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Tynning Hill, Radstock

Ecological
Management Plan

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Plans

Habitat Features

(2222/P02 July 2016 PW)

Landscape and Ecological Management Plan

(2222/P03 July 2016 PW)

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Section 1: Introduction

Instruction

- 1.1. This Ecological Management Plan (EcMP) has been prepared by Tyler Grange LLP on behalf of David Webb Management Ltd. It describes a strategy to provide the planning authority with the required certainty that the impacts of the proposed development at land at Tynning Hill, Radstock (hereafter referred to as the 'site') can be mitigated. The site is centred on National Grid Reference ST 696 553.

Scope of the EcMP

- 1.2. The implementation of this EcMP will ensure appropriate management of existing retained ecological features and sets out design and management of new features. The EcMP will include land within the 'application area' which will be subject to development, but will include other land within the developer's control, as shown on plan 2222/P03.
- 1.3. It is intended that the implementation of the EcMP would maximise the biodiversity potential of retained and newly created features, and enhance the ecological importance of the proposed development and the wider area, in accordance with planning policy and guidance.
- 1.4. Details of monitoring are also provided, for a period of 10 years, following completion of the development.



Section 2: Site Summary

Location

- 2.1. The 'site' is centred on National Grid Reference ST 696 553 and is defined by the blue line boundary (see **Plans 2222/P02 and 2222/P03**). However only the area within the red line boundary, the 'application area' is proposed for development.

Site Area

- 2.2. The site is approximately 5.7ha in area however only approximately 1.8ha within the application area is proposed for development.

Land Tenure

- 2.3. The site is owned by David Webb Management Ltd.

Site Context

- 2.4. The site is at the foot of a southeast facing slope, adjacent and to the north of a colliery spoil heap (Tynning Tip) that now supports mixed woodland and acid grassland. In the south west corner, the site was once the location of colliery workers' cottages, though these have been demolished leaving the building platforms, roads and rubble piles. The south east corner of the site comprises old orchard which has become overgrown with dense scrub and tall ruderal vegetation. The rest of the site was previously arable fields but they are no longer cultivated and are now dominated by coarse grasses. To the north and northeast of the site are arable fields.
- 2.5. The site lies is located on the western most edge of the Cotswolds NCA (No.107). This comprises a steep scarp supporting unimproved limestone grassland, cut by numerous wooded valleys and provides a surround for the settlements of Cheltenham, Gloucester, Stroud and Bath. It is also immediately adjacent to the Bristol, Avon Valley and Ridges NCA (No. 118), as defined by Natural England. This NCA is approximately 21% urban and is dominated by the City of Bristol and its surrounding areas including the M4 and M5 corridors. The area is characterised by steep wooded slopes, ridges and broad valleys and large expanses of farmland.
- 2.6. The EcMP covers all the land within the site including the application area (refer to **Plan 2222/P03**).

Protected Sites

- 2.7. The site is not covered by or adjacent to any site which is designated on account of its nature conservation importance and there are no such sites within the likely 'zone of influence' of the EcMP as it affects the site.

Habitats and Flora

- 2.8. An ecological assessment has been prepared as part of the planning application (Tyler Grange report reference 2222_R02 dated July 2016) for which an extended Phase 1 habitat survey was



undertaken on 26th June 2014 and an updated survey on the 27th June 2016, based on survey guidance set out in the Handbook for Phase 1 habitat survey (Ref 1). This entailed recording the main plant species and classifying and mapping broad habitat types present. Note was taken of the more conspicuous fauna, and any evidence of, or potential for the presence of protected/notable flora and fauna.

- 2.9. Full detail of the site habitats is provided within the Ecological Assessment Report (Tyler Grange report reference 2222_R02 dated July 2016). The evaluation of habitats and species is defined in accordance with published guidance (Ref.2).
- 2.10. The site, including application area supports a mosaic of habitats, most of which are common and widespread. Habitat features are illustrated on **Plan 2222/P02**. Site habitats include tall, coarse grassland with patches of tall ruderal species and typical of unmanaged grassland in Southern England of **site importance**, species rich tree lines and hedgerow of **local importance** and limited patches of more species-rich grassland associated with the skeletal soils on the concrete bases of the former houses which in isolation, are of **local to district importance**.

Fauna

Amphibians

- 2.11. Whilst great crested newt *Triturus cristatus* is not likely to be present, common toad *Bufo bufo*, a SOPI, could be.

Badgers

- 2.12. Not setts were identified on site during the 2014 and 2016 surveys. Badgers would be expected to be present locally and may have a sett on site within the dense vegetation, though this could not be confirmed during the surveys. Badger is not a species of conservation concern and their legal status is primarily to protect them from persecution. As such the badger population is of **negligible ecological importance**.

