Proposal to construct a Berrow and Burnham Path to avoid the Coast Road

Stage 1: Unity Farm to Co-op

Berrow Parish Council

Burnham on Sea & Highbridge Town Council

Greenways and Cycleroutes Limited
The Wool Hall
12 St. Thomas Street
Bristol
BS1 6JJ

March 2018

Contents

Proposals to construct a Berrow and Burnham Path to avoid the Coast Road

1. Introduction and outline of Project for a traffic free path from Unity Farm to the Coop to avoid the Coast and Berrow Roads for a distance of 2.5kms.

Berrow Parish Council have sought to create a path beside the Coast Road for over 20 years. The 750m section between Hurn Lane and Berrow Church has no footway on either side making this section of road all but impassable in high season. In addition, the Coast Road is not particularly wide so equally there is no safe place for cyclists, particularly families and holiday makers.

Greenways and Cycleroutes (a local Charity) worked with the local councils and landowners to open up Brean Down Way from Weston-Super-Mare to Brean. It was opened on 7th July 2017 and immediately was popular with the public who, for the first time for many years, are able to walk and cycle free from traffic over the crucial River Axe sluices at Diamond Farm. Some 27,000 trips were recorded here in the first 7 weeks of opening, and the path has continued to be popular ever since.

Following this, local Councillors encouraged us to consider extending further south to connect to Berrow and Burnham-on-Sea, and our proposals for this are set out in a small report “Brean, Berrow, Brent Knoll and Burnham-on-Sea Cycling Routes – September 2017” which is attached as Appendix 1 to this planning document for information. This report recommended reconstructing Middle Street through to Brent Knoll all to the same standard as the Parish Council’s recent work on Crooked Lane, as well as the Coast Route which is the subject of this application to cover the section from Unity Farm at Berrow to the outskirts of Burnham.

The opportunities for making a good quality and attractive route along this corridor are very limited. One can walk along the beach, and even cycle, but there are no continuous public rights of way running north or south, although there are 7 or 8 public paths running through to the beach. The open land between the main roads is owned by just four parties, Unity Farm, Sedgemoor District Council at Berrow Dunes, Berrow Parish Council and the Burnham and Berrow Golf Club. A successful route utterly depends upon the support and goodwill of these local landowners.

Brean Down Way Path, Summer 2017

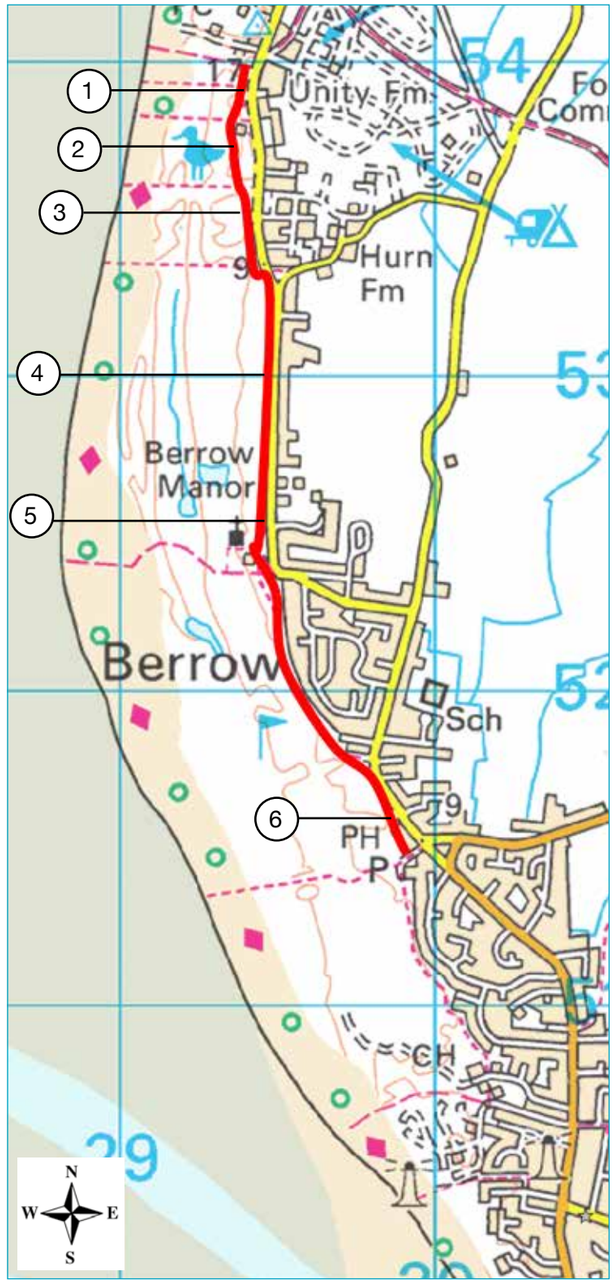
Traffic on the Coast Road

1. There is no footway of any sort beside this busy road. The project proposes to construct a new path just to the west of the roadside drainage ditch, and to carefully fence this off from the adjacent golf course land both for security and against errant balls. Vegetation will be carefully cut back just sufficiently to allow the fence to be erected. There are two or three service pole strainers which will require adjusting.

   Once open this key section will enable the public to walk all the way though on a traffic free route.

Map of overall route

1. *Unity Farm section along the edge of the former sand quarry area.*
2. *Through Berrow Dunes Nature Reserve to their car park to avoid narrow footway on road past Roughlands*
3. *Clear back and widen existing footway as far as Hurn Lane*
4. *New path alongside ditch on the boundary of Golf Course*
5. *Pick up old road past Berrow Church*
6. *Rebuild existing track past Recreation Ground*



1 km

2. Location Plan

3. Details of the proposals

The following pages describe the proposals by way of plans, text, photographs and sketch cross-sections. The ecology of the area is described in some detail in a report by Rupert Higgins MCIEEM attached as Appendix 2.

Map 1: Unity Farm Section

Unity Farm to Berrow Dunes Nature Reserve Section – 400m

Over this section the footway adjacent to the Coastal Road is too narrow for shared use and the summer traffic on the road itself denies the opportunity for cycling lanes or other measures on the road. So the Coastal Cycling route is proposed to run inside the hedge on Unity Farm, and then along a shallow valley through the Nature Reserve to reach the Car Park at which point walkers and cyclists can join the existing roadside footway which has scope for being widened if necessary.

1. Existing Bridleway to the Beach. For most cyclists it will be a little more convenient to go a few yards further north and take the carpark access road to the beach if they want to use it.

2. There is a need for a controlled crossing of the Coast Road here to link through to Unity Farm and to the bridleway through the caravan site to Berrow Common, the Green Lane and Middle Street to Brent Knoll.

3. Cut through the hedge here and fence through to the sandpit access track as shown in the section, 4m from the back of the hedge.

4. Rearrange the gates across the sand pit entrance so as to allow the public through but keep the field stock proof. Grade down the end of the sand back so as to allow access for livestock to the top of the bank.

Unity Farm

5. Excavate the sand to make a level space for the path all through behind the hedge. Construct a standard path 2.5m wide and plant trees at intervals along the back of the bank all as shown in the cross section. Note that the wildflower and grass turf to be carefully stripped and then re-laid down the excavated slope.

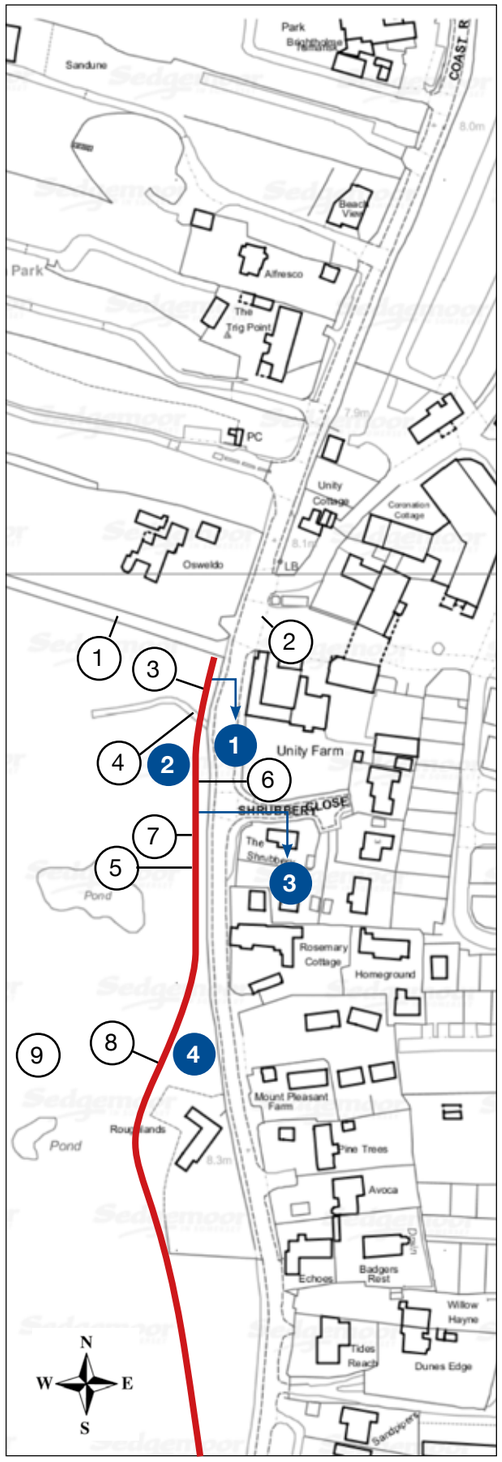
6. Fell and remove this one large Ash tree which is overhanging the Coast Road.

7. Excavate the remains of the old cesspit (serving a house on the top of the sand bank long gone) and back fill level to the path as necessary. Cut off any old supplies including water.

8. Slice through the sand bank on the diagonal as shown in the sketch section. The path should drop at an even gradient to reach the level of the floor of the Berrow Dunes area.

9. Connect with existing footpath.

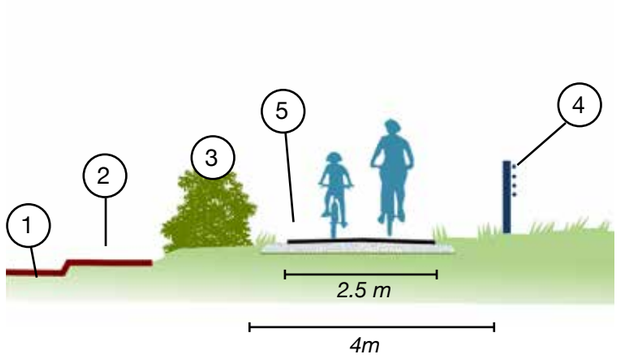
View through Buckthorn Road cut through Nature Reserve



The following cross-sections, which are arranged looking south, help to explain our proposal.

