

# Borden Nature Reserve



Proposed Management Plan

2021-2024

Compiled by the Borden Nature Reserve Committee

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## 1. INTRODUCTION

Borden Nature Reserve is a roughly rectangular site covering approximately 6.25ha. The site was a former chalk quarry which was filled with a mixture of domestic refuse and other material over a period from 1966 to 1982. The refuse tip was capped in 1985. The capping material used was a mixture of clay with flints and puddled chalk. It is believed that the cap depth is between 500-700mm. The whole site was returned to grassland in 1985 (Reference 1)

Today the site has become dominated, in many areas, by scrub, mainly hawthorn and brambles. Other areas of rough grass are dominated by stands of hemlock with some ragwort. There are two small areas with a wider floral diversity but these are being encroached upon by scrub. Inside the boundary line of the site are mainly mature trees with a line to the west of poplars. Some clarification is needed as to whether the poplars lie inside or outside of the boundary line.

Paths are maintained by Kent County Council for ease of access to the existing gas control system, including the landfill gas flaring compound and water monitoring locations.



### **Vision Statement:**

The aim of this proposed management plan is to ensure that a consistent approach to management of the site is adhered to. This plan is designed to maintain and enhance current habitats for wildlife, ultimately increasing the biodiversity. By involving local residents in all aspects of the management of the nature reserve it is hoped that the impact of any new housing development can be made a positive one by inclusion in this fabulous local wildlife area.

### **Obtaining Local Nature Reserve Status is imperative.**

## 2. GENERAL SITE INFORMATION

### 2.1 Location

Borden Nature Reserve is located off Cryalls Lane in Borden, Kent  
Ordnance Survey Map Explorer(1:25000) sheet 149, TQ888633

### 2.2 Size

The site covers approximately 6.25ha. (Reference 1)

### 2.3 Ownership

The site is under the ownership of Kent County Council.

On the 1<sup>st</sup> October 1999 the site was leased to Borden Parish Council for a period of 25 years ending and including 30<sup>th</sup> September 2024.

### 2.4. Management Infrastructure

Kent County Council is responsible for maintaining the gas control systems, including a network of gas collection pipework, various monitoring apparatus and the landfill gas flare and compound located to the southeast off the reserve. KCC manage the environmental control aspects of the site to ensure "risk" to fauna and flora both on and off site is managed to ensure all environmental risk is controlled and maintained. The production of landfill gas is a direct consequence of the former use being a landfill site for the disposal of domestic waste collected locally.

### 2.5. Access

The main entrance is situated on Cryalls Lane. There is a locked gate for vehicle access for management and maintenance purposes only. Adjacent to this gate is a kissing gate for public pedestrian access. There is no designated parking either on or off site.

OS map Sheet TQ 86/96 Pathfinder 1194 which is based on surveys dated 1956-73 shows a public footpath crossing the site. OS Explorer 149 dated 2003 shows the public footpath skirting the edge of the site. From the plan contained within the Lease document the public footpath runs inside the perimeter of Borden Nature Reserve's boundary. From this public footpath there are two access points to the network of pathways in the reserve. There are some unofficial entrances from the southern arable field. There are 3 kissing gate access points on the southern edge.

The need for disability access is being addressed.

Public footpaths from Borden Lane, Auckland Drive and The Street, Borden connect with the network of maintained paths within the reserve.

### 2.6. Surrounding Land Use

The site (outlined in red below) is bordered to the east by old unmanaged orchard in which the local badger population lives.

To the south of the site is an arable field, and beyond this lies Borden village recreation area and The Playstool/Woodland. This area includes a recreation area with picnic benches, children's play area, adult exercise equipment and Borden Sports Association Pavilion.

To the west is a further arable field.

To the north are two arable fields (outlined in yellow below) which are subject to planning development. The town of Sittingbourne (population: 62,500, increasing) lies to the north and east of the site and the site is situated on a "green corridor" between Sittingbourne and the village of Borden.

The development of arable land, immediately to the north of the site, for housing, would inevitably increase the footfall to the reserve and impact in a number of negative ways.

Figure 1



## 2.7. Site Description

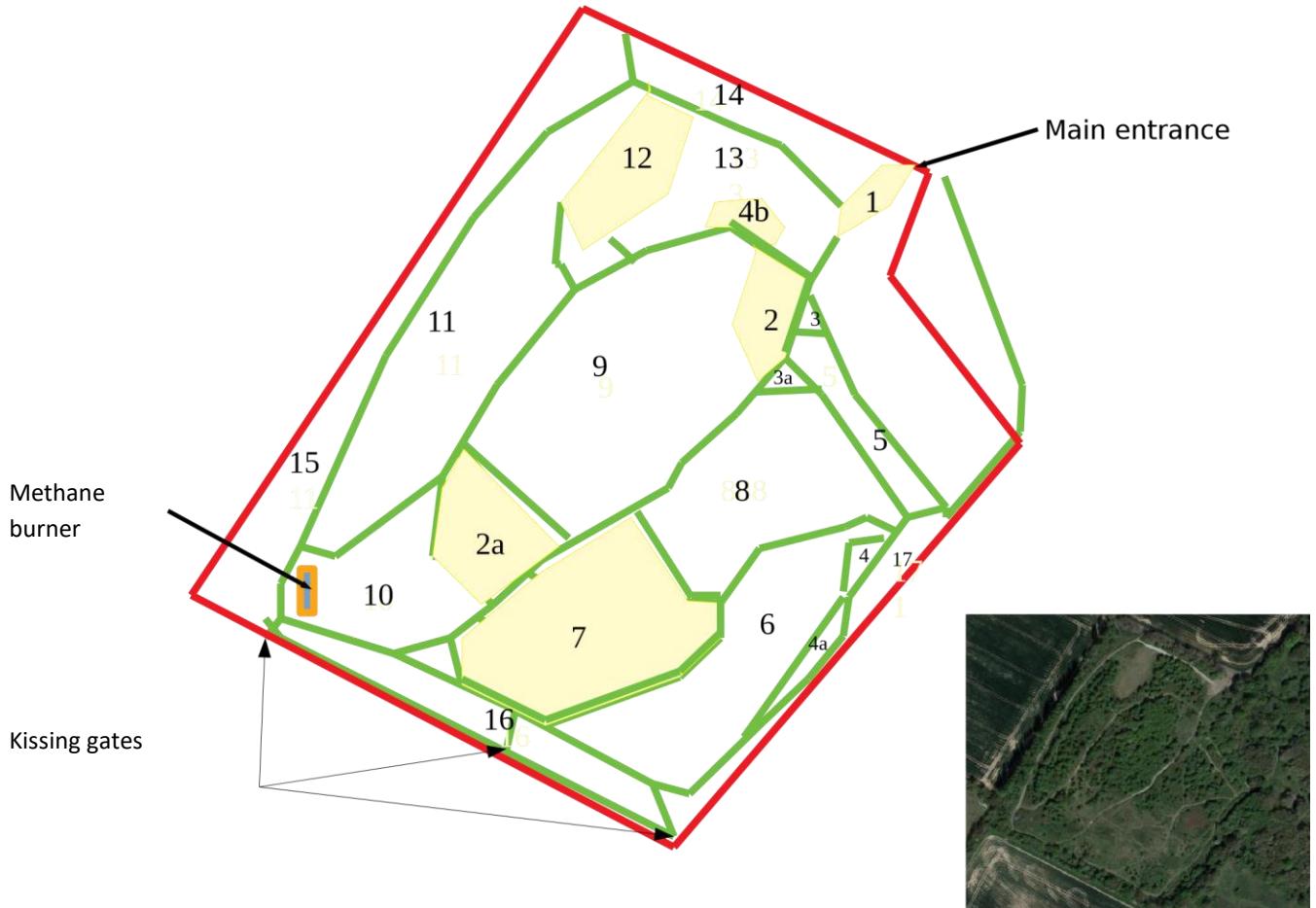
The site is roughly level with some undulations and a particular dip on the eastern side. It is thought that this dip may have occurred due to decay and settlement within the body of the closed landfill site. Today Borden Nature Reserve consists of several habitats:

- Scrub, mainly hawthorn and dogwood;
- Unmanaged hedge;
- Mature/maturing trees including sycamore and walnut;
- Some dense area of brambles;
- Areas dominated by hemlock and some ragwort;
- Some small flower rich areas.

The reserve has circa 30 lockable Landfill Gas Monitoring Points (GMPs) which are accessed by Kent County Council to measure and control the flows of collected landfill gas around the site. The need to access these GMPs means that paths are cut regularly and the areas around individual GMPs are kept clear of vegetation by cutting back. Any herbicide application is kept to an absolute minimum with regard to safeguarding close by fauna/flora.

Within this network of paths distinct separate areas have developed which have been described with reference to the vegetation.

Figure 2 Plan of Borden Nature Reserve.  
Boundary of site shown in red, paths in green.



**Areas on Figure 2:**

1. Gravelled main entrance from Cryalls Lane
- 2/2a. Low height sward with diverse flora
- 3/3a. On 25<sup>th</sup> July these areas were dominated by meadow's crane's-bill, other species appeared through the year including common knapweed, field scabious and chicory
- 4/4a. Brambles possibly dewberry as described in 1998
- 4b. Brambles with meadow vetchling just poking through
5. Corridor between mature scrub mainly hawthorn
6. This area includes a dip in the ground and was not entered, visible were stinging nettles, elder and bramble
7. Stands of hemlock with some immature ash trees at the southern end
8. Hemlock and ragwort abundant, other vegetation present including localised areas of great mullein
9. Maturing trees and scrub including sycamore, walnut and hawthorn
10. Hemlock and ragwort some dock

11. Maturing scrub and trees
12. Very short grass (rabbits?) to eastern edge large stand of creeping thistle
13. Quite dense stand of mature hawthorn with grass under
14. Mature trees with garlic mustard under
15. Mature scrub and trees with ivy ground cover
16. Mature trees with path through
17. Mature trees

## **2.8 Statutory Designations**

It is believed by the committee that obtaining a Local Nature Reserve designation is vital.

### 3. EVALUATION OF RESOURCE

#### 3.1 Size

6.25ha (Reference 1)

#### 3.2 Context

Borden Nature Reserve is located at the periphery of Sittingbourne and to the north of Borden village. The site is small and contains several different habitats. It is adjacent on the eastern border to an area of old unmanaged orchard, as there is no significant barrier to wildlife, creatures will move freely between the two sites.

Any housing development to the north would result in further isolation from the site from other wildlife areas.

#### 3.3 Diversity

The habitats include scrub, small areas of low sward with greater floral diversity, unmanaged hedgerow and mature trees.

The value of the scrub, much of which consists as large stands of hawthorn must not be underestimated as it provides shelter and nesting sites as well as food for much wildlife. Bramble is also a very valuable plant for wildlife. However, scrub encroachment into areas of high floral diversity must be prevented through management or the diversity will be lost.

See Appendix 1 for detailed floral species list (excluding grasses and sedges) and Appendix 2 for data collated from visitors to the site. Areas 2 and 2a and periphery of some maintained paths contain a wide floral diversity.

Further ecological surveys are required to determine the presence and breeding status of amphibians, reptiles, bats, small mammals, invertebrates and birds.

In July 2021 eggs of the Fiery Clearwing moth (*Pyropteron chrysidiiformis*) were found on the stems of 5 dock plants situated at the sides of paths. This is a priority species in the UK Biodiversity Plan and is fully protected under schedule 5 of the Wildlife and Countryside Act (1981).

#### 3.4 Rarity

The habitats at Borden Nature Reserve might not be considered rare. However, in July 2021 eggs of the Fiery Clearwing moth, a listed priority species in the UK Biodiversity Plan and fully protected under schedule 5 of the Wildlife and Countryside Act (1981) were found. Adults of the moth fly by day in late May, June and July and it is important that these moths are surveyed and monitored in 2022 and going forward and, that the particular habitat at the site where they were found is protected and enhanced.

Schedule 5 lists Animal Species that are protected under Section 9. Section 9 prohibits the intentional killing, injuring or taking of the species listed in Schedule 5 and also prohibits their possession and the trade in the wild animals listed. The species listed are also further protected from disturbance by prohibiting actions that affect places they use for shelter.

As eggs of this rare species have been found at the site it is important that all involved in management of the habitats and those involved in maintenance of the paths and access to the methane vents are aware of the need to strictly adhere to the present pathways. Pathways must not be widened as this could result in damage to the habitat of the moth.

**3.5 Fragility**

The site could not be considered as fragile due to its history as a quarry and then as a refuse tip. However, as mentioned in 3.4, a rare listed species has found a suitable habitat, eggs were found and hopefully adult moths will be found in 2022.

Any housing development will potentially have a negative impact on the site. Increased footfall and more use of the site for recreation will be injurious to the wildlife. Increased traffic on the small village roads will no doubt impact on the mammals and birds, particularly badgers, foxes, rabbits and hedgehogs. It is important that the site is recognised as a valuable resource for wildlife that needs protection. This proposed management plan recognises the importance of educating and involving local people and building respect, through this education, for wildlife.

**3.6 Potential**

The site has potential for the natural habitat to be enhanced.