Bats

- 2.13. No features suitable for roosting exist within the site. Houses nearby to the south are likely to support roosts. With the exception of the southwestern boundary that is adjacent to woodland at Tynning Tip, it is unlikely that there are important bat commuting routes across the site (most bat species prefer to commute from roosts to foraging grounds along linear features such as hedgerows and ditches). Overall, the site is not likely to be of greater than **local importance** for bats.

Birds

- 2.14. The dense scrub and tall ruderal would be expected to support breeding passerines with plentiful insects, seeds and fruit available. There is potential that the Schedule 1 species barn owl *Tyto alba* could be using the site as part of a much wider foraging resource and they, and other birds of prey, would not be dependent upon it. The bird assemblage would not be expected to be of greater than **local importance**.



Brown Hare

- 2.15. Brown hare would only be expected to be using the site as part of a much wider foraging resource as such the population, if present, would be of **site importance**.

Dormouse

- 2.16. Although the site does offer some potential habitats for dormouse *Muscardinus avellanarius* there is optimal dormouse habitat present off site in the wider area in the form of woodland blocks to the west of south of the site. As such the site is considered to be of no more than **site importance** to dormouse, if present.

Invertebrates

- 2.17. Several key invertebrates were recorded within the application area during the 2014 survey:
- the red data book blue carpenter bee *Ceratina cyanea* was recorded on bramble;
 - the nationally scarce seed beetle *Bruchus atomarius* was recorded on melilot;
 - the nationally scarce weevil *Zacladus exiguous* was recorded on the ruderal vegetation; this is the first time this species has been recorded in Somerset; and
 - the picture-winged fly *Terellia longicauda* was recorded on woolly thistle.
- 2.18. Given the nature of the habitats present and the species identified the invertebrate fauna supported by the application area and the similar habitats within the site is considered, overall, to be of **county importance**. In the absence of intervention those species found in the pioneer habitats, which are now confined to the stone bases, would not be expected to persist.

Reptiles

- 2.19. The detailed survey of the application area confirmed a good population of common reptiles in the pioneer and rank grassland, including slow worm *Anguis fragilis* (peak adult count 11) and common lizard *Zootoca vivipara* (peak adult count 7). The site habitats outside the application area would also be expected to support a population of common reptiles. The good assemblage of reptiles is considered to be of **local importance**.

Summary of Important Features

- 2.20. Table 1 summarises the existing important ecological features.

Feature	Importance	Conservation Context	Legal protection
Species-rich grassland/pioneer community	Local to district	LBAP	
Rank grassland	Site		
Tree lines and Hedgerow	Local		
Badgers	Negligible		Protection of Badgers Act 1992

Bats	Local	LBAP	WCA; NERC Habitats Regulations;
Birds	Local	Red List; Amber list	WCA; NERC
Brown hare	Site		
Invertebrates	County	Red data book	
Reptiles	Local		WCA; NERC

Table 1: Important and Protected Ecological Features – *LBAP denotes Bath and North east Somerset Wildlthings Biodiversity Action Plan species; SSCI denotes Site of Nature Conservation Importance; NERC denotes Habitats and Species of Principal Importance, as defined in the Natural Environment and Rural Communities Act 2006; WCA denotes Wildlife and Countryside Act, 1981 (as amended); Habitats Regulations denotes Conservation of Habitats and Species Regulations 2010.*

Section 3: Management Objectives and Constraints

Site Potential

Grassland

Species-Rich Grassland/Pioneer Community

- 3.1. Without intervention, the species-rich grassland/pioneer community associated with the skeletal soils on the concrete bases of the former houses will reduce in importance in the short to medium term as a result of natural succession to more species-poor, rank communities. This habitat occupies circa 0.2ha of the site and it will be lost within the development footprint. Owing to the relatively recent origins of this habitat, there is potential to recreate it through translocation and, through management, to arrest the ongoing successional process to maintain its importance in the long term (something that could not be achieved without development or intervention controlled by some other means).

Rank grassland

- 3.2. The rank grassland in F2 is currently of site importance however there is some evidence of a more diverse seed bank present in discrete, more species-rich areas. Therefore, there is potential to restore F2 to a species-rich grassland which, if managed appropriately and resorted to species-rich semi-improved grassland, could be of up to district importance after 10 years or so. This could be achieved through the implementation of an appropriate wildflower meadow management regime. This would also benefit a range of insect fauna including butterflies, crickets and grasshoppers, as well as amphibians, reptiles and birds.
- 3.3. As the grassland is likely to support reptiles, management would need to retain opportunities and should be enhanced for reptiles where these are retained to maintain carrying capacity.
- 3.4. Furthermore, there is potential to reduce the competition risk to more ecologically important grassland through removal of the variagated yellow archangel *Lamiastrum galeobdolon* on site (TN1, **Plan 2222/02**) as this species is invasive and can spread rapidly, carpeting the ground and outcompeting all other species (Ref. 3).