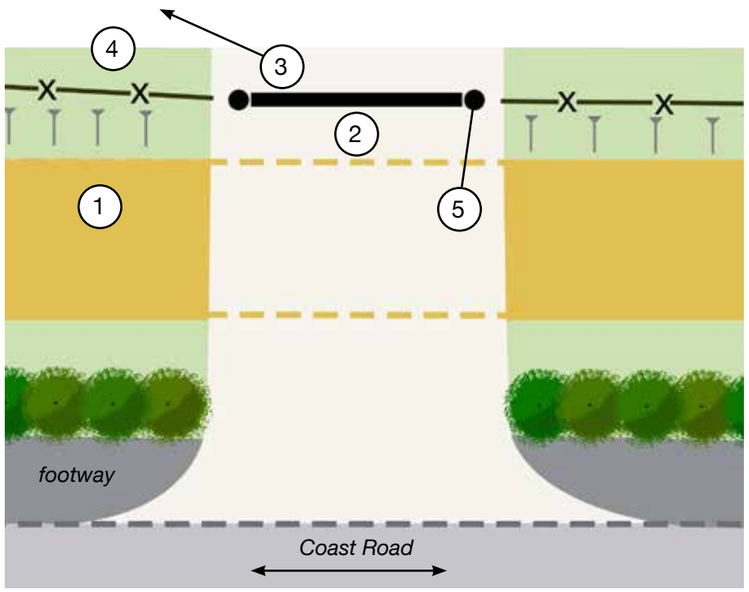
1 Start of Coastal Cycling Route immediately to the south of Unity Farm Bridle paths

1. *Coast Road*
2. *Existing footway.*
3. *Maintain and enhance hedges.*
4. *New stockproof fence set 4m from back of hedge.*
5. *Level ground and construct 2.5m wide path on stone base.*



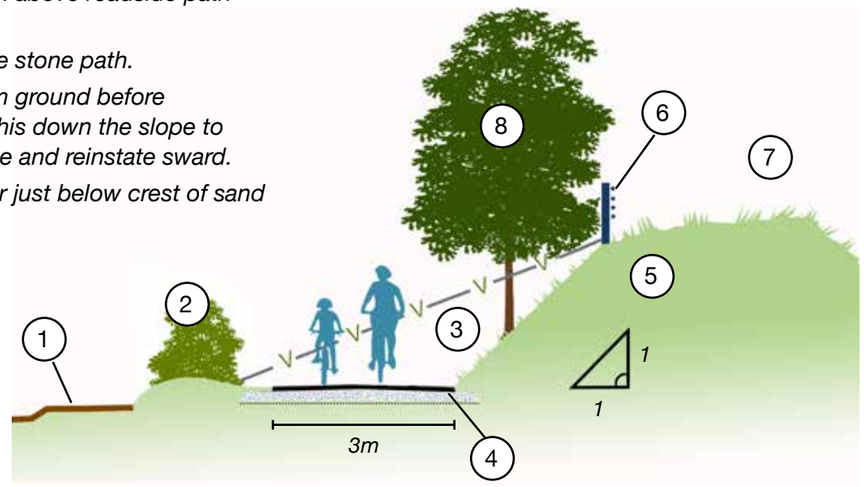
2 Plan of entrance to sandpit

1. *Proposed path running inside existing hedges.*
2. *Existing tarmac road access to old sandpit area.*
3. *Relocate existing gates 7m from roadside.*
4. *Grade back sand bank, relay turf and locate new gate for field access.*
5. *Two bollards set 1.5m apart to prevent vehicular access along path to Nature Reserve.*



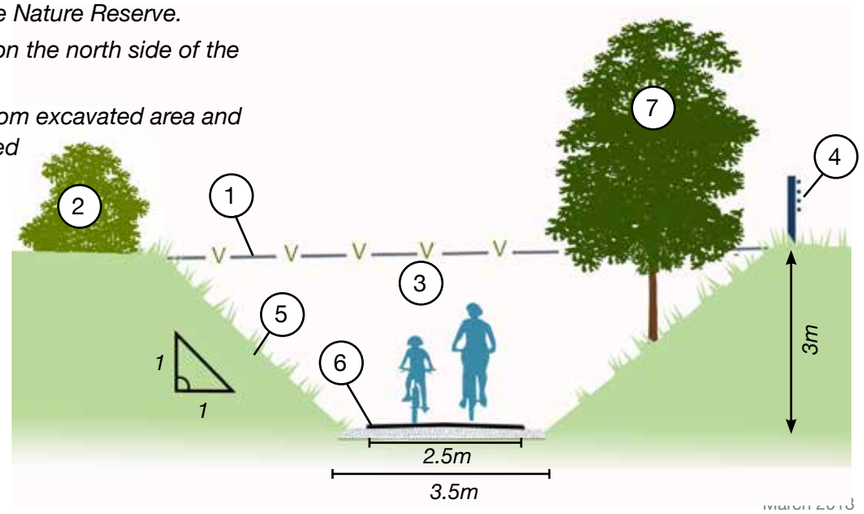
3 Cross section through proposed path beside the Coast Road at Unity Farm, looking south

1. *Existing narrow footway adjacent to Coast Road.*
2. *Maintain and plant up gaps in existing hedge.*
3. *Excavate back of sand bank to make 3m wide level base 0.3m above roadside path level.*
4. *Construct 2.5m wide stone path.*
5. *Carefully lift turf from ground before excavation and lay this down the slope to protect the sand face and reinstate sward.*
6. *Livestock fence at or just below crest of sand bank.*
7. *Remainder of sandbank to be maintained for grazing.*
8. *Plant Ash trees (or as agreed by ecologist) at 20m intervals to replace all trees removed by path construction.*



4 Cross section through path as it cuts diagonally through the sand bank to reach the lower level of the Berrow Dunes Reserve

1. *Existing ground levels at top of sand bank.*
2. *Existing scrub at edge of Nature Reserve.*
3. *Excavate way through. Note that the path will be gently dropping at this point to reach the lower level of the Nature Reserve.*
4. *Fence for livestock on the north side of the cutting.*
5. *Carefully strip turf from excavated area and lay down the exposed sand slopes.*
6. *Construct 2.5m wide stone path on the floor of the cutting.*
7. *Plant trees on slope.*



Map 2: Past Roughlands and through Berrow Dunes Nature Reserve

This section makes a new path through a shallow valley to the west of Roughlands in order to bypass the narrow roadside footway which is not suitable for shared use This is a particularly attractive section of the route and will give the public a glimpse of the delights of the Berrow Dunes area. South of the existing car park the route follows the existing roadside footway and widens it where necessary for shared use.

1. The path enters the Berrow Dunes area at the end of the Unity Farm sand cutting.

2. The existing public footpath AX4/17 crosses here and we will install a clear notice to prohibit cycling access to the dunes.

3. This section is a wide gulley covered in Buckthorn. At one time this was probably an open grass meadow and it may be considered best to remove the invasive Buckthorn to restore the area. But for the purposes of this application we have confined the clearance to the width of the path and verge either side.

   The construction of the path throughout the new sections of path in this application will comprise a 150mm thick layer of compacted stone finished off with a smooth layer of fine limestone dust, exactly as we have built further north on the Brean Down Way.

4. Here the route crosses an open grassed track towards the sea which makes an easy link for walkers.

5. The path continues through more open ground, cutting through a couple of low ridges to give an even and easy route. Over this section a large dune to the east completely shields the Coast Road.

6. Make a link to the existing car park.

7. But take the main path around through this open space in order to avoid conflict with parking vehicles at busy times. This section of the path might well include some picnic seating.

8. Cross the car park access road square on as far back from the road as possible. Traffic speeds are low here and visibility is good. There may be merit in tarmacking the crossing to reduce erosion by traffic at this point.

9. Continue southwards in the Nature Reserve as for as long as it is considered suitable in order to join the roadside footway at a point well away from the occasionally congested entrance to the car park. Cut through the hedge here and remove sufficient to give the best visibility possible.

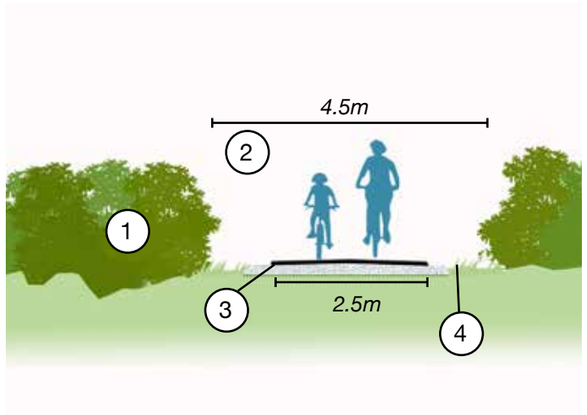
1. View through Nature Reserve

10. Join the existing footway and clear this back to give the full width of 2m as originally constructed. This path is nicely separated from the road by a grass verge which somehow gives the illusion of separation from traffic in a rural manner.

2. View of path beside Coast Road

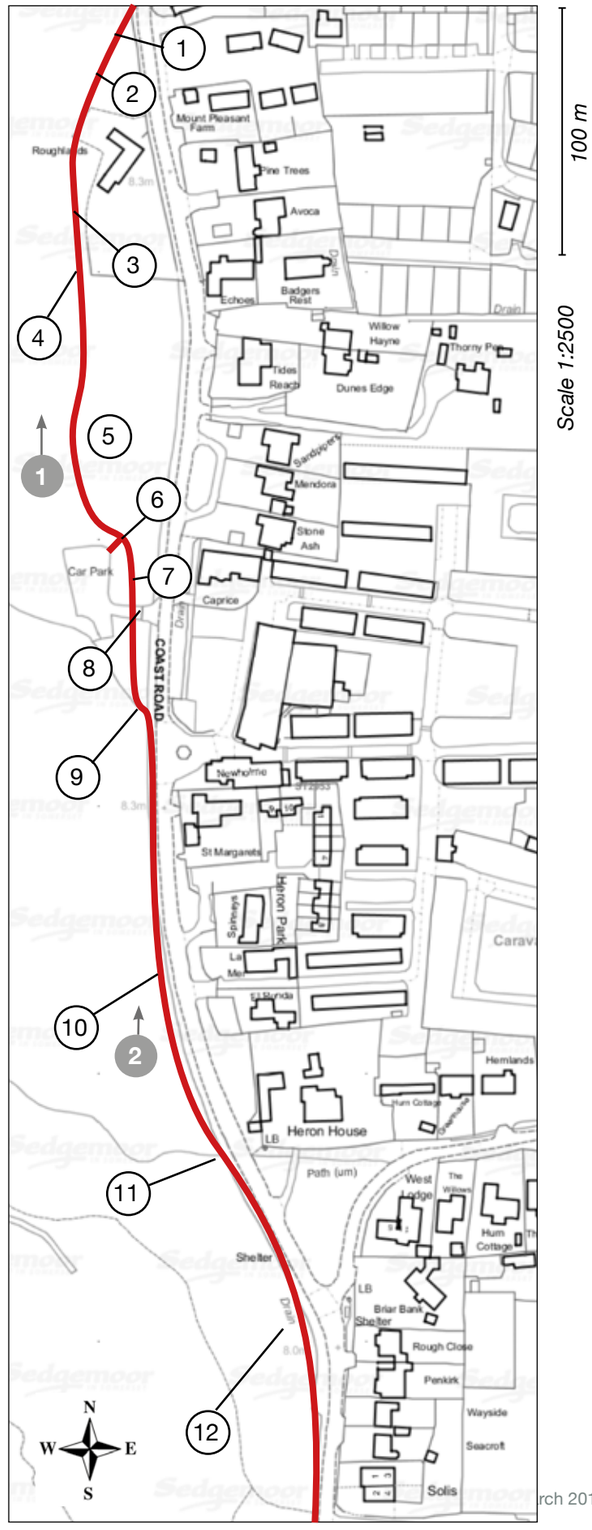
5 Cross section through Nature Reserve to reach existing car park

1. *Mainly Buckthorn dominated scrub.*
2. *Extend the survey "trace" to 4.5m wide. Poison all Buckthorn roots as set out in the Reserve Management Plan.*
3. *Construct 2.5m wide path.*
4. *Maintain 1m wide grass verges.*



11. Footpath AX4/15/1 crosses here for a southern access into the Berrow Dunes area. Continue widening the existing footpath and clearing it back full width as well as cutting generous verges. If, at a future date, the levels of usage demand, then this path needs to be widened to 2.5m or 3.0m for comfortable shared use.