In 1985 the site was returned to grassland. Much of the scrub areas that are present today may have regenerated naturally. It is not clear whether planting was undertaken. Suggestions were made in 1998 as to possible planting schemes (Reference 1) and minutes of a previous committee meeting in 2007 suggest that planting was scheduled but it is uncertain if this took place.

Whether planting took place or regeneration happened naturally the site is now at the point where management is necessary to maintain and potentially enhance certain areas to increase biodiversity. The site at present offers a haven for many creatures to thrive, from larger mammals to tiny invertebrates, all depending on the plant communities present. Some of these plant communities are at risk of disappearing because of scrub encroachment. Management of these florally diverse areas is necessary and there is the potential to enlarge said areas to improve foraging for pollinators.

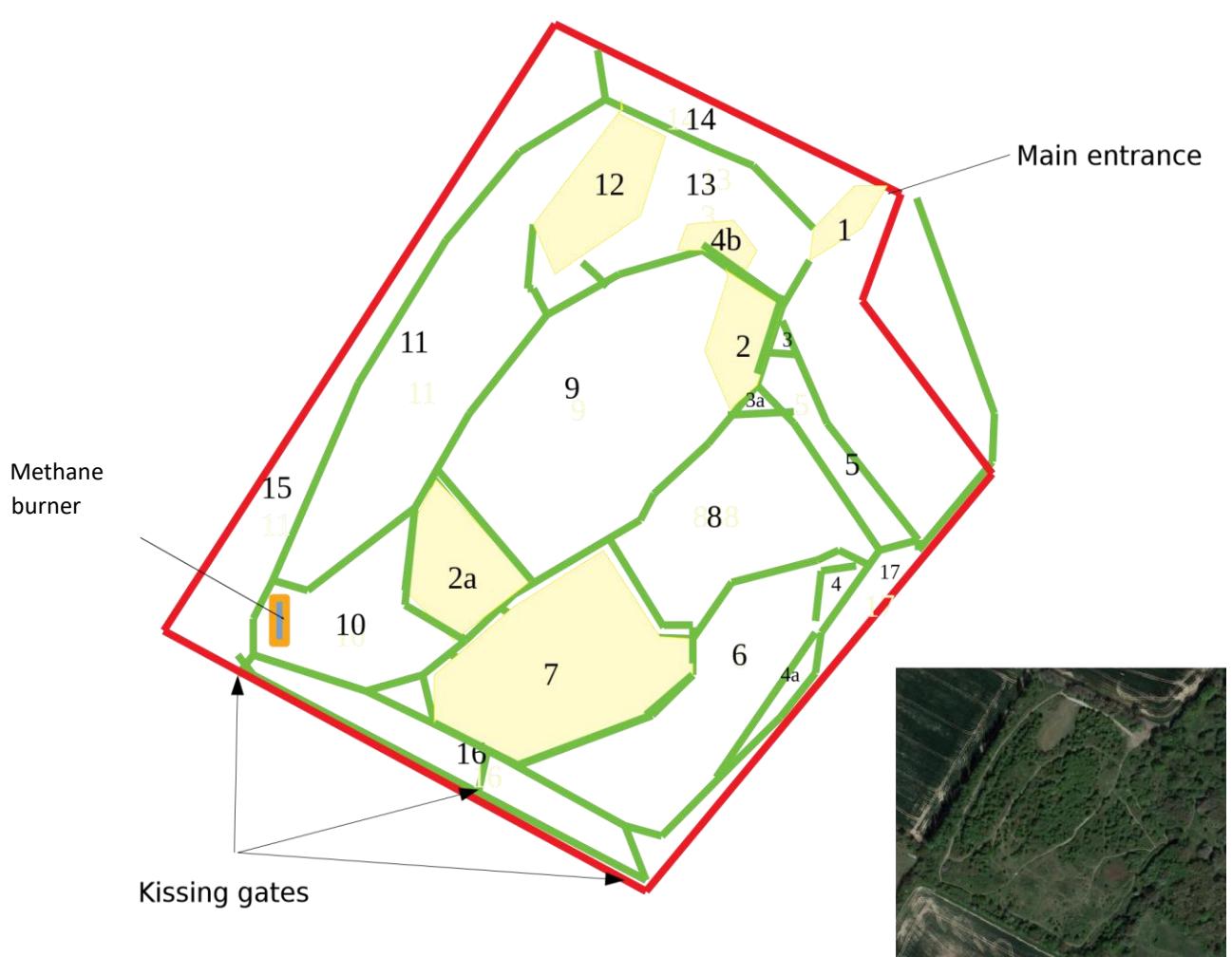
The addition of water to the site raises issues since digging would not be advisable due to the previous history of the site. However, there is a possibility to introduce a water area in an already existing dip. Potentially such a feature would increase biodiversity.

It is hoped that ongoing interpretation and education initiatives will encourage the local residents to look after the site and respect how it benefits wildlife.

#### 4. MANAGEMENT OBJECTIVES

Figure 3 – Management Compartment Map of Borden Nature Reserve; showing in red the site boundary, with the majority of existing paths in green.

The numbered areas include areas to be concentrated on for management purposes and are also used to specify areas where certain flora was found (Appendix 1).



#### The management objectives are as follows:

1. Maintain and enhance the habitat types and species present;
2. Combine habitat enhancement and management with education, recreation and access. Through education encourage public understanding and awareness of issues relating to the site;
3. Monitor effects of management on the site.

**4.1 Objective 1: Maintain and enhance the habitat types and species present.**

Management requirements are described relative to the distinct areas in figure 3.

Area 1 To check dog waste and general waste bins are being emptied regularly

Area 2,3,  
3a; These small areas are floristically diverse and were seen, throughout the summer of 2021, to attract many pollinators, including a variety of bee and butterfly species. To maintain and enhance these areas management should involve regular cutting back of encroaching scrub particularly bramble and hawthorn and this could be done with the aim of enlarging, particularly, area 2.

Any cuttings from scrub and tree management should be utilised for constructing dead hedges and habitat piles. Dead hedging could be used to limit accessibility to areas as required.

Management should also involve yearly cutting back of the vegetation after flowering and removal of the cuttings. Removal of cuttings by raking prevents the soil from becoming enriched and favouring less desirable species. Cuttings could be placed, for a few days, at the periphery of the cut and enlarged area in the hope that they will shed seeds. They should then be removed and a habitat pile created at a suitable location such as area 7.

The building of a bee bank suitably positioned facing south with a covering of sand, adjacent to these pollen and nectar rich areas should be considered.

Just to the south of area 2 is a maturing sycamore, the tree will soon produce seeds and sycamore trees will become abundant, for this reason it is considered advisable to remove this particular sycamore.

Area 2a;

A floristically diverse area including bee orchids. Advancing scrub needs to be managed. Management should include a yearly cut at the end of flowering with cuttings being removed.