Hedgerows

- 3.5. No hedgerows will be lost as a result of the development. Hedgerows and trees are currently not managed but could be to maximise density, fruiting and flowering to provide increased cover and foraging resources for fauna. There also exists an opportunity to increase the quantum of hedgerow habitat within the application area and, by using native species typical of the area, additional habitat can be provided for nesting birds and invertebrates.
- 3.6. Furthermore, if a sensitive lighting scheme is implemented along newly planted hedgerows, these linear features could provide additional corridors for bats foraging and commuting across the site.

Scattered trees and tree lines

- 3.7. Tree loss will be limited to a small number of semi-mature specimens within the application area. These will be replaced within the community orchard and within the application area.

Protected and Notable Fauna

- 3.8. In the absence of intervention, encroaching tall ruderal and scrub vegetation may result in the elimination of the supporting plant species including small-leaved cranesbills, such as herb Robert *Geranium robertianum* and dove's-foot cranesbill *Geranium molle* for two nationally scarce beetle species *Zacladus exiguus* and *Bruchus atomarius* and woolly thistle for *Terellia longicauda*.
- 3.9. There is potential to retain these habitats through translocation and management and maximise the likelihood of these populations persisting.
- 3.10. Through habitat creation and enhancement, similar or better opportunities for bats, reptiles, birds and invertebrates can be created on the site.

Objectives

- 3.11. The objectives of the EcMP are to realise the site potential set out above and are specifically:
1. To retain species-rich grassland/pioneer community habitat in the long-term;
 2. To restore species-rich grassland in F2;
 3. Maintenance of current scrub to grassland ratio in F2 and F3;
 4. To enhance retained and newly planted hedgerows and trees to benefit wildlife;
 5. To maintain the conservation status of identified key species at the site such as reptiles and invertebrates;
 6. To increase the amenity and interpretative value of the site;
 7. Monitor the efficacy of the EcMP by undertaking biological recording of habitats and species.

Management Constraints

- 3.12. Management cannot be undertaken that would result in offences under protective legislation. As such, management would ensure conformity with all relevant legislation, including the Wildlife and Countryside Act (WCA) 1981 (as amended), the Conservation of Habitats and Species Regulations 2010, the Natural Environment and Rural Communities (NERC) Act 2006 and the Protection of Badgers Act 1992.
- 3.13. This would include the protection of an active badger sett should one be present, nesting birds and the avoidance of killing or injuring common reptiles.
- 3.14. In addition, ideally grassland in field F2 would be grazed as part of the management plan however given its use by members of the public and dog walkers, management options are likely to be limited to periodic hay cutting rather than grazing.



Section 4: Management Prescriptions

- 4.1. The following management prescriptions are devised to fulfil the objectives in Section 3. Plan **2222/P02** illustrates the habitats present within the site at the time of the extended Phase 1 habitat survey on 27th June 2016 and Plan **2222/P03** illustrates what is proposed as part of the EcMP.

Grassland

Management Objective 1: To retain species-rich grassland/pioneer community habitat in the long-term

- 4.2. It is proposed to undertake clearance tall ruderal and dense scrub vegetation within F1 (refer to **Plan 2222/P03**) and create an area of bare ground for the translocation of approximately 0.2ha of the concrete substrate and associated skeletal soils which currently supports the species rich pockets of pioneer grassland within the application area. This will help facilitate some of the less competitive grass and herbaceous species to colonise. Once established the area will be subject to a management regime to prevent tall ruderal and scrub encroachment and the loss of this habitat type over time.

Management Objective 2: To restore species-rich grassland in F2

- 4.3. The objective of diversifying and increasing the wildflower and herb component of the grass sward in F2 will be achieved by reducing dominance of competitive grass species by hay cutting and through introduction of yellow-rattle *Rhinanthus minor*. Cutting and removal of arisings is also likely to reduce the nutrient status of the soils. Re-seeding the grassland is not recommended in this instance due to their being sufficient relics of a more diverse grassland community present, and hence potential for restoration.
- 4.4. Owing to the likely use of the site by members of the public and its size, grazing is inappropriate and therefore cutting and subsequent removal of arisings is likely to be the most feasible way in which grass can be managed. The main hay cut will be timed to occur during August after most of the species have set seed. A further cut will also be taken in the early spring at the beginning of March to take off the surplus growth accumulated over the autumn and winter months. This would simulate the grazing of aftermath after hay cutting, which is a common practice in the traditional management of meadows.
- 4.5. In the autumn of the first year (August to mid-September), a flail cutter will be used to cut the grass, as this will beat up the ground as well as taking off the sward, thus creating small patches of bare ground that can be readily colonised by wildflowers. Yellow-rattle, which is semi-parasitic and widely used to reduce dominance of competitive grasses, will be broadcast immediately after at a rate of 0.5-1g/m². The seed will germinate after the winter and by the next autumn, the sward should have opened up allowing other wildflowers to establish increasing the sward diversity.
- 4.6. A scythe bar cutter will be used to take off the August hay cut in year 2 and the grass left full length for at least two days in the field to allow the fallen seed to set before tedding and baling for removal. Thereafter, a spring cut and an autumn cut using a scythe bar cutter will be undertaken.
- 4.7. The margins of the grassland adjacent to hedgerows would be managed differently to encourage an “ecotone” between the hedgerow and grassland. This area will comprise a headland of between 2 and 5m width creating a “scalped edge” effect bordering grassland and hedges. This will be cut