12. Here the footpath comes to an end and the work of constructing a new path to Berrow Church begins.



Map 3: Along Golf Course lands adjacent to the Coast Road

This is a key section with no path at all, and the one where Berrow Parish Council have long sought a solution. Some years ago the Parish was well advanced with a scheme but this fell at the last minute on account of funding and landownership shortfalls. It appears that the funders required sufficient width for a bridleway, a width which is not really available in the narrow woodland strip bordering the Gold Course itself. We are **not** providing for equestrians as they already have full access along the beach. As a consequence, we will only be providing a path for shared walking and cycling use.

Section beside Coast Road and alongside Golf Course

The sketch section shows how the path would best be arranged. Care would need to be given to the details of the boundary fence to prevent trespass, and drainage from the adjacent fairways. Mostly the width and thickness of the vegetation is such that golfers will be unaware of either the path or its users as they will not be visible. Over 2 or 3 short sections the vegetation is perhaps only 10 metres wide at present, and here some additional planting and infill maybe needed in order to mask off the path.

Over a distance of 800m there is no footpath at all beside this busy road. The proposal involves cutting back 3-4metres into the belt of scrub and trees forming the boundary of the golf course and constructing a new path along the side of the existing drainage ditch. Careful thought will need to be given to securing the golf course against public trespass, providing for adequate cross drainage for the golf course where necessary and augmenting existing planting over the short sections where the tree belt is less than 10m wide.

The target detail all through will be as shown in this cross-section sketch. The path will be constructed to the west of the roadside ditch. This arrangement will result in an attractive corridor with a good open area between the path and road – something of importance when close to traffic for this distance (750m).

At the same time culverting of the ditch should be avoided at all costs – because of its huge expense and the consequences of encroaching onto Highways owned land – but local revetments to the edge of the ditch may be needed at pinch points,

On the west side of the path a new fence will serve to prevent trespass and to protect the public from errant golf balls. Whilst the general height of this fence is 1.8m over a few short sections near tees on the course there maybe the need to heighten it to 2 metres.

2. Southern end of Coastal Road Path

1. Typical view beside Coast Road

Behind the hedge the vegetation should be planted up densely at any locations where the width of cover is small.

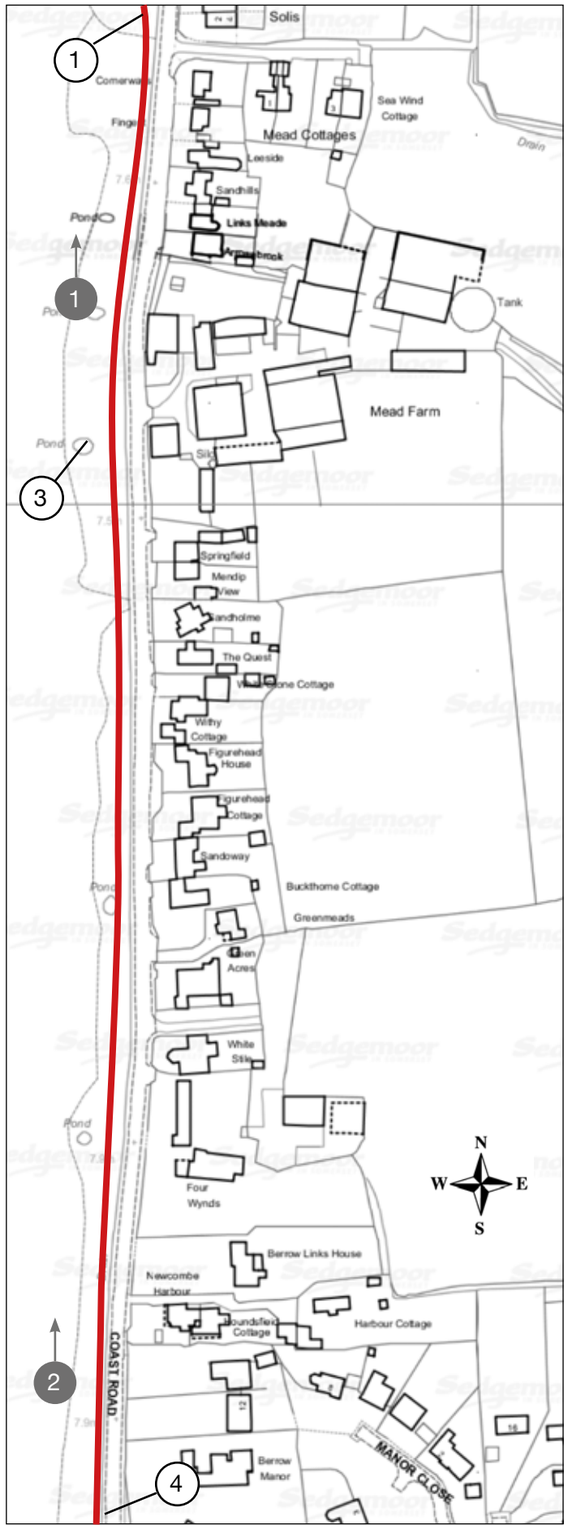
1. There is no footway of any sort beside this busy road. The project proposes to construct a new path just to the west of the roadside drainage ditch, and to carefully fence this off from the adjacent golf course land both for security and against errant balls. Vegetation will be carefully cut back just sufficiently to allow the fence to be erected. There are two or three service pole strainers which will require adjusting.

   Once open this key section will enable the public to walk all the way though on a traffic free route.

2. Maintain existing access gate.

3. The ponds through here are likely to be popular haunts for the protected Great Crested Newt. Works to this section will be carried out at the guidance and supervision of the project ecologist – Rupert Higgins.

4. Link through to the unsurfaced road to Berrow Church.

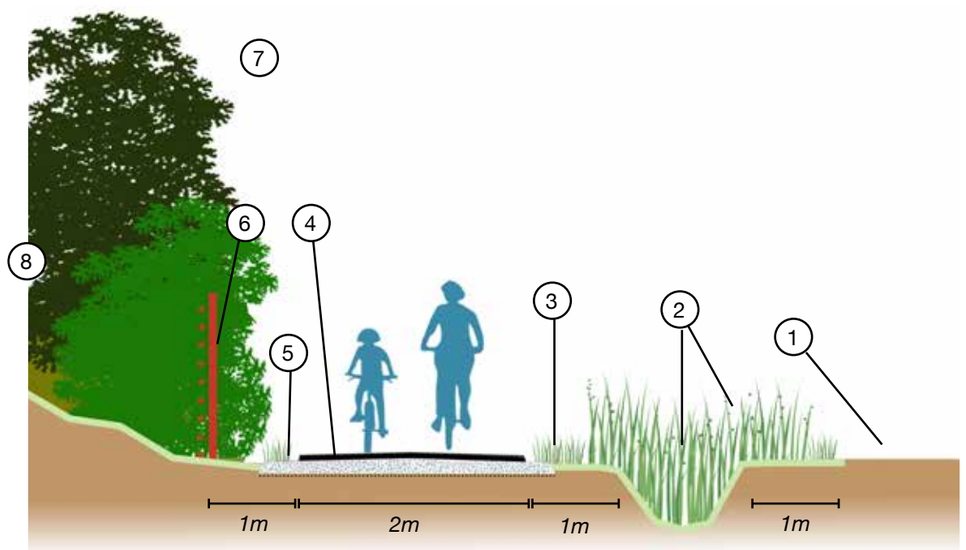









1. *Coast Road traffic*
2. *Existing grass verge and ditch maintained to provide a clear margin between the road and its traffic and the greenway path.*
3. *Mow the first 0.5m of verge along the path edge*
4. *Construct new stone path 2.5m wide set with a central camber and slightly below ground level so as to ensure the surface drains dry.*
5. *Maintain a narrow verge against the tree belt vegetation*
6. *Install galvanised steel mesh fence 1.8m high to prevent dogs straying onto the golf course and trespass.*
7. *Maintain tree and scrub belt and reinforce planting where necessary.*
8. *Burnham and Berrow Golf Course.*



Map 4: St.Mary's Church and the track through to the Village Ponds

This section follows the old road to the church and then the track (Restricted Byway AX4/2) to the Berrow Village Ponds. This track is also owned by the Burnham and Berrow Golf Club.

1. The Church access road is stone and generally suitable for walking and cycling and this project does not include proposals to reconstruct it. Note that as well as the tracks to the small Church car park, there are a number of designated footpaths in the area including AX4/6 crossing the Golf Course to reach the sea.

2. Footpath across Green maybe followed rather than the road. (Insert details of footpaths in the area).

3. Join the restricted byway, behind Little Court. There will need to be a short link constructed at the start of this path so as to ensure that walkers and cyclists don't stray onto the nearby Coast Road.

   The existing ROW is generally quite good. Its stone surface needs to be cleared back and then resurfaced to end up slightly proud of the ground for drainage. The designation of this section as a Restricted Byway, allows for horse riders and cyclists as well as pedestrians. The land is owned by the Golf Club.

4. Continue all through this section behind Julian's Acres. The path is well set back from the residential boundary and for much if the way well screened and set in a low defile. Add additional planting if necessary.

5. Join the Parish Council land at the Village Ponds.

1. View of approved road to Church

2. View of Berrow Church

3. This section is muddy in winter

4. Surface varies

- Binding Margin -

Map 5: Berrow Ponds to the Coop

This section runs down the west side of the Recreation Ground via the exiting track. The only work required is scraping back and laying a new surface to raise the path clear of any wetness.