This area also contains cotoneaster species which has valuable flowers for pollinators and berries for birds but it can become invasive so needs to be monitored.

There is a small stand of dogwood which again is valuable to wildlife but needs monitoring and management to prevent it becoming invasive.

There is a small walnut that is covered with ivy, if the ivy covers the crown the tree will possibly die and become top heavy so this needs monitoring.

A horse chestnut, the only one observed on site, is present in this area. Scrub around the base needs cutting back.

Area 4b;

This is an area of dense bramble, meadow vetchling was seen scrambling up through the bramble. To encourage the vetchling some of this dense patch of brambles should be cut back creating a scalloped edge adjacent to the path.

Area 6; this area has not been closely surveyed and does not appear to be accessed regularly by the public. A knowledgeable visitor to the site expects that it provides a good habitat for reptiles and amphibians, containing a large dip and banks which provide shelter. It is therefore a good site to survey for these species and a simple sheet of black corrugated metal laid on the ground at an appropriate place might facilitate positive detection of slow worms, common lizards and snakes. Slow worms, common lizards and grass snakes have previously been seen at the site.

The already present dip in this area could lend itself to the building of a pond, the site as a whole does not contain a water habitat. The dip could mean that no digging would be necessary, digging being a difficulty with the history of the site. Water would be invaluable to wildlife and would increase biodiversity.

Area 6 is also possibly a suitable site for a hibernaculum, bringing in soil to the area as opposed to digging it out. However if reptiles and amphibians are already present less disturbance would possibly be the better option.

Areas 7,8, 10; these areas contain, amongst other species, large stands of hemlock, common ragwort and some dock species.

Ragwort is invaluable to many invertebrate species and as there are no horse paddocks in the immediate vicinity, poses no problem.

In these areas Fiery Clearwing moth eggs were found on the stems of dock plants. Dock plants are the food plant of the larvae of this moth. The eggs hatch in August and the larvae burrow into the roots of the food plant. Larvae normally spend one year in the roots but occasionally will spend two, before pupating in May. It is of utmost importance that this plant species is preserved in these areas. The Factsheet from Butterfly Conservation (Reference 2) advises that any encroaching scrub should be cut back periodically to retain open sunny areas around the dock. Eggs were found on plants adjacent to the paths. These plants were generally standing alone fitting, in part, with the description of habitat preferred by the moth. Management of these areas should be of a light touch encouraging open areas around dock.

Around the periphery of these areas, hemlock management could be attempted by removal of flower heads before seed setting.

Area 11; the western side of area 11, close to the path, has a number of young sycamore trees that should be removed before profuse seeding takes place.

Area 12; an oval area of very short grass believed to be kept like this by rabbits. The history of this area is that it used to regularly flood from Cryalls Lane and at some point some form of soil was placed there by Kent County Council. The area needs no management other than monitoring. There is a large stand, on the east side, of creeping thistle which was seen to be feeding many pollinators. There were then flocks of goldfinches feeding on the thistle seeds. Creeping thistle is an invaluable source of food for invertebrates and birds.

Area 13; a large stand of mature hawthorn with grass under. A few of these hawthorns, adjacent to the path could be removed to open up the area and maybe seed with the cuttings from areas 2, 2a, 3, 3a. Or plug plant as appropriate.

Area 14; the abundance of garlic mustard under the mature trees provides food for the larvae of the orange tip butterfly Anthocharis cardamines.

Management of this area involves the monitoring of the large pollarded poplars, some of which are covered with ivy.

This might be a suitable site for the building of a hibernaculum close to the gravelled Area 1 however, this would need further investigation since it would involve digging and methane could be an issue.

Mature trees might be a suitable site for bat and bird boxes.

**Area 15;**

to the south of this area is scrub including brambles. Going north there is a wide area with mainly mature hawthorn and a few other species including Chokeberry. The ground has a covering of ivy.

Along the boundary are very tall poplar trees, some of which are covered with dense ivy. The weight of the ivy has and, could cause further, breaking of poplar limbs and is a situation that needs monitoring. Some limbs have fallen and are “hung-up” on other vegetation. It is unclear as to whether the poplars are within or outside the boundary. The boundary needs to be clarified so that the responsibility for the poplars is clear. In some instances it might be advisable to cut the ivy at the base of the trees to limit further ivy growth. Ivy is a hugely valuable wildlife resource so this must be done only where deemed necessary for safety reasons.

At the northern end of area 15 is one buddleia bush. This bush, as would be expected, is hugely popular with butterflies and many other pollinators during the summer months. Clearance around the bush and seeding or propagating seed from the bush and planting out would enhance the area for pollinators.

Along the western side of the path would be an appropriate place to plant some hedging, suggested species would include spindle *Euonymus europaeus*, and hazel, both of which are of great value to wildlife and there are few of these at the reserve.

**Area 16;**

An unmanaged hedgerow forms the southern boundary. A variety of mature trees including ash, cherry and field maple form another row of vegetation a path runs between the hedge and other trees. Ash trees need monitoring for die-back.

The mature trees could be a site for the placement of bird and bat boxes.

**Summary of proposed management priorities to maintain present habitats:**

- Stop scrub encroachment into florally diverse areas;
- Dead hedging and habitat piles to be constructed from scrub and tree cuttings, creating protected areas as necessary;
- Cut (October) and remove cuttings from florally diverse areas;
- Removal of some sycamore;
- Management of dock areas for fiery clearwing moth;
- Management of hemlock spread

**Lower priority – proposed management to enhance habitats:**

- Pond building
- Bee bank construction
- Bird box placement
- Bat box placement
- Hibernaculum construction
- Planting of native hedge plants
- Propagating seed of buddleia and planting out
- Enlarge areas of floral diversity, seeding and plug planting from present areas.

**4.2 Objective 2: Combine habitat enhancement and management with education, recreation and access; through education encourage public understanding and awareness of issues relating to the site;**

Borden Nature Reserve is well used by dog walkers. Alterations in habitat management and restrictions to access will need to be clearly defined and interpreted on site to avoid misunderstandings.

Pathways present at the site are clearly defined through regular cutting carried out by KCC for maintenance access.

'Quiet' spaces for wildlife already exist as quite a few areas are impenetrable due to thick scrub growth including bramble.

There is a residual risk from any fires on site due to the possible presence of escaped landfill gas (including CH4) produced deep within the former landfill from the breakdown of the waste contained within. This needs to be advised to the public and other visitors or users of the site.

Access for all those with disabilities, to at least part of the site, is being actively investigated.