less frequently than the main grassland area (i.e. once every two to four years) in order to allow for formation of tussocks, tall herbs and scrub. Such hinterlands are valuable in providing refuges for reptiles, small mammals and invertebrates particularly after the main hay cut has been taken off. As with the main hay cut, the arisings will be left for at least two days before removal.

- 4.8. The stand of variagated yellow archangel is limited in size and will need to be excavated since, whilst the roots are shallow and can be easily pulled, stolons easily break meaning the plant persists (Ref 3).

Management Objective 3: Maintenance of current scrub to grassland ratio in F2 and F3

- 4.9. The existing ratio of scrub to open grassland habitat is of benefit to wildlife, providing greater structural diversity within the site, and therefore increasing the value to a wide range of invertebrate, bird and mammal species. The current ratio, or proportions, should, however, be maintained through scrub removal once every three years to prevent excessive scrub encroachment into the grassland.

- 4.10. Table 2 summarises the prescriptions in relation to the objectives described above.

Management Operation	Timing	Frequency	Method
Objective 1: To retain species-rich grassland/pioneer community habitat in the long-term			
Clearance of dense scrub/tall ruderal vegetation in F1 under supervision of an Ecological Clerk of Works (ECoW) (refer to Reptile section)	Before construction	Once	Chainsaws/clearing saws/ hand tools/strimmers
Creation of areas of bare ground under supervision of an ecologist	Before construction	Once	Excavator with Grading bucket
Translocation of concrete substrate to bare ground in F1	Year 1	Once	Excavator with Grading bucket
Regular weeding and mowing down to 30 – 50mm; rake off arisings	Year 1	3-4 times	Strimmer
Hay cut; rake off arisings	Years 2 – 10 August	Annually; August	Strimmer
Mow regrowth down to 50mm; rake off arisings	Years 2 – 10 Autumn & spring	Annually; August	Strimmer
Management of scrub and tall ruderal habitat	October	Annually	Chainsaws/clearing saws/ hand tools/strimmers
Objective 2. To restore species-rich grassland in F2			
Removal of yellow variagated archangel	June	Year 1	Excavator/hand tools
Hay cut	August	Year 1	Flail cutter



Management Operation	Timing	Frequency	Method
Sow yellow rattle at rate of 0.5-1g/m ²	After hay cut	Year 1	By hand
Hay cut	August	Year 2	Scythe bar cutter
Spring cut	Early March	Annual	Flail cutter
Hay cut	August	Annual	Scythe bar cutter
Hedgerow headland cut	October	Every 2- 4 years	Scythe bar cutter
Prevention of scrub encroachment in F2 and F3			
Scrub clearance in F2 and F3	October	Years 3, 6 and 9	Brush cutter

Table 2: Management of Grassland

Hedgerows and Trees

Management Objective 4: To enhance retained and newly planted hedgerows and trees to benefit wildlife

- 4.11. The existing hedgerow and tree lines on site are largely unmanaged and are therefore tall and bushy which benefits wildlife using the site. Hedgerows and trees will be managed to maximise density, fruiting and flowering to provide increased cover and foraging resources for fauna.
- 4.12. It will be necessary to ensure that retained trees cause no health and safety risks by removing dangerous limbs.
- 4.13. Approximately 230m and new native, species-rich hedgerow planting is proposed around the boundaries of the application area which will utilise existing tree specimens on site wherever possible. Additional scrub planting will be planted adjacent to Tynning Tip at the south western boundary of the site to improve the existing foraging and commuting corridor for bats.
- 4.14. Once established, it will be managed to both screen development and maximise biodiversity interest.
- 4.15. Table 3 summarises the prescriptions to achieve the desired objective.