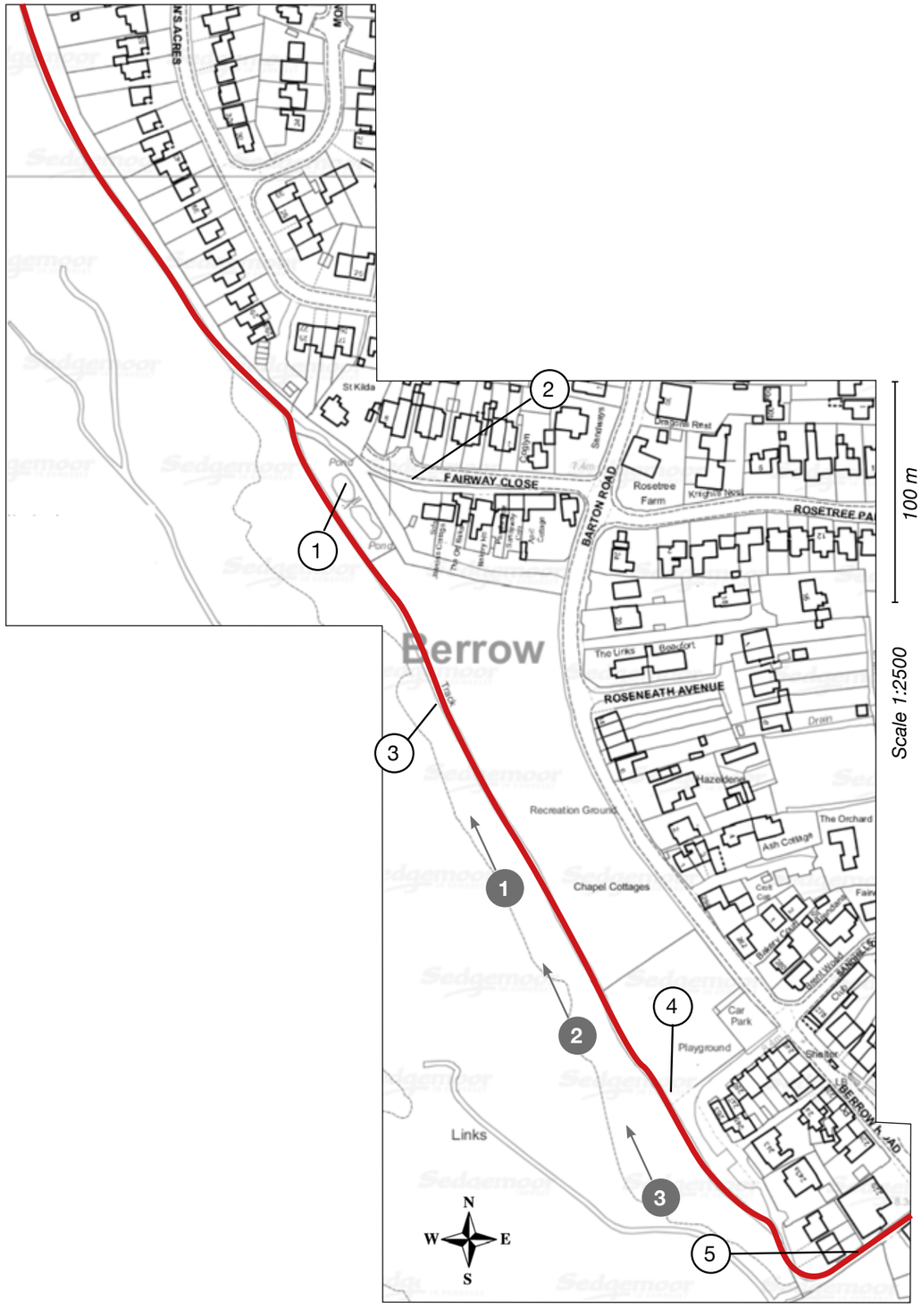
1. Village Ponds
2. Existing footpath link to Fairway Close.
3. Follow track alongside Recreation Ground and reconstruct path all through.
4. Make link to car park.
5. Join tarmac road behind housing and connect through to Berrow Road by the Co-operative.

This is the end of the current planning application.

1.

2.

3.



Archaeology

We are not aware of any archaeological issues.

Wildlife and Ecology

Appendix 2 contains the Ecology report prepared by Rupert Higgins MCIEEM. This sets out the constraints on the project in particular in regard to work to protect Great Crested Newts. We are adopting the advice in this report.

Clearance back of bush and small trees will take place after the bird nesting season (September 1St) and no work to the construction pf the path shall take place until it is either fully fenced as in the case of the Coast Road section beside the Golf Course or mature trees within two metres of the path protected with chestnut paling.

Drainage Matters

The path will be constructed just proud of ground level throughout its length. There is no known run off in this sandy area and water actually landing on the path will be shed sideways off its central camber to flow away exactly as it does at present. A licence will be required from the Inland Drainage Board for constructing close to the drainage ditch beside the road.

Design and Access Statement

The purpose of this project is to create a high quality, all weather path suitable for year-round use on foot and bicycle. The path will be rural in nature. It will not have hard edge kerbs it formal street furniture. It will not have lighting. The path will have good access to Berrow at Unity Farm, and to Burnham at the Golf Club, and to intermediate public roads and rights of way. Despite this we will not be constructing any new links to the public roads as we will join these by existing tracks and bridleways at points on private land.

The project will take active steps to encourage visitors to area, to cycle and walk along the path rather than drive – to Burnham for example.

Construction Management Plan

We anticipate that the clearance, the path construction and the fencing will all be done by local contractors familiar with the area and this type of work.

The plan below shows the planned site storage areas (blue star). These are at the Unity Farm sand pit, at the Berrow Dunes car park site where any surplus stone can be used to repair the car park, and on the northern access road to Berrow Church, which could usefully be closed for the duration of the works. Stone will be dumped at these points and ten dumpers distributing the stone will proceed along the line of the path, over the stone they have already constructed.

It is anticipated that the path building contract will run for approximately 6 weeks from October. The site operating hours will be 8.00am to 6.00pm Monday to Friday and Saturday morning if required by the contractors. The times of deliveries are not available yet, but will be included in the method statements provided by contractor.

The noise and dust will be as normal on a minor road construction. The plant here though is likely to be more modest in size and therefore quieter. If the weather is very dry and dust from tipping lorries is a problem then the aggregates will be sprayed at the point of tipping and loading into dumpers.

It is not anticipated that any site vehicles will travel on the public highway and materials delivery vehicles will not travel on the site, so there should be no mud taken onto the public roads.

We do not anticipate any visitors except supervisory engineering staff, who travel by bicycle, and an official visit by Council Members.

The site offices ,if required, storage and equipment will be at the Unity Farm end.

Brean Down Way under construction 2017

Sorry, it has taken me a while to get back to you. At our Full Council meeting last night, my Councillors agreed to support the proposed new cycle route.

The path behind the village green is owned by Berrow Parish Council from behind the Co-op to the end of the village ponds. Beyond this belongs to Burnham and Berrow Golf Club.

Kind regards,

John

Berrow Parish Council

I'm pleased to be able to tell you that the Town Council agreed at the Full Council meeting on 5th March to unanimously endorse your report and for you to use the Town Council logo in relation to this project. Here is the draft minute from the meeting:

30/18/TC Greenways and Cycleroute's bid to extend cycle path

Members AGREED to support this and to give permission for the group to use the Town Council logo on publicity.

Burnham on Sea & Highbridge Town Council

Brean, Berrow, Brent Knoll and Burnham-on-Sea

Opportunities for Cycling Routes in the Area

Appendix 1

Greenways and Cycleroutes Limited
The Wool Hall
12 St. Thomas Street
Bristol
BS1 6JJ

September 2017

March 2018

Brean, Berrow, Brent Knoll and Burnham-on-Sea Cycling Routes

Picture of opening

On July 7th 2017, the Brean Down Way was opened by Mrs. Annie Maws, the Lord Lieutenant of Somerset.

This largely traffic free route connects through to Weston-Super-Mare. It has proved immensely popular with over 28,000 trips recorded crossing the River Axe sluices in its first 7 weeks, enough to make this the most heavily used cycling route in Somerset.

Not surprisingly there are now calls to extend the route to serve Berrow, Burnham-on-Sea and Brent Knoll. These notes set out the opportunities on the ground and sketch up ways of realising the links over the next few years.

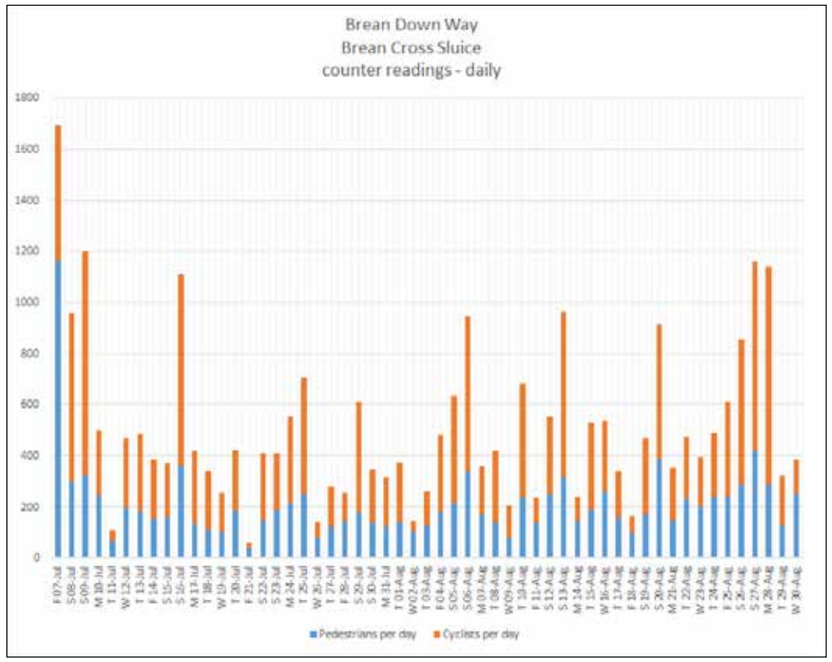
Whilst ideally one would look for a route alongside the Coast and Berrow Roads all the way through, in practice this is not possible. At the north end, almost all the way from the Brean Leisure Park to the Weston Road is tightly constrained, and similarly in the south through Burnham there is insufficient space for a separate path.

We think that the best strategy is to put in place the Brean, Brent and Burnham Triangular Greenway, as shown here, all as a really good quality traffic free circuit. These would both be self-contained tourist attractions – 8 miles long, but also provide alternatives to a sizable section of the main road. For the remainder, we have sketched in routes along more lightly trafficked roads as well as the ever-present freedom to cycle along the beach as signed at present. This is really only attractive when going with the wind, so the Brean and Burnham route would give a handy return option.

Greenways and Cycleroutes Limited (the local Charity which opened up the Brean Down Way is working with local people to bring forward these links to Burnham. The works required for the Middle Street and Crooked Lane routes to Brent Knoll are considered as a potential early win which could be opened in 2018. The Berrow Coastal Path requires detailed negotiations with the Burnham and Berrow Golf Club. If their crucial support was forthcoming then the proposed route north and south of Berrow Church could be opened by 2019.

The details of these two components are discussed in Appendix 1 and 2. Appendix 3 considers opportunities and links in Burnham-on-Sea.

Plot of record of usage on the Brean Down Way



Brean, Berrow, Brent Knoll and Burnham-on-Sea Cycling Routes – key elements

1 Completed Brean down way from Weston super Mare to Brean Down

2 Possible extension beside Warren Road to make a traffic free path up the Coast

3 It is possible to cycle on the sands but this does not suit everyone and the conditions vary from day to day

4 The Unity Farm to Burnham and Berrow Golf Club House greenway route building on existing paths and completing missing sections.