**Summary of proposed management priorities for educating and encouraging public understanding and awareness, recreation and access:**

- Signage regarding fire risk;
- Interpretation materials detailing paths and ongoing habitat management need to be installed in some form;
- Continue the program of interesting and varied public events to promote and inform about wildlife and habitat management. These could include guided walks for wild flowers and the continuance of the dawn chorus walk, bat walk and nature trail walks;
- Board to record species seen;
- Regular health and safety checks – signage damage, tree risk;
- Litter and fly tipping should be addressed to maintain the habitats and the visual appearance of the site;
- Involvement of Friends of Borden Nature Reserve should be encouraged and supported to provide a vehicle for the local community to get involved with the site at a practical level, from the strategic decision making to habitat management and running events and walks;
- Disability access.

**4.3****Objective 3: Monitor effects of management on the wildlife of the site.**

In order to evaluate the effects of the proposed management plan on the habitats and species it is important to carry out long-term monitoring in the form of collating casual observations and formal surveys. For this to be effective, baseline data should be collated, this information demonstrates the ecological situation prior to implementing new management regimes.

The placement of the final capping on the site was carried out in 1981. A mixture of capping material was used – three quarters of the site (from the south to the north) was capped with puddled Chalk; the remaining 25% was covered with Thanet Sands with the most recently filled area capped with a mixture of Clay with flints and puddled Chalk. The depth of the capping material cannot be confirmed although it is expected that as for other sites of this age it was 500-700mm in thickness.

At this point it is important to note that the site was returned to grassland in 1985. A preliminary report was carried out in 1998 (Reference 1) in which it was stated page 2 “....the site is roughly at its peak and will soon begin to decline in wildlife value if not managed more specifically.”

The report contains some species lists and the plant survey completed in 2021 makes a comparison in terms of recorded/not recorded with the survey from 1998.

Future studies would be useful, as would the collection of any existing records from local recorders. A search on iRecord, specific to the nature reserve has been carried out. Only one record was found. During 2018/2019 data was collected by Borden residents, of nature within the Parish, this was sent to the Kent and Medway Biological Records Centre.

**Summary of proposed management plan for monitoring effects of management on the wildlife of the site.**

- Undertake or commission ecological surveys to obtain baseline data on invertebrates, amphibians, reptiles, birds, bats.
- Collate data from local people about species seen
- Review, evaluate and update on a 5 yearly cycle, or more frequently if required.

**4.4****Factors influencing management.**

- **Safety** – the entire site is accessible at all times, therefore in the interest of public safety, all possible measures should be taken to ensure public safety whilst work is being carried out, including closing paths.  
The presence of the Landfill Gas collection infrastructure and Gas Flare will continue to be considered.
- **Community involvement** – local community and interest groups should be involved in and consulted upon the practical and strategic management of the site at every possible opportunity.
- **Funding** – funding needs to be sought for materials and tools and specific works e.g. pond, bird boxes etc.
- **Legal obligations** – work likely to cause disturbance to breeding birds i.e. felling and scrub clearance cannot be undertaken during the bird breeding season (March to September). Therefore, all felling (unless required to make an area safe) and scrub clearance must be undertaken during the autumn and winter as it is an offence to disturb any wild bird whilst it is tending a nest containing eggs or chicks, until the chicks have successfully fledged. To do so would be a criminal offence under The Wildlife & Countryside Act 1981.
- **Protected species** – mature trees could provide roosting opportunities for bats and should be surveyed by a licensed bat worker prior to any works. All species of bats and their roosts are protected by The Wildlife & Countryside Act 1981, the Countryside and Rights of Way Act 2000 and the Conservation of Habitats and Species Regulations 2010.  
The presence of the fiery clearwing has been noted in this report, a species protected by The Wildlife & Countryside Act 1981
- **Management** – annual or bi-annual meetings regarding the implementation of the management plan for the site are required to identify a work programme and schedule of work. Meetings should involve Kent County Council (Waste Management), Borden Parish Council, contractors and anyone else likely to carry out works at the site or other interest.

## 5. MANAGEMENT PROPOSALS

<b>Objective 1: Maintain and enhance the habitat types and species present</b>		
	Outline Prescription	Who by ?– Suitable Operatives
1	Set up FoBNR volunteer work party	
2	Undertake or commission ecological surveys to obtain baseline data on invertebrates, amphibians, reptiles, fungi, birds, bats etc (although this would be seen as baseline it needs to be remembered that the site is possibly at peak/passed peak any management will probably maintain rather than enhance).	
3	Collate fauna data already available	
4	Carry out a plant survey of site	Sue Trueman see Appendix 1
5	Set up 'activity group' on iRecord for recording fauna	Sue Trueman
6	Develop a plan of site describing different areas with respect to flora/habitat	Sue Trueman: Figure 2 of this report
7	Scrub management particularly hawthorn, dogwood management in areas 2, 2a, 9, 10 as per figure 2 of site	FoBNR volunteer work party
8	Removal of some small trees including sycamore in areas 9,11	FoBNR volunteer work party
9	Management of hemlock at periphery of areas 7, 8, 10. This would involve removal of flowering heads before seed setting. Also where starting to encroach on other areas particularly at path edges.	FoBNR volunteer work party this has some health and safety issues
10	Native wild flower seeding – 7,8,9 above leading to more area for possible native wild flower seeding or plug planting, seed being collected from elsewhere on site, mainly from areas 2 and 2a or, from plant life or other reliable seed source	FoBNR volunteer work party
11	Dead hedging/habitat piles - to make use of scrub and tree cuttings to, enclose or restrict access to certain areas.	FoBNR volunteer work party
12	Survey for ash trees and die back with assistance from Woodland Trust or other	Woodland Trust/anybody with specific knowledge
13	Regular litter picks	FoBNR volunteers
14	Maintain and enhance the habitat for the fiery clearwing moth - carefully clearing around dock plants	Sue Trueman FoBNR

<b>Objective 2 :</b> <b>Combine habitat enhancement and management with education, recreation and access provision. Through education encourage public understanding and awareness of issues relating to the site</b>		
	Outline Prescription	Who by ?– Suitable Operatives
15	Develop interpretation boards/ leaflets, to explain management and impacts on ecology	
16	Encourage local residents to become members of the FoBNR posting photos of flora and fauna on Facebook etc or iRecord	
17	Involve FoBNR in the management of scrub, seeding, plug planting etc.	
18	Set up a recording site/ physical blackboard at site for species seen	