Management Operation	Timing	Frequency	Method
Objective 4. To enhance retained and newly planted hedgerows and trees to benefit wildlife			
Gapping up existing hedgerows and treelines using native species found in hedgerows locally	Late winter	Year 1	To be determined
Hedgerow management	Late winter	5 – 10 year rotation; maintain tall bushy growth	Flail cutter
Tree safety survey of trees close to paths and other publicly accessible areas. Take off dangerous limbs (see bats below).	Late winter	Annual and after winds	Visual. Remove dangerous Limbs with chainsaw but leave on site (refer invertebrate section)
New hedgerows			



Management Operation	Timing	Frequency	Method
Strip ground of turf where planting required under the supervision of an ecologist	Before construction	Once	JCB Grading bucket
Gap up and light trimming to promote dense growth. Removal and replacement of dead/diseased plants.	-	Year 2 - 5	By hand

Table 3: Management of hedgerows and trees

Management Objective 5: To maintain the conservation status of identified key species at the site such as reptiles and invertebrates

- 4.16. The habitat prescriptions outlined for Management Objectives 1 – 4 are devised to benefit a range of fauna, particularly those outlined in Table 1. Additional prescriptions are described below and are summarised in Table 4 below.

Badgers

- 4.17. If a main or annex badger sett is identified during site clearance which will be lost or damaged as a result of the development the badger mitigation strategy will include for the provision of a new sett outside the application area and the clearance required in F1 to ensure that the badger clan can persist. Any sett provided would be fenced off in order to protect it interference by humans and dogs. Monitoring of the artificial sett will be undertaken to determine whether badgers are using it. The results of these surveys will be used to inform any required changes to the EcMP.
- 4.18. The retention of the majority the hedgerow and treeline and orchard habitats within F3 will ensure suitable foraging habitat for badgers is retained on the site following completion of the development. This provision of additional hedgerow planting along the application area boundaries, which will be managed to maximise the potential for wildlife, will provide additional foraging corridors on the site for badgers. Furthermore, the creation of wildflower grassland in F2 will also provide enhanced habitat for badger foraging.
- 4.19. It is unlikely that the footpaths proposed on the site would be used after dusk, when badgers are more likely to be active. In addition, no lighting will be provided outside the application area, reducing potential disturbance from lighting on badgers around the site.

Bats

- 4.1. Those features of likely to be used by commuting and foraging bats (hedgerows and mature trees) are retained. Management described above will ensure their structural integrity, and will maximise their density, flowering and fruiting, therefore encouraging invertebrates, including flying insect prey of bats, such as moths.
- 4.20. The retention of dark, unlit corridors, as shown on **Plan 2222/P03**, along the eastern and western boundaries, will allow bats to continue to use and move through the site. The planting of additional hedgerows on the application area boundaries will also offer additional foraging and commuting corridors. Furthermore, the proposed changes to the grassland management on the site should improve invertebrate diversity and therefore increase prey availability for bats.
- 4.21. No trees to be lost have potential for roosting bats. In future, any trees requiring works would be assessed by a licenced bat worker, in advance of the works, to determine their potential to support

roosting bats and hence the potential to harm roosting bats, in order to devise appropriate mitigation, as required.

- 4.22. Some bats species, such as common and soprano pipistrelle and possibly single brown long-eared (*Plecotus auritus*) bats may forage over new gardens and could roost in new houses. In order to provide additional roosting opportunities for bats, eight bat boxes including Schwegler 2F DFP and 1FD, will be attached on retained mature trees with four proprietary bat bricks in new buildings (such as Schwegler 1FR) fronting on to suitable, habitats (siting to be agreed with ECoW). The exact locations of these should be agreed by a bat worker but approximate locations within the existing semi-natural habitats are shown on **Plan 2222/03**.
- 4.23. They will be installed at least 4m above ground level on trees, or as close to the eaves as possible, or at the gables, on new buildings, to provide a variety of environmental conditions to be used at different temperatures and in different weather conditions, *i.e.* located facing between south-west to south-east, in clusters and away from direct lighting (Ref 4).
- 4.24. Bat boxes will be left undisturbed unless damaged to the extent that it obvious that no bats are roosting within them (*i.e.* large holes allowing the inside of the box to be viewed from the ground). These will be monitored at least every two years, from implementation of the EcMP *i.e.* years 2 and 4, by appropriate bat licence holders (from the local bat group, for instance), with any bat roost records provided to the local biological records centre. In the event that bat boxes are not used after three years then they will be moved to other trees by the local bat group.