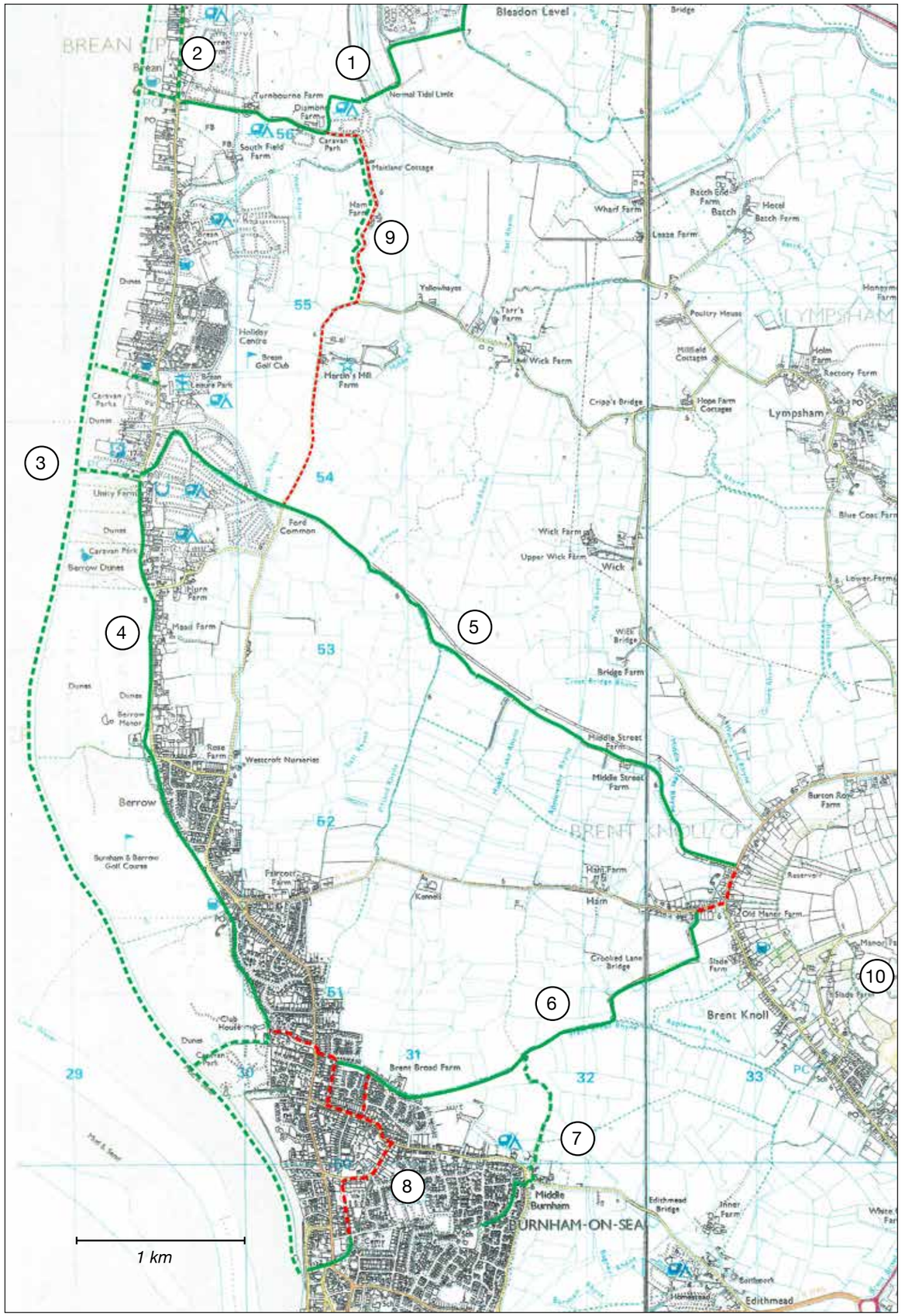
5 Middle Street Bridlepath and Greenway for a direct route to Brent Knoll

6 The Crooked Lane route has recently been improved

7 Additional way into Burnham

8 Possible signed route on residential roads

9 Red Road is quiet but the Weston Road not so for this direct route north. A new field edge path would solve any conflict



Appendix 1: Middle Street and Crooked Lane

The routes to Brent Knoll

Greenways and Cycleroutes Limited
The Wool Hall
12 St. Thomas Street
Bristol
BS1 6JJ

September 2017

Middle Street and Crooked Lane – The routes to Brent Knoll

This map shows the Middle Street and Crooked Lane bridle paths which march across the open moors and levels well away from trafficked roads such as the Brent Road. This note illustrates these greenway routes as they currently are, and suggests the works needed to make them into popular cycling routes as well as easier for walkers and equestrians.

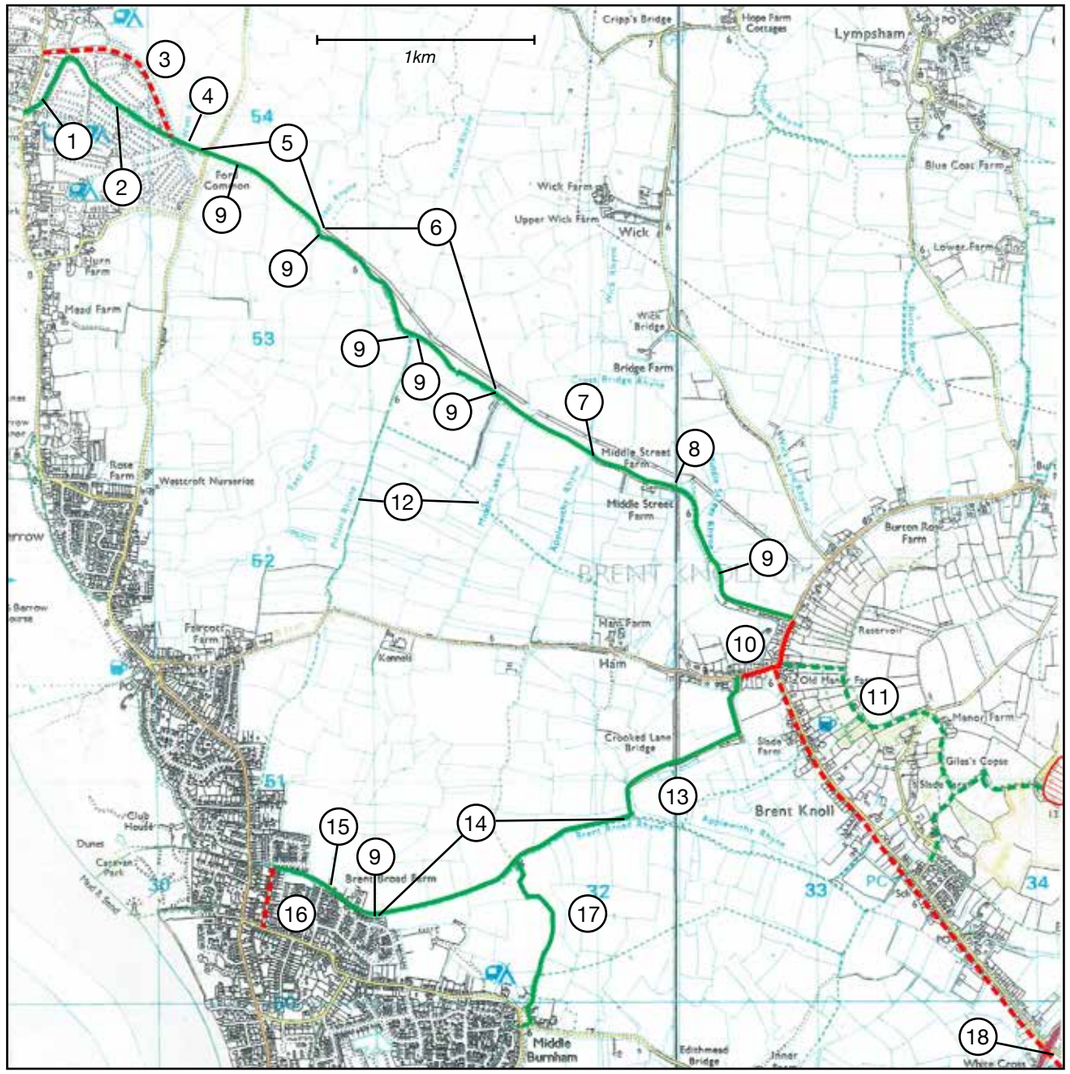
The proposed extent of the works needs to be carefully discussed with the farmers who use the routes for the management of their livestock, and with the County Council, Rights of Way team.

Once these details are agreed then the works to reconstruct these bridleways can be put in hand without further agreements as their current status already permits cycling and any necessary works to enhance their surfaces.

The main attraction of these two routes is their intimate contact with the open countryside of this area of moor, of levels, and of drains and rhynes. The sound of the wind sighing through the reeds bordering the greenways, and the ever distant presence of Brent Knoll, does make the passage of these paths particularly memorable.

Water levels and drainage are the determining factor of whether these lands can be crossed at all, and our detail shows a path which will run above any common flood level, will drain dry at all times and should outlast the very occasional inundation from exceptional floods.

View from the Greenway



1. The public bridleway route follows a Unity Farm service road.

2. Here the bridleway has a sealed surface and border of wild flowers.

3. The course of the partly unused main road.

4. This short section needs to be cleared back. Large concrete drums prevent vehicular use. The Greenway crosses Red Road with excellent visibility in either direction.

5. The first section across the moors has a hard stone base which needs to be cleaned off, repaired and smoothed out. All the farm gates have adjacent wicket gates which can be improved for cycling use.

6. From the bridge over the East Rhyne the way is less and less used by farm vehicles and as a consequence has no stone surface and is deeply rutted. This section needs to be completely reconstructed.

7. Middle Street is a good tarmac road and virtually traffic free.

8. Bridge over mainline railway with fairly easy ramps either side.

9. Tarmac road continues all the way to Brent Knoll.

10. The main road is a little busy, but it does have a footway over its whole length for pedestrians and perhaps novice cyclists.

11. Public footpaths to Brent Knoll.

12. Connecting footpaths and bridleways which needs clear signing.

13. Crooked Lane is a quiet tarmac road all the way to, and across, the railway bridge.

14. This whole section has a sound surface recently constructed with crushed concrete and recycled materials. This needs tidying up, loose material removed and the surface smoothed.

15 The final section of the Brent Broad has a hard stone surface leading through to residential roads.

16. There are a number of opportunities for links towards the Town Centre.

17. The continuation of Crooked Lane provides yet another possible connection.

18. The Brent Knoll road passes the village Post Office and shop and would provide for a very good route to the heart of the Somerset Levels, Langport and beyond. BUT there is no possibility of crossing the A38 as it stands at present with almost continuous streams of traffic in both directions. Any plans to signalise this very difficult junction should provide for both pedestrians and cyclists too.

Description of photographs

Detailed plans of **Middle Street** section with photographs

View of bridleway through campsite

This first section of the Greenway runs on a generally raised bank. It has a hard surface and is quite dry.

After the last field gate the track is almost unused.

The section through to the start of the tarmac road is also rutted and requires a complete reconstruction as shown in the detailed section.

Crooked Lane

View of Middle Street near Brent Knoll.

Some sections are deeply rutted and overgrown.

Typical cross section for reconstruction of Middle Street

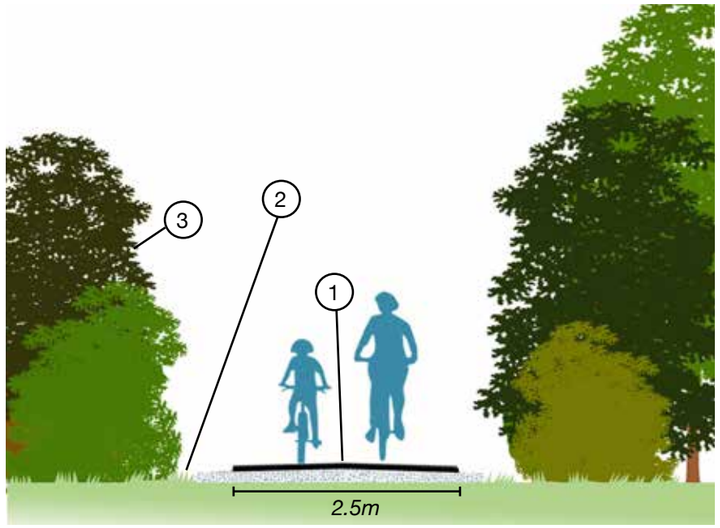
Middle Street – Brent Knoll - 3.6kms

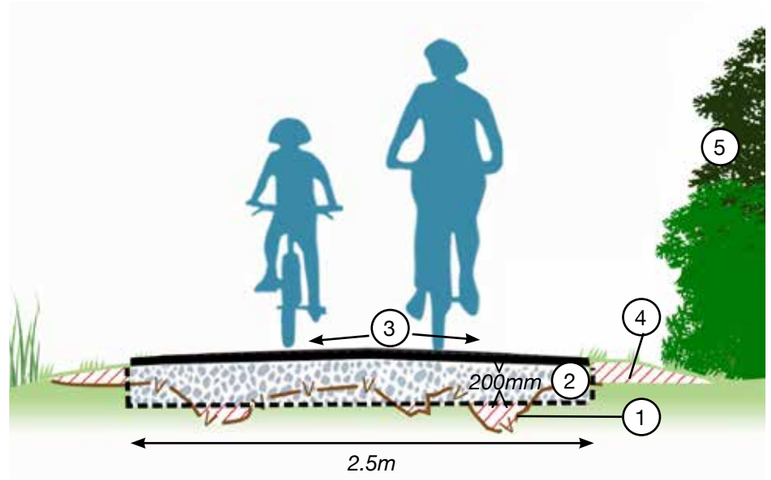
Exactly half of Middle Street through to Ford Common is a lovely and almost traffic free road with a good tarmac surface. The middle 900metres is a deeply rutted grass track winding between hedges, and the last 900m has a stone surface of sots which needs repairs. For the whole length Middle Street has a wonderful feeling of space with views across the open moors to both Brent Knoll and Brean Down.