19	Maintenance of paths and areas around fixed landfill gas and leachate monitoring points to continue as managed previously by KCC. The use of herbicides around fixed monitoring points (Gas and Water) to be very carefully managed, and only considered when no other alternative exists. A reduction in herbicide use may require volunteers to help keep fixed monitoring points and accesses clear.	KCC / contractor / FoBNR volunteers
20	Dead hedging/habitat piles. Need to explain to visitors the importance of different habitats.	FoBNR volunteers
21	Set up black corrugated reptile survey refugia – later maybe hibernaculum in area 6 where digging might not be necessary	FoBNR volunteers
22	Sand bank/scrape for bees near 2 or 2a	FoBNR volunteers
23	Bird boxes on mature trees	FoBNR volunteers
24	Bat boxes after surveying	FoBNR volunteers
25	Build a pond area 6	FoBNR volunteers
26	Address disability access	

**Objective 3 Monitor the effect of management on the wildlife of the site**

	<b>Outline Prescription</b>	<b>Who by ?– Suitable Operatives</b>
27	Further ecological surveys to monitor data on invertebrates, amphibians, reptiles, fungi, birds, bats etc.	
28	Keep photographic records of before and after management and monitor	

**6. FOUR YEAR WORK PROGRAMME 2021-2024**

Project		2021	2022	2023	2024
1	Set up FoBNR volunteer work party	a.s.a.p.			
2	Undertake or commission ecological surveys to obtain baseline data on invertebrates, amphibians, reptiles, fungi, birds, bats etc (although this would be seen as baseline it needs to be remembered that the site is possibly at peak/ passed peak any management will probably maintain rather than enhance).		x	x	x
3	Collate fauna data already available	a.s.a.p.	x		
4	Carry out a plant survey of site		Update	Update	Update
5	Set up 'activity group' on iRecord for recording fauna	done	monitor	monitor	monitor
6	Develop a plan of site describing different areas with respect to flora/habitat	done	Update through year	Update through year	Update through year
7	Scrub management particularly hawthorn, dogwood management in areas 2, 2a, 9, 10 as per figure 2 of management plan	Dec	Jan,Feb, Nov,Dec	Jan,Feb, Nov,Dec	Jan,Feb, Nov,Dec
8	Removal of some small trees including sycamore in areas 9,11	Dec	Jan,Feb, Nov,Dec	Jan,Feb, Nov,Dec	Jan,Feb, Nov,Dec
9	Management of hemlock at periphery of areas 7, 8, 10. This would involve removal of flowering heads before seed setting. Also where starting to encroach on other areas particularly at path sides.		Before seed set	Before seed set	Before seed set
10	Native wild flower seeding – 7,8,9 above leading to more area for possible native wild flower seeding or plug planting, seed being collected from elsewhere on site, mainly in areas 2 and 2a or from plant life or other reliable seed source		Spring/ Autumn	Spring/ Autumn	Spring/ Autumn
11	Dead hedging/habitat piles - to make use of scrub and tree cuttings to, enclose or restrict access to, certain areas.	Dec	Jan,Feb, Nov,Dec	Jan,Feb, Nov,Dec	Jan,Feb, Nov,Dec
12	Survey for ash trees for die back with assistance from Woodland Trust or other	Dec	asap	monitor	monitor
13	Regular litter picks	Dec	Monthly	Monthly	Monthly
14	Maintain and enhance the habitat for the fiery clearwing moth - carefully clearing around dock plants		x	x	x
15	Develop interpretation boards/ leaflets, to explain management and impacts on ecology		As and when required	As and when required	As and when required
16	Encourage local residents to become members of the FoBNR posting photos of flora and fauna on Facebook etc. or better still use iRecord	x	x	x	x
17	Involve FoBNR in the management of scrub, seeding, plug planting etc	x	x	x	x
18	Set up a recording site/ physical blackboard at site for species seen		x	x	
19	Maintenance of paths and areas around fixed landfill gas and leachate monitoring points to continue as managed previously by KCC in order to maintain adequate environmental controls on (and off) site. The use of herbicides will be very carefully managed and only considered when no other alternative exists. This may require volunteers to help keep these areas clear if herbicides are no longer applied.		x	x	x
20	Dead hedging/habitat piles. Need to explain to visitors the importance of different habitats.	x	x	x	x
21	Set up black corrugated reptile survey refugia and monitor– later maybe hibernaculum in area 6 where digging might not be necessary		spring	monitor	monitor
22	Sand bank/scrape for bees near 2 or 2a		spring	monitor	monitor
23	Bird boxes on mature trees		spring	monitor	monitor
24	Survey for bats, put up bat boxes		x	monitor	monitor

25	Build a pond		x	x	monitor
26	Address disability access				
27	Further ecological surveys to monitor data on invertebrates, amphibians, reptiles, fungi, birds, bats etc		x	x	x
28	Keep photographic records of before and after and monitor	x	x	x	x

## 7. FUNDING IMPLICATIONS

	MANAGEMENT PRESCRIPTION (& POSSIBLE LEAD)	POSSIBLE FUNDING SOURCE			
		Volunteer time	Fund raise/grant	KCC / Borden PC	Additional funding
1	Set up FoBNR volunteer work party	x			
2	Undertake or commission ecological surveys to obtain baseline data on fauna		x	x	
3	Collate fauna data already available	x			
4	Carry out a plant survey of site	x			
5	Set up 'activity group' on iRecord for recording fauna	x			
6	Develop a plan of site describing different areas with respect to flora/habitat	x			
7	Scrub management particularly hawthorn, dogwood	x			tools
8	Removal of some small trees including sycamore	x			tools
9	Management of hemlock	x			Tools clothing
10	Native wild flower seeding – 7,8,9 above leading to more area for possible native wild flower seeding or plug planting, seed collection from site, or from reliable seed source	x	x	x	tools
11	Dead hedging/habitat piles - to make use of scrub and tree cuttings to, enclose or restrict access to, certain areas.	x			tools
12	Survey for ash trees for die back with assistance from Woodland Trust or other	x		x	
13	Regular litter picks	x			tools
14	Maintain and enhance the habitat for the fiery clearwing moth - carefully clearing around dock plants	x			tools
15	Develop interpretation boards/ leaflets, to explain management and impacts on ecology	x	x	x	
16	Encourage local residents to become members of the FoBNR post photos of flora and fauna on Facebook / iRecord	x			
17	Involve FoBNR in the management of scrub, seeding, plug planting etc.	x	x	x	tools
18	Set up a recording site/ physical blackboard at site for species seen		x	x	
19	Maintenance of paths and areas around- fixed landfill gas and leachate monitoring points to continue as managed previously by KCC in order to maintain adequate environmental controls on (and off) site. The use of herbicides will be very careful managed and only considered when no	x		KCC	

	other alternative exists. This may require volunteers to help keep these areas clear if herbicides are no longer applied.				
20	Dead hedging/habitat piles. Need to explain to visitors the importance of different habitats.	x		x	
21	Set up reptile survey refugia and monitor— later maybe hibernaculum	x	x	x	tools
22	Sand bank/scrape for bees	x	x	x	tools
23	Bird boxes on mature trees	x	x	x	tools
24	Survey for bats, put up bat boxes	x	x	x	tools
25	Build a pond	x	x	x	tools
26	Address disability access		x	x	
27	Further ecological surveys to monitor various species	x	x	x	tools
28	Keep photographic records of before and after management	x			

## 8. APPENDICES

### Appendix 1: Borden Nature Reserve plant species list

Borden Nature Reserve, Cryalls Lane, Borden, Kent excluding grasses.