Birds

- 4.25. All wild birds, their nests and eggs are afforded protection under the Wildlife and Countryside Act (WCA) 1981, as amended. As such any removal or trimming of woody vegetation, including hedgerows, trees and shrubs, as well as the two buildings on site, should be timed to avoid the nesting bird season, *i.e.* between 1st September and 28th February, inclusive. Should this not be possible, works should be preceded by a check for active nests by an ecologist. If an active nest is found, an appropriate buffer will be determined on site by the ecologist, and retained until such time as the young have fledged and/or the nest is no longer active.
- 4.26. Ten bird boxes, to provide nesting opportunities for a range of species, including birds of conservation concern, will be incorporated onto new buildings and on retained mature trees. These could include:
- Woodcrete by Schwegler open front nest box - guaranteed to be long lasting, and suitable for species including pied wagtail *Motacilla alba*, robins *Erithacus rubecula* and wrens *Troglodytes troglodytes*;
 - RSPB Classic nest box - suitable for species including great tit *Parus major*, tree sparrow *Passer montanus*, pied flycatcher *Ficedula hypoleuca*, house sparrow, and nuthatch *Sitta europaea*;
 - Apex starling nest box - designed for starling and other larger garden birds; and
 - Blackbird nest box - suitable for blackbird *Turdus merula*, robin, dunnock *Prunella modularis* and wagtails.
- 4.27. The exact locations of these should be agreed by an ecologist but approximate locations within the existing semi-natural habitats are shown on **Plan 2222/03**. Locations within the built development would be confirmed, but could be controlled by planning condition.



- 4.28. Bird boxes will be sited in suitable locations away from potential interference by people or predators, at least 2-4m from the ground, facing between north and east (Ref 5). Ideally they will be put up in the autumn and will be left undisturbed during the breeding bird season (March 1st to August 31st inclusive). These would be monitored and cleared out annually for 2 years.

Invertebrates

- 4.29. The species-rich grassland/pioneer community within the application area supports some notable invertebrate species. Translocation of these habitats outside the application area into F1 (Refer to Management Objective 1) maximises the likelihood of the current invertebrate assemblage persisting on site. If possible, woolly thistle plants would be moved individually and/or seed collected for later sowing to provide larval host plants for the picture-winged fly *Terellia longicauda*.
- 4.30. Furthermore, the proposed changes to the grassland management in F2 should improve the onsite habitats for a wide range of invertebrate species by increasing the sward diversity present and therefore the available food resource. Deadwood from the treelines and woodland on site will be retained *in situ* providing additional habitat for deadwood (saproxylic) specialists.
- 4.31. In order to assess the success of the proposed management, monitoring is proposed during years 1, 3, and 5. The results of these surveys will inform any changes to the EcMP.

Reptiles

- 4.32. Existing suitable habitats for reptiles within the application area will be lost to the development. In addition, the change in management within F2 from rank grassland to wildflower grassland will also reduce habitat suitability for reptiles although the pockets of dense scrub and unmanaged hedgerow will be retained.
- 4.33. As the reptile mitigation strategy will involve the translocation of reptiles outside the application area into existing site habitats the carrying capacity of these habitats must be increased. The proposed removal of tall ruderal and scrub within F1 and reversion to the open mosaic habitats will provide better opportunities than currently exist within F1. Furthermore, the ecotone proposed around F2 will also provide a variation in habitat structure which will be beneficial to reptiles. The cutting regime proposed within F2 (see Management Objective 2) within F2 will ensure long term suitability of this habitat for reptiles. Lastly, a total of seven reptile hibernacula will be created around the site. Indicative locations are shown on **Plan 2222/03**. These will provide reptiles opportunities for shelter or hibernation, as well as opportunities for other species, such as common toad and invertebrates. The hibernacula can contain a range of materials, including those already present on site such as brash and rubble. However, given the timing of the hibernacula construction (prior to development commencing) it is likely that materials will need to be sourced elsewhere.
- 4.34. Arisings sourced from the cutting regime implemented in F1 and F2 can be used to “top up” hibernacula and create additional habitat piles in the field margins for reptiles. Deadwood retained *in situ* may also offer some shelter for reptiles using the site.
- 4.35. The population of reptiles will be subject to monitoring in years 1, 3 and 5.



Management Operation	Timing	Frequency	Method
Badgers			
Monitoring of artificial badger sett (if necessary)	February – May or September/October	Annually	Survey by ecologist
Bats			
Tree surveys of trees with bat roosting potential requiring work	April – September	As and when required	Survey by ecologist
Monitoring of bat boxes	April/May or September (to avoid maternity period).	Years 2, 4, 6, 8 10	By local bat group
Move bat boxes if unoccupied	Timing unconstrained, can be combined with a monitoring check	Year 4 and 8 if necessary	By/under supervision of an appropriately qualified bat ecologist
Birds			
Clearance of woody vegetation that could support bird nests.	Outside March to August, unless prior survey undertaken.	As required.	Survey would be undertaken by an ecologist.
Invertebrates			
Refer to Management Objective 1			
Monitoring of invertebrate assemblage	June	Years 1, 3 and 5	Suitably qualified ecologist
Reptiles			
Construction of hibernacula	Pre-construction	Once	Translocation by suitably qualified ecologist and ecological supervision of works
Monitoring of Reptile population	March to October	Years 1, 3 and 5	Suitably qualified ecologist