1. Fill ruts and construct sound stone surface, 250mm thick laid on geofabric. Finish with fine stone dust. Ensure that the final level of the path is a little above ground level in order to provide good drainage.

2. Maintain narrow mown verges either side of path

3. Keep hedges trimmed back where necessary.





Detail of cross section through Green Lane reconstruction

1 Fill ruts and level ground removing the minimum of material in order not to leave the path in a trough.

2 Construct path of 200mm thick scalpings or good compacting recycled materials, and carefully compact to give level surface free of undulations. The stone to be laid on one layer of heavy duty polypropylene fabric and the top to be finished with a light dusting of limestone dust sufficient to fill all the interfaces in the stone.

3 Finish surface with a 25mm central camber to ensure drainage. The finished path level is to be at least 100mm above the adjacent ground levels.

4 Build up the shoulders to support the edge of the path with available material and seed with wild grass mix.

5 Trim back hedges for space and to maintain views.

Appendix 2:

Unity Farm to the Burnham and Berrow Golf Club avoiding the Coast Road

Greenways and Cycleroutes Limited
The Wool Hall
12 St. Thomas Street
Bristol
BS1 6JJ

September 2017

With the opening of the Brean Down Way from Weston-Super-Mare, there has been a natural demand for making an equally safe and attractive way up the coast from Burnham-on-Sea. This note covers the detail of the central 3.4km section where there is a good opportunity for making an excellent route. This page describes the proposed route by way of pictures.

1 The existing bridleway to the sea.

2 Cross the Coast Road to join the bridleway to Brent Knoll.

3 Past Roughlands there is insufficient width for shared use and a new path is needed through the local Nature Reserve.

4 The existing path north of Hurn Lane.

5 The 780m long section of the Coast Road where there is no path at all.

6 Berrow Church Road.

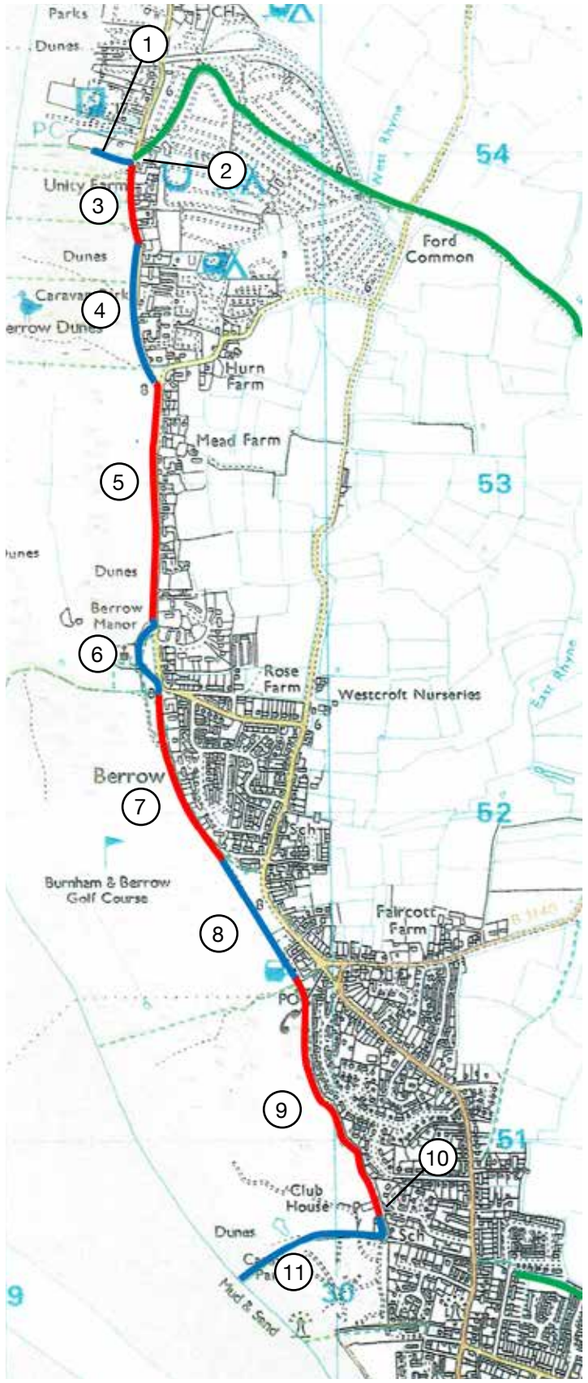
7 The public right of way through to the Church.

8 Existing track alongside open public space.

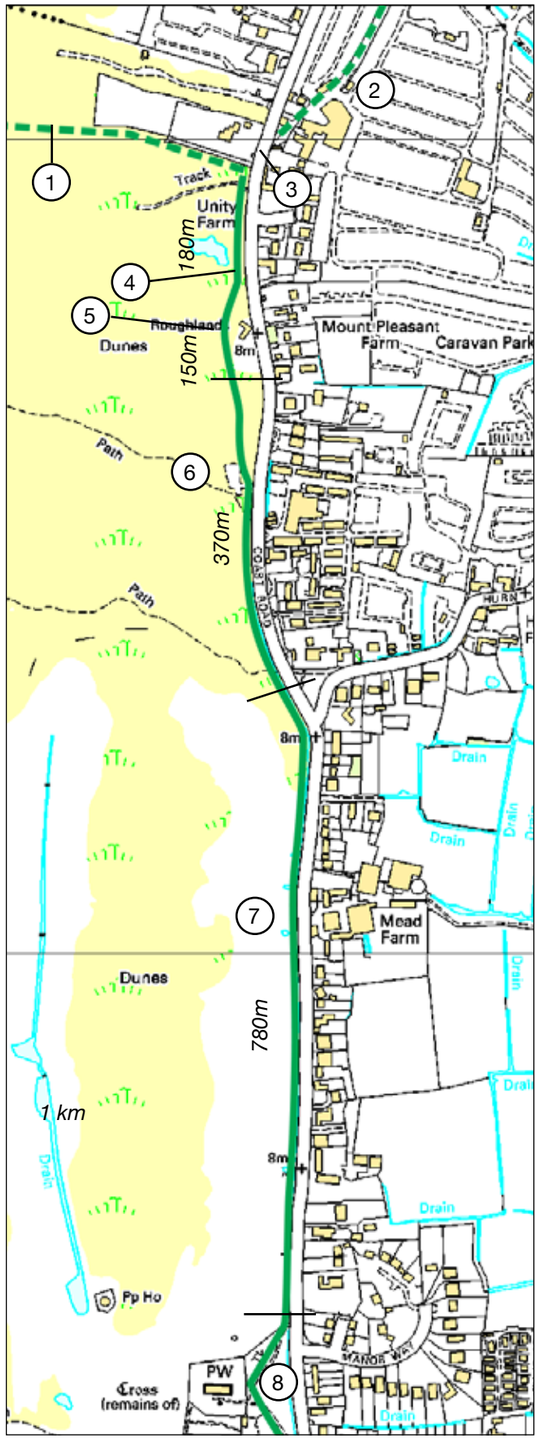
9 Existing footpath through dense vegetation.

10 Christopher's Way leads through to the main road and Shelley Drive for the bridleway to Brent Knoll.

11 The bridle path to the sea ends in soft sand.



Details of northern section from Unity Farm to Berrow Church



The following pages describe the works required and the options which might be available in some further detail. The numbering refers to the points on the map.

1. The existing bridle path to the sea makes a local link and also the end of the Middle Street way from Brent Knoll. This provides the option of a short length of beach in order to avoid the section of Coast Road as far as the Parish Hall and the Brean Down Way. However, for most cyclists it would be easier to use the beach access road just to the north.

2. The Brent Knoll bridle path starts off as a service road which could be enhanced with planting.

3. Crossing the Coast Road is not easy at busy times. There are in fact very few pedestrian crossings of this road to enable campsite residents to reach the beach in safety. This location would be an obvious location as it would provide for the public route and the entrance to the Unity Site. The montage suggests that a diagonal zebra arrangement would work the best. The Beach Access Road is just in the distance where the person is standing.

Sketch of zebra crossing required to connect bridleways and provide access from the Unity Site to the beach

4. The footway south to beyond Roughlands is too narrow for shared use. The best option would be to run a new path behind the hedge at the edge of the rough grazing. It would be even better to run along the ridge of the sand bank for the views but this would probably affect the grazing adversely?

5. Past Roughlands itself there is really no option but to ramp down into the “valley” at the rear of Roughlands and to create 150m long new path through the Berrow Dunes Local Nature Reserve. This fragment of the route would have to be detailed sensitively, but it would give the opportunity to expand the public’s appreciation of this Coastal Dunes Site of Special Scientific Interest (SSSI). The path here would look very like sections of the existing Golf Course Footpath further south, only with a better surface.

6. This Roughlands Diversions can then join the existing roadside path. This is generally good, and once cleared back has an adequate width. Like the recent path along Weston Road, the narrow grass verge serves to separate the public away from the roadside ambience, and also serves to collect detritus from the road which otherwise would bounce onto the path.

7. The “missing” section of Coastal Road path runs for some 780 metres from just to the north of the Hurn Lane bus stop to Berrow Church. Here the route must rely upon the support of the Burnham and Berrow Golf Club who own the belt of scrub and trees separating their course from the Coastal Road. See page 8.

8. The lane to Berrow Church makes for a welcome break and connects to the only public bridleway leading across the golf course to the sea. The Church Lane has a good stone surface but this could be improved.

