerr, B. (2007) *Access Audit Report: Bishop's Itchington*. Access2Audits

Falk, S (2003) *Warwickshire Local Biodiversity Action Plan: Quarries and Gravel Pits*. PDF file available at http://www.warwickshire.gov.uk/ accessed December 2009. See also, LBAP reports for 'Disused industrial and railway land.'

Falk, S. (2006) The modern bee and wasp assemblages (hymenoptera:aculeata) of Warwickshire's calcareous quarries and spoilheaps, and the conservation issues facing them. *BR. J. ENT. NAT. HIST*., **19**: 7-33

Irving , J.A. (2004) Warwickshire Local Biodiversity Action Plan: Lowland Calcareous Grassland. PDF file available at http://www.warwickshire.gov.uk/ accessed December 2009.

Stratford-on-Avon District Council (2007) *Harbury Cement Works Masterplan: Supplementary Planning Document*

Warmington, K (2003) *Warwickshire Local Biodiversity Action Plan: The Small Blue*. PDF file available at http://www.warwickshire.gov.uk/ accessed December 2009.

Warwickshire Museum Field Services, (1999) *Ecological Survey and Management Plan*

Warwickshire Museum Field Services, (2006) *Ecological Survey and Management Plan Update* and Appendices

Other Resources:

IN124 - *The Scrub Management Handbook: Guidance on the management of scrub on nature conservation*, available at http://www.naturalengland.org.uk/

'*Why manage scrub on chalk and limestone grassland?*' available at http://www.rspb.org.uk/ourwork/conservation/advice/scrub/manage.asp