Table 4: Management for Protected and Notable Fauna

Management Objective 6: Increase the amenity and interpretative importance of the site

- 4.36. There is a Public Right of Way (PRoW) on the site, which would be retained. New, informal pathways connecting to it will be created (**Plan 2222/P03**), though they will not be surfaced, to retain a more natural feel to the areas subject to the EcMP. These pathways will be checked on twice annually and managed if required (e.g. mown).

- 4.37. Interpretation material in the homebuyers packs and on an interpretation board would state why this area is managed as it is. This will help promote ownership of these wildlife and amenity areas.
- 4.38. Prescriptions are summarised in Table 5, below.

Management Operation	Timing	Frequency	Method
Maintenance of existing pathways on site	Spring/ Summer	Annually	To be determined
Design signage and agree with LPA	-	To be confirmed	To be confirmed
Erect signs and maintain required	Once design agreed	To be confirmed	To be confirmed

Table 5: Management for Amenity

Management Objective 7: Monitor the Efficacy of the EcMP

- 4.39. Fundamental to the success of any habitat management plan is the requirement to monitor the effects of management in order to assess whether it is achieving its objectives and to determine future management proposals. This includes the establishment of a pre management baseline against which to judge the effects of the management required and regular surveys of the managed area in order to monitor changes.
- 4.40. The baseline position of the site habitats has already been obtained and is described in Section 2.
- 4.41. Changes in the floral composition of grasslands take place over several years and therefore the frequency of surveys should reflect this. Resurvey of the grassland will therefore be undertaken every three years.
- 4.42. A report of the findings of the monitoring surveys will be provided to the Local Planning Authority (LPA).
- 4.43. Prescriptions are summarised in Table 6, below.

Management Operation	Timing	Frequency	Method
Monitor site flora	May/June	Every three years	National Vegetation Classification
Monitor site fauna	As per species/group requirements	Annually for the first 5 years every year thereafter	Ecologist/license holder where necessary
Review the management plan if necessary, in consultation with LPA.	-	Five yearly	-

Table 6: Monitoring prescriptions

References

1. Joint Nature Conservation Committee (2007). Handbook for Phase 1 habitat survey - a technique for environmental audit. JNCC, Peterborough
2. Chartered Institute of Ecology and Environmental Management (2016). *Guidelines for Ecological Impact Assessment in the United Kingdom and Ireland – Terrestrial, Freshwater and Coastal* Chartered Institute for Ecology and Environmental Management, Winchester.
3. Plant life (2010). *Variagated yellow archangel* (Retrieved from http://www.plantlife.org.uk/wild_plants/plant_species/variegated_yellow_archangel 25th July 2016).
4. BCT. (2014). *Bat Box Information Pack*. London (Available from file:///C:/Users/Asus/Downloads/Bat_Box_Information_Pack.pdf): Bat Conservation Trust (BCT).
5. RSPB. (2006). *Advice on siting a nestbox*. Sandy (Available from: <http://www.rspb.org.uk/makeahomeforwildlife/advice/helpingbirds/nestboxes/smallbirds/siting.aspx>: Royal Society for the Protection of Birds (RSPB).



Plans

Habitat Features

(2222/P02 July 2016 PW)

Landscape and Ecological Management Plan

(2222/P03 July 2016 PW)