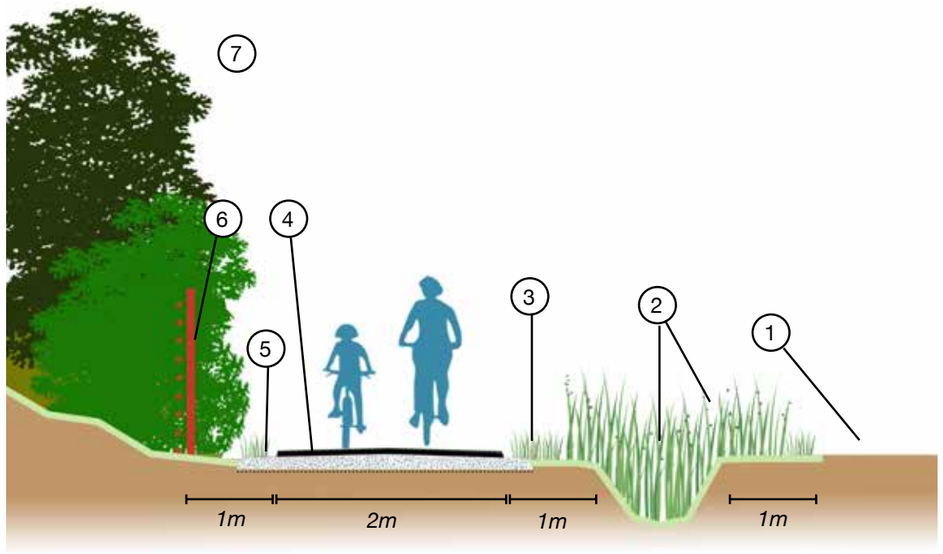
Section beside Coast Road and alongside Golf Course

The sketch section shows how the path would best be arranged. Care would need to be given to the details of the boundary fence to prevent trespass, and drainage from the adjacent fairways. Mostly the width and thickness of the vegetation is such that golfers will be unaware of either the path or its users as they will not be visible. Over 2 or 3 short sections the vegetation is perhaps only 10 metres wide at present, and here some additional planting and infill maybe needed in order to mask off the path.

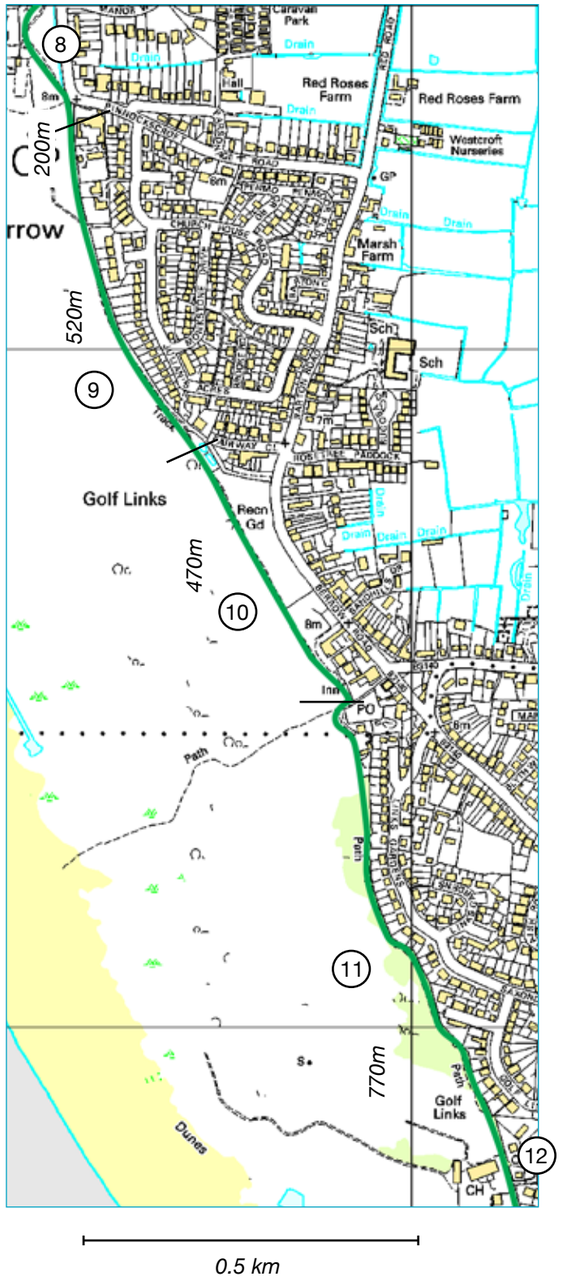
Over a distance of 800m there is no footpath at all beside this busy road. The proposal involves cutting back 3-4metres into the belt of scrub and trees forming the boundary of the golf course and constructing a new path along the side of the existing drainage ditch. Careful thought will need to be given to securing the golf course against public trespass, providing for adequate cross drainage for the golf course where necessary and augmenting existing planting over the short sections where the tree belt is less than 10m wide.

1. *Coast Road traffic*
2. *Existing grass verge and ditch maintained to provide a clear margin between the road and its traffic and the greenway path.*
3. *Mow the first 0.5m of verge along the path edge*
4. *Construct new stone path 2.5m wide set with a central camber and slightly below ground level so as to ensure the surface drains dry.*
5. *Maintain a narrow verge against the tree belt vegetation*
6. *Install galvanised steel mesh fence 1.2m high to prevent dogs straying onto the golf course and trespass.*
7. *Maintain tree and scrub belt and reinforce planting where necessary.*
8. *Burnham and Berrow Golf Course.*

View alongside Coast Road north of Berrow Church



Southern section Berrow Church to Club House



9. The next section of route is a “restricted byway” open to all non-motorised vehicles including cyclist. Its surface varies and it should all be brought up to the standard of the best sections.

Picture showing improved section

Picture showing somewhat less good section which needs clearing out and repairing

10. The Byway continues its physical presence along the rear of the Recreation Ground although it is not designated as such. There are opportunities for good connectivity here, although again there is no provision to cross Berrow Road. The surface varies and all needs to be brought up to a good stone standard.

11. From the Brent Road access to the Golf Course to the Club House, a distance of 770m, the route proposes to follow the alignment of the exiting public footpath. Throughout its surface needs to be widened to 2.5m where possible and built to a good stone standard. To start with there are two

short sections with open, and very welcome views over the Golf Course and its public footpath link to the sea. There are separated

Picture showing path between hedge and fencing

Picture showing path on edge of Golf Course with wide views

by a section already planted with a dividing boundary hedge.

At the end of this section is a tubular frame designed to deter equestrians' usage southwards. It is envisaged that this prohibition remains in place, because there is not sufficient space for multiple use and that the position on this last section of the path would provide for permissive use of the route by cyclists, whilst maintaining the public rights of way for pedestrians.

Over the remaining section the vegetation would need to be cut back a little no more than one metre either side of the path and the surface rebuilt in good stone.

At one point the existing path runs on a long timber board walk to cross a wet area. This is too narrow for shared use and we would have to see if either the boardwalk could be widened, or replaced with a low causeway and crossing culverts to ensure continuity of the wet area.

Start of existing footpath behind club house fence.

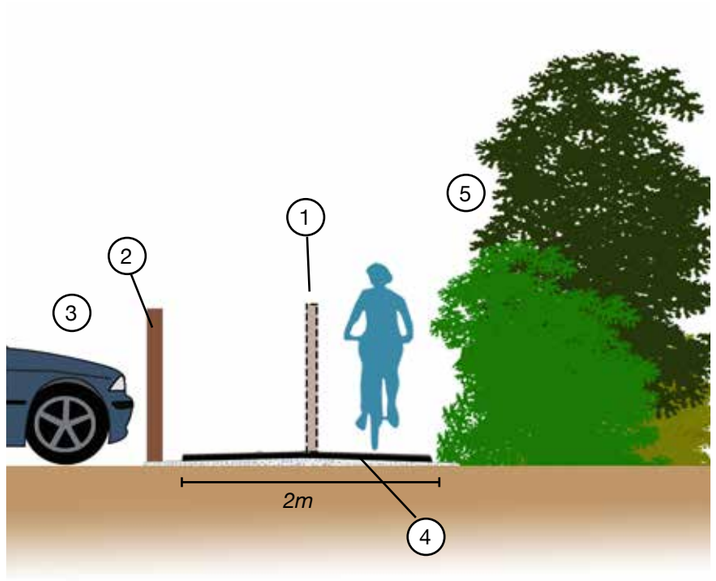
Lastly approaching the entrance to the Golf Club we do need to gain a little more width by repositioning the existing timber fence about 1 metre into the carpark. This would not affect the capacity of the car park although some parking bays may need to be repointed.

12. Finally, the public can join Christopher's Way for a route onwards, either to Brent Knoll, or to Burnham Town Centre. A much safer exit for this public path to the road could be incorporated into the Club's planned new gating arrangements. Incidentally the road is called 'Saint Christopher's Way'.

View along existing path past Club House carpark

Here a short length of path will need to be slightly widened so as to accommodation both walkers and cyclists. The capacity of the carpark will be unaffected although it may be necessary to slightly revise the carpark paint lines for best effect.

1. Existing timber fence to be removed.
2. Re-erect fence on this new alignment 1m in front of the existing fence
3. Existing carpark
4. Construct new path 2m wide
5. Cut back the vegetation as hard as possible on this side to make the most of the space through this narrow section



Caption

Map showing opportunities for linking the Brean Down Way with Brent Knoll, Berrow and Burnham-on-Sea

This map sketches out a number of ways of building up cycling routes for local journeys and creating a network of great tourist and holiday interest.

1. Brean Down Way to Weston super Mare opened 7th July 2017

2. Potential route along the east side of Warren Road would avoid the busy seasonal traffic on this road.

3. The beach is signed as part of the National Cycle Network, but this option is not at all suitable for everyday trips and most of the linking bridleways are sandy.

4. This 3.4km long route to avoid the Coast Road requires new construction and upgrading of existing paths. This mostly runs on lands owned by the Burnham and Berrow Golf Club.

5. The Middle Street link to Brent Knoll traverses the open moors with wonderful views. About half the way is a tarmac public road and the remainder a green lane with bridleway status. Some reconstruction is required.

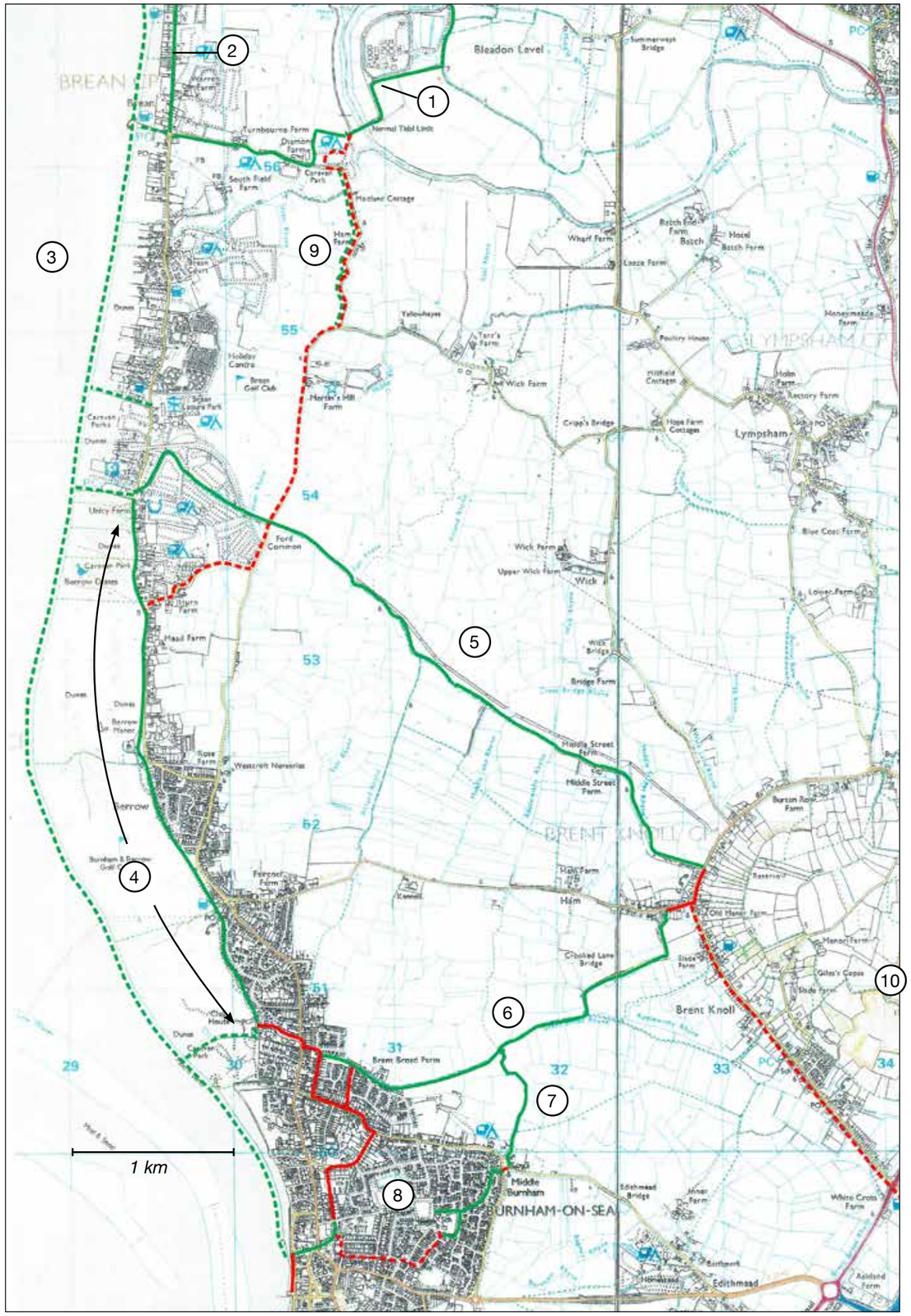
6. Crooked Lane and Brent Broad have recently been stoned up with crushed concrete and recycled materials. This bridleway completes a triangular route. A small amount of work is needed to make it suitable for a wide range of cyclists.

7. Crooked Lane continues to provide an alternative link to Burnham

8. Residential roads in Burnham could be linked together to make a family cycling route through to the sea front

9. Red Road is generally quiet but Ham Road would require a new path along the field edge if a direct way from Burnham to Weston super Mare was required.

10. Brent Knoll is a worthwhile destination with far flung views in every direction from it 139m summit.



Unity Farm and Burnham and Berrow Golf Club Greenway – 3.4kms

Table of Distances and Estimation of Costs

1, 2, and 3 N/A	Metres	£
4. Unity Farm, new stone path along field edge, including fencing and gates @ £50k/km	180	9,000
5. Diversion through Berrow Dunes Nature Reserve including ramps and earthworks @ £60k/km	150	9,000
6. Clearing back existing path beside Coast Road – sum	310	5,000
7. New path set behind ditch including security fencing @ £80k/km	780	62,000
8. Berrow Church Road – repairs – sum	200	3,000
9. Existing Byway track, rebuilding and refurbishment to existing best standard @ £40k/km	520	21,000
10. Existing track behind recreation ground @ £40k/km	470	19,000
11. Golf Course Footpath – allow for rebuilding wider (2.5m) all through @ £40k/km plus sum for widening or replacing board walk plus sum for detailed fencing at Club House Car Park	770	31,000 15,000 15,000
12. Signing and seats all through		10,000
13. Design, reports, planning and engineering management		20,000
14. Sum for completing with summer workcamp		10,000
Total estimate of costs for this Berrow and Burnham Path	3,380m	£229,000

Appendix 2

Wessex Ecological Consultancy
28 Egerton Road
Bishopston
Bristol
BS7 8HL

PROPOSED BREAN TO BURNHAM CYCLEPATH

ECOLOGICAL REPORT

MARCH 2018

Partners: Dawn Lawrence BSc (Hons) MIBiol; Rupert Higgins BSc (Hons) MIEEM

PROPOSED BREAN TO BURNHAM CYCLE PATH

1 INTRODUCTION

The purpose of this report is to assess the potential impact on biodiversity of a proposal to create a cycle path between Brean and Burnham, parts of which pass through and close to sites with statutory nature conservation designations. The plan has been informed by field surveys, a data search and review of published information. The proposals have been discussed with representatives of Natural England and Sedgemoor District Council, who manage part of the area as a Local Nature Reserve.

2 METHODS

Site surveys were carried out on 6th March 2018. They covered vegetation types, both vascular and lower plants and birds. Hedges were surveyed to a level allowing assessment under the 1997 Hedgerow Regulations. The site and surrounding areas were searched for badger setts and for other signs of badger activity, including paths, feeding signs and dung pits. Trees were carefully searched, using binoculars where necessary, for potential bat roosts in holes, crevices and dense growths of ivy. Rhynes and other wetland habitats were checked for otter spraints and feeding signs and for water vole burrows, droppings and feeding signs. Habitat quality for reptiles and other protected species was assessed; this included an HSI assessment of ponds for great crested newt.

The survey was carried out early in the season. This means that some groups, including breeding birds, invertebrates and vascular plants, could not be fully covered. Habitat suitability for groups not covered was assessed.

A data search was carried out at Somerset Environmental Records Centre (SERC) who provided details of designated sites, protected species and notable species within 1km of the route. The Conservation and Enhancement Plan for the Berrow Dunes LNR (2013) was referred to, particularly to inform assessment of favourable status for the SSSI and to identify appropriate management and enhancement proposals. Information on bird use of the area has also been sourced from Somerset Bird Reports.

3 SURVEY RESULTS

3.1 Site Description

The route of the path passes through several distinct areas. The northern section crosses part of a grazed field; it then follows a route cleared through scrub in the LNR. The path would then run along a road, necessitating the widening of an existing footpath and then the creation of a new path through an area of secondary woodland. For much of the southern part of the route the path would follow an existing track, which largely runs past secondary woodland and scrub.

3.2 Vegetation

Appendix 1 contains species lists for the areas described below. These are shown on the attached maps.

3.2.1 Area 1 consists of a grazed field. The route runs through a mound on the eastern edge of the field, which appears to have been formed when the road was constructed. This part of the field has rough grassland with frequent grass species including perennial rye-grass (*Lolium perenne*) and red fescue (*Festuca rubra*). Frequent herbs here include dandelion (*Taraxacum vulgare agg*), cuckoo-pint (*Arum maculatum*) and common daisy (*Bellis perennis*). There are scattered immature trees, most frequently hawthorn (*Crataegus monogyna*), through the area.

A very small area (between 1m$^{2 \text{ and } 2m2)}$ has a sparse sward with frequent sand-hill screw moss (*Syntrichia ruralis ssp ruraliformis*) and biting stonecrop (*Sedum acre*) and smaller quantities of other species including common storksbill (*Erodium cicutarium*), wild thyme (*Thymus polytrichus*), buckshorn plantain (*Plantago coronopus*) and whitish feather-moss (*Brachythecium albicans*).

In the southern part of the field evening primrose (*Oenothera spp*) and white stonecrop (*Sedum album*) are frequent and wild thyme and sand sedge (*Carex arenaria*) are present in small quantity.

Photograph 1: Area 1, showing the rough grassland that dominates the area.

3.2.2 The route through area 2 follows a line that has been cut through scrub, which is dominated by bramble (*Rubus fruticosus agg*), hawthorn (*Crataegus monogyna*), blackthorn (*Prunus spinosa*) and sea buckthorn (*Hippophae rhamnoides*). The ground flora is fairly sparse, but includes ivy (*Hedera helix*), cuckoo-pint, stinking iris (*Iris foetidissima*) and hart's-tongue fern (*Phyllitis scolopendrium*).

Two short lengths of the area have remnant open grassland. This has frequent red fescue (*Festuca rubra*) and neat feather-moss (*Pseudoscleropodium purum*), with species present in smaller quantity including glaucous sedge (*Carex flacca*) and wild parsnip (*Pastinaca sativa*).

Photograph 2: A typical section of cleared scrub in area 2.

Photograph 2: The largest area of remnant grassland in area 2.

3.2.3 The path follows a roadside footpath through area 3. There are narrow verges of improved grassland to either side of this path. The verges have frequent false oat-grass (*Arrhenatherum elatius*) and other species including cuckoo-pint, cow parsley (*Anthriscus sylvestris*) and broad-leaved dock (*Rumex obtusifolius*).

To the west of the verge there is woodland dominated by ash (*Fraxinus exclesior*) and grey poplar (*Populus x canescens*), with a locally dense fringe of bramble on its eastern edge. The wood's ground flora is dominated by ivy with frequent cuckoo-pint and greater celandine (*Chelidonium majus*). There are several patches of widow iris (*Hermodactylus tuberosus*) close to the edge of the wood.

3.2.4 The path continues along the road edge through area 4, but there is no path here. The verge is narrow, and has improved grassland similar to that described for area 3. A very shallow ditch runs parallel to the road. Abundant growth of stinging nettle (*Urtica dioica*), broad-leaved dock (*Rumex obtusifolius*) and other terrestrial species indicates that this is dry for most of the year, but some wetland species are also present. These include greater reedmace (*Typha latifolia*), common reed (*Phragmites australis*) and fool's watercress (*Apium nodiflorum*).

The woodland to the west of the verge has a fringe of dense bramble. It is dominated by a mixture of grey poplar and grey sallow (*Salix cinerea*) with species present in smaller quantity including sea buckthorn, ash and elder (*Sambucus nigra*). The ground flora is dominated by ivy, with other species including cuckoo-pint, stinging nettle and a variety of non-native bulb species.

3.2.5 In the northern part of the section past Berrow Church the route follows a stone track. This has some sparse grassland, which is also present on the edges of the track. Species here include yarrow (*Achillea millefolium*), lesser trefoil (*Trifolium dubium*) and ribwort plantain (*Plantago lanceolata*).

The southern part of this section crosses an area of trampled grassland. This is dominated by perennial rye-grass and creeping bent (*Agrostis stolonifera*), with a very limited diversity of herb species including dovesfoot cranesbill (*Geranium molle*) and ribwort plantain.

3.2.6 The southern half of the route follows an existing track, which largely runs through scrub and woodland. Frequent woody species in these areas include bramble, sea buckthorn and grey poplar. The ground flora is dominated by ivy, with other species including various garden escapes, wood avens (*Geum urbanum*), cuckoo-pint and, close to the southern end of the route, a large patch of sweet violet (*Viola odorata*).

One section of the path runs along a walk way through damp woodland. The woodland here is dominated by grey poplar, with ground flora species including pendulous sedge (*Carex pendula*), wood dock (*Rumex sanguineus*) and lesser celandine (*Ficaria vesca*).

For much of this length the path has a narrow fringe of species-poor grassland, with species including crow garlic (*Allium vineale*), shining cranesbill (*Geranium lucidum*) and herb Robert (*Geranium robertianum*).

Two sections of the path run past short areas of remnant grassland. These are dominated by red fescue and false oat-grass, but also include small quantities of sand sedge and sandhill screw moss. Lyme grass (*Leymus arenarius*), but at a distance of more than 2m from the path.

Photograph 3: One of the more open sections of the path through area 6.

Photograph 4: The raised section of the path through damp woodland.

Photograph 5: The largest area of remnant grassland in area 6.

3.3 Protected Species

Badger paths and other signs were seen at the northern end of area 3 and at the southern end of area 4, as shown on the attached map. No sett was found within or adjacent to any area likely to be affected by