The list was gathered on walk through visits on 10<sup>th</sup> and 11<sup>th</sup> July 2021 and a few other visits as noted in comments. Paths were followed and adhered to throughout the visit. The last column shows whether the species was seen in 1998

	Common name	Latin name	Comments	1998
1.	Agrimony	<i>Agrimonia eupatoria</i>	Throughout site	y
2.	Amphibious Bistort	<i>Persicaria amphibia</i>	Area 12	y
3.	Apple	<i>Malus spp.</i>	Area 16 one tree	
4.	Ash	<i>Fraxinus excelsior</i>	Mature and immature seen, areas 7 and 16, health with regard to ash dieback needs further investigation. Mature tree seen area 11 near vent 5C crown looking unhealthy	y
5.	Asparagus	<i>Asparagus officinalis</i>	Areas 10 and 8	
6.	Bee Orchid	<i>Ophrys apifera</i>	Going over at time of visit only saw one in area 8 but, people have reported many more this year	
7.	Bird's-foot-trefoil (Common)	<i>Lotus corniculatus</i>	Particularly in area 2	y
8.	Black Horehound	<i>Ballota nigra</i>	Small clumps scattered throughout site	y
9.	Black Medick	<i>Medicago lupulina</i>		
10.	Blackthorn	<i>Prunus spinosa</i>	Periphery of site mainly	y
11.	Blue Fleabane	<i>Erigeron acer</i>	Area 2a, seen 1/8/21	
12.	Bramble	<i>Rubus fruticosus agg</i>	Throughout site, appears to be different micro species present. Clumps at 4 and 4a could be Dewberry as recorded 1998	y
13.	Bristly Oxtongue	<i>Helminthotheca echioides</i>		y

14.	Buddleia (butterfly-bush)	<i>Buddleja davidii</i>	One bush seen area 15	
15.	Chicory	<i>Chichorium intybus</i>	One plant seen area 3	
16.	Chokeberry	<i>Aronia spp</i>		
17.	Cleavers (goose grass)	<i>Galium aparine</i>		y
18.	Common Centaury	<i>Centaurium erythraea</i>	Particularly in areas 2 and 2a	
19.	Common Fleabane	<i>Pulicaria dysentrica</i>		y
20.	Common Knapweed	<i>Centaurea nigra</i>	Particularly in areas 2 and 2a and 3 and 3a	
21.	Common Mallow	<i>Mallow sylvestris</i>		y
22.	Common Ragwort	<i>Jacobaea vulgaris</i>	Throughout site	y
23.	Common Reed	<i>Phragmites australis</i>	Two clumps area 7	
24.	Common Vetch	<i>Vicia sativa</i>		y
25.	Cotoneaster	<i>Cotoneaster spp</i>	A couple of small shrubs seen area 15 and 9	
26.	Creeping Buttercup	<i>Ranunculus repens</i>		y

27.	Creeping Cinquefoil	<i>Potentilla reptans</i>		y
28.	Creeping Thistle	<i>Cirsium arvense</i>	Large clumps around periphery of area 12	y
29.	Curled Dock	<i>Rumex crispus</i>		
30.	Cut-leaved Crane's-bill	<i>Geranium dissectum</i>		y
31.	Daisy	<i>Bellis perennis</i>		
32.	Dog rose	<i>Rosa canina</i>	Throughout site, invading areas of shorter sward and greater floral diversity	y
33.	Dog wood	<i>Cornus sanguinea</i>	Large specimen border between area 2 and 9 and elsewhere	
34.	Dwarf Mallow	<i>Malva neglecta</i>	Pathway between areas 7 and 8	
35.	Elderberry	<i>Sambucus nigra</i>		y
36.	Field Bindweed	<i>Convolvulus arvensis</i>		y
37.	Field Maple	<i>Acer campestre</i>	Periphery of site, area 16	
38.	Field Scabious	<i>Knautia arvensis</i>	Areas 3 and 3a	
39.	Forget-me-not	<i>Myosotis spp</i>	In mown area around vents, probably Early - <i>ramosissima</i>	
40.	Garlic Mustard (Jack-by-the-hedge)	<i>Alliaria petiolata</i>	Abundant in area 14 under trees	
41.	Great Mullein	<i>Verbascum thapsus</i>	Area 7	

42.	Great Willowherb	<i>Epilobium hirsutum</i>	Area 8	y
43.	Greater Burdock	<i>Arctium lappa</i>		y
44.	Greater Periwinkle	<i>Vinca major</i>	Only one plant seen	
45.	Greater Plantain	<i>Plantago major</i>	Paths	y
46.	Green Alkanet	<i>Pentaglottis sempervirens</i>	One plant seen area 8 near vent 6D	
47.	Ground Ivy	<i>Glechoma hederacea</i>		y
48.	Hawkweed Oxtongue	<i>Picris hieracioides</i>		y
49.	Hawthorn	<i>Crataegus monogyna</i>	Throughout site – different maturities seen, starting to invade the few small areas of greater floral diversity that remain eg. 2, 2a	y
50.	Hazel	<i>Corylus avellana</i>	Area 17	
51.	Hemlock	<i>Conium maculatum</i>	Throughout site – large stands of this seen particularly areas 6,7,8,10	y
52.	Herb Robert	<i>Geranium robertianum</i>		
53.	Hoary Cress	<i>Lepidium draba</i>		
54.	Hoary Mustard	<i>Hirschfeldia incana</i>		
55.	Hogweed	<i>Heracleum sphondylium</i>		y
56.	Hollyhock	<i>Alcea rosea</i>	Areas 1 and 12	

57.	Horse Chestnut	<i>Aesculus hippocastanum</i>	Area 9	
58.	Lady's Bedstraw	<i>Galium verum</i>	Areas 2 and 2a	
59.	Large Bindweed	<i>Calystegia silvatica</i>		y
60.	Meadow Crane's-bill	<i>Geranium pratense</i>	Mainly areas 3 and 3a	
61.	Meadow Vetchling	<i>Lathyrus pratensis</i>	Area 4c reaching up through dense brambles	y
62.	Mint	<i>Mentha spp</i>	Two different species seen near 3a	
63.	Mugwort	<i>Artemesia vulgaris</i>		y
64.	Musk Mallow	<i>Malva moschata</i>	Spotted across site more in area 2	
65.	Oak	<i>Quercus spp</i>	Area 9, 14	y
66.	Oxeye Daisy	<i>Leucanthemum vulgare</i>	Areas 2, 2a	
67.	Perforate St John's wort	<i>Hypericum perforatum</i>		y
68.	Pineapple Weed	<i>Matricaria discoidea</i>		
69.	Poplar	<i>Populus spp</i>	Area 15	y

70.	Poppy	<i>Papaver spp.</i>	Only one seen	y
71.	Prickly Lettuce	<i>Lactuca serriola</i>		y
72.	Prickly Sow Thistle	<i>Sonchus asper</i>		
73.	Primrose (only leaves seen)	<i>Primula vulgaris</i>	Area 2	
74.	Purple Toadflax	<i>Linaria purpurea</i>	One plant area 1	
75.	Pyramidal Orchid	<i>Anacamotis pyramidalis</i>	Area 2a	
76.	Red Bartsia	<i>Odontites vernus</i>	Edges of paths particularly areas 4 and 4a	y
77.	Red Clover	<i>Trifolium pratense</i>		
78.	Red Shank	<i>Persicaria maculosa</i>	Area 12/13 adjacent to gravelled path	
79.	Ribwort Plantain	<i>Plantago lanceolata</i>		y
80.	Rosebay Willowherb	<i>Chamerion angustifolium</i>		
81.	Rush	<i>Juncus spp.</i>	Area 11	y
82.	Salsify/Goat's beard	<i>Tragopogon porrifolius/pratensis</i>	Need to confirm which when in flower	
83.	Scarlet Pimpernel	<i>Anagallis arvensis</i>		y
84.	Scentless Mayweed	<i>Tripleurospermum inodorum</i>	Large clump area 12	y
85.	Selfheal	<i>Prunella vulgaris</i>		
86.	Small-flowered Crane's bill	<i>Geranium pusillum</i>		
87.	Smooth Tare	<i>Vicia tetrasperma</i>		y
88.	Sorrel	<i>Rumex acetosa</i>		
89.	Spear Mint	<i>Mentha spicata</i>	In region of 3 and 3a	
90.	Spear Thistle	<i>Cirsium vulgare</i>		y
91.	Spindle	<i>Eunonymus europaeus</i>	Area 16	
92.	Spotted Medick	<i>Medicago arabica</i>		
93.	St Johns-wort	<i>Hypericum spp.</i>	Need to id when flowering	
94.	Stinging Nettles	<i>Urtica dioica</i>		
95.	Stinking Iris	<i>Iris foetidissima</i>	Area 13	
96.	Stone Parsley	<i>Sison amomum</i>		y
97.	Stork's-bill	<i>Erodium spp.</i>	Need to check stipules but prob common, <i>cicutarium</i>	

98.	Sycamore	<i>Acer pseudoplatanus</i>	Mature trees around periphery. Invading other areas	
99.	Teasel	<i>Dipsacus fullonum</i>		y
100.	Upright Hedge Parsley	<i>Torilis japonica</i>	Need to check fruits to confirm id	
101.	Wall Speedwell	<i>Veronica arvensis</i>	Found around vents where grass cut	
102.	Walnut	<i>Juglans regia</i>	Throughout site various sizes	
103.	Weld	<i>Reseda luteola</i>	Throughout site, area 7 with denser populations	y
104.	White Bryony	<i>Bryonia dioica</i>	One plant seen area 15	
105.	White Campion	<i>Silene latifolia</i>		y
106.	White Clover	<i>Trifolium repens</i>		y
107.	White Dead Nettle	<i>Lamium album</i>	Couple of small patches across site, some area 1	
108.	Wild Carrot	<i>Daucus carota</i>		y
109.	Wild Strawberry	<i>Fragaria vesca</i>	One plant area 2b	
109.	Willowherb	<i>Epilobium spp.</i>	Along edges of paths need to id	
110.	Wood Avens	<i>Geum urbanum</i>		
111.	Woody Nightshade (Bittersweet)	<i>Solanum dulcamara</i>		y
112.	Yarrow	<i>Achillea millefolium</i>		
113	Yellow Iris	<i>Iris pseudacorus</i>	Area 12 one clump	y

**NB** a list follows of species observed in 1998 but not seen in 2021, this does not mean that no longer present but that they weren't observed during surveying in 2021:

Lesser Bird's-foot-trefoil, Autumnal Hawkweed. White Melilot, Wood Dock, Fiddle Dock, Meadow Buttercup, Horse Radish, Lesser Hop Trefoil, Pear, Juncus inflexus, J. conglomeratus, J. effusus.

#### Appendix 2: Borden Nature Reserve collated data from visitors to site during 2020 - (Work in Progress)

<b>Birds</b>		<b>Butterflies/moths</b>	
Blackbird	Greater spotted woodpecker	Comma	Large white
Blue tit	Pied wagtail	Gate keeper	Small White
Chaffinch	Kestrel	Marbled White	Speckled Wood
Crow	Collared dove	Brown Argus	Small Tortoiseshell
Dunnock	Black cap	Peacock	Green-veined White
Fieldfare	Cuckoo (heard)	Red admiral	Brimstone
Great tit	Song thrush	Painted lady	Ringlet
Linnet	Buzzard	Orange tip	Meadow brown

Long-tailed tit	Common blue      Small copper
Magpie	Cinnibar moth
Wood Pigeon	6 Spot burnet moth
Redwing	Eggs of Fiery Clearwing moth
Robin	
Sparrow      Green woodpecker	
White throat	
<b>Hoverflies</b>	<b>Bees</b>
Volucella zonaria	Common Carder Bee ( <i>Bombus pascuorum</i> )
Marmalade hoverfly	Red-tailed Bumblebee ( <i>Bombus lapidarius</i> )
	Buff-tailed Bumblebee ( <i>Bombus terrestris</i> )
	Vestal Cuckoo Bee ( <i>Bombus vestalis</i> )
	Red Bartsia Bee ( <i>Melitta tricincta</i> )
	Early Bumblebee ( <i>Bombus pratorum</i> )
<b>Mammals</b>	<b>Amphibians</b>
Fox ( <i>Vulpes vulpes</i> )	Frog
Badger ( <i>Meles meles</i> )	
Squirrel	
Bank vole	
	Dragonflies
<b>Fungi</b>	Grasshoppers
Jelly ear	
Turkey tail shelf fungus	

## 9. REFERENCES

1. Dr Bob Gibbons, Mark Loxton (1998) Cryalls Lane Landfill Site Proposed Nature Reserve, A Preliminary Report
2. Butterfly Conservation Factsheet Fiery Clearwing *Pyropteron chrysidiiformis*