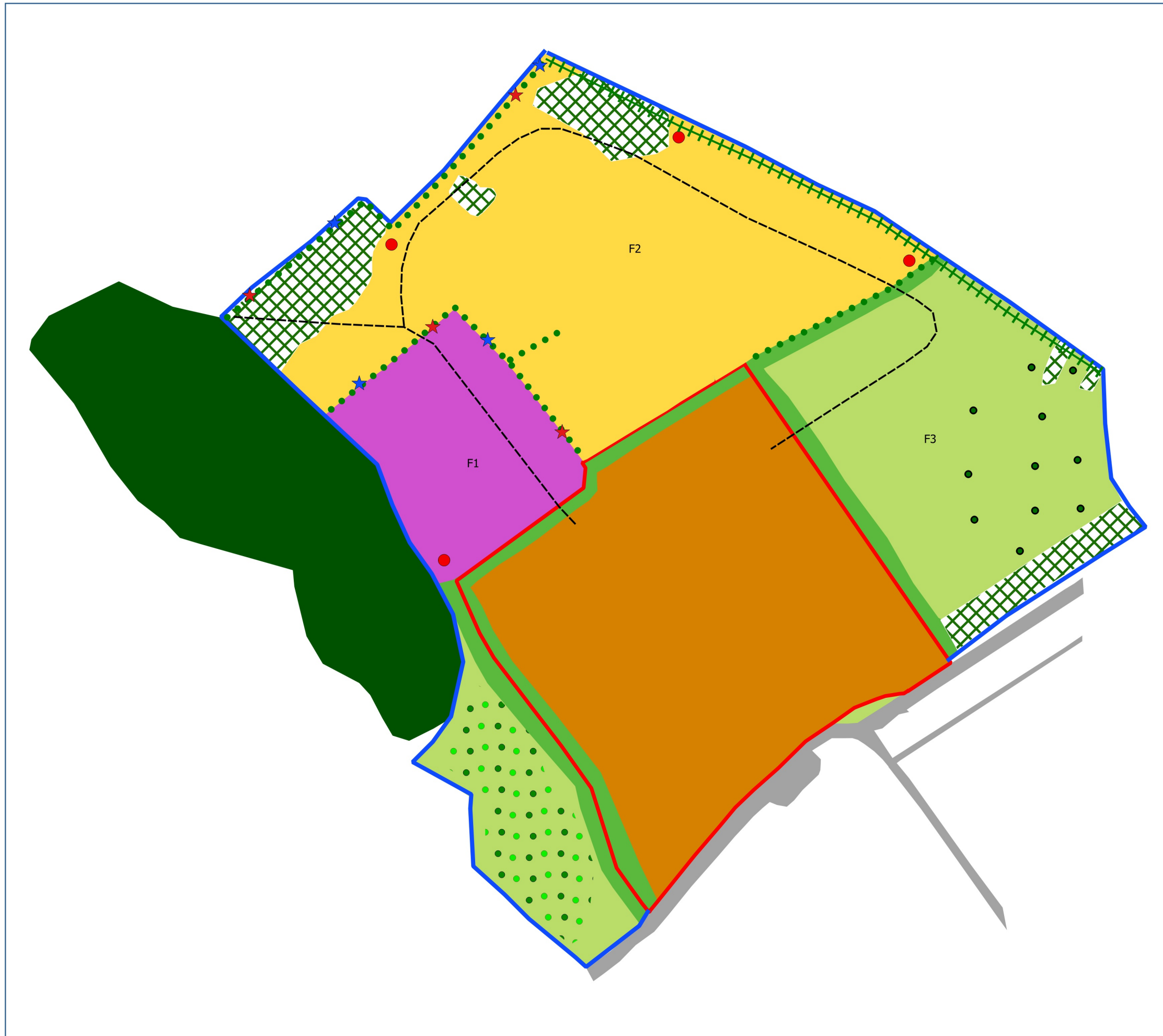


- Site Boundary
- Application Boundary
- Rank Grassland
- Species Rich Semi-Improved Grassland
- Dense Scrub
- Mixed Scattered Trees
- Scattered Trees/Treeline
- Woodland
- Tall Ruderal Vegetation
- Species Poor Hedgerow
- - - Dry Ditch
- Earth Bank
- |—|—| Fence
- Running Water
- Buildings
- Residential Gardens
- Tarmac and Hardstanding
- Target Note TN1 - TN5

TN1: Location of variegated yellow archangel *Lamium galeobdolo*.
 TN2+TN3: Approximate location of pyramid orchid *Anacamptis pyramidalis*
 TN4: Approximate location of common spotted orchid *Dactylorhiza fuchsii*.
 TN5: Approximate location of woolly thistle *Cirsium eriophorum*.



Project	Tynning Hill, Radstock
Drawing Title	Habitat Features Plan 2016
Scale	As Shown (Approximate)
Drawing No.	2222/P02
Date	July 2016
Checked	PW/HM



- Application Boundary
- Site Boundary
- Existing and Retained Elements**
- Rank Grassland
- Mixed Scattered Trees
- Scattered Trees/Tree Line
- Dense Scrub
- Species-poor Hedgerow
- Offsite Woodland
- New Landscape Elements/Ecological Habitat**
- Area of Translocated Concrete Substrate
- Creation of Species Rich Neutral Grassland with Scalloped Edges
- Proposed Native Hedgerow Planting
- Residential Development (Refer to Plan xxx for Full Layout)
- Existing Desire Lines to be Formalised
- Proposed Hibernacula Locations
- ★ Proposed Bat Box Locations (Approximate)
- ★ Proposed Bird Box Locations (Approximate)



Project	Tynning Hill, Radstock
Drawing Title	Indicative Landscape & Ecological Management Plan
Scale	As Shown (Approximate)
Drawing No.	2222/P03
Date	July 2016
Checked	PW/HM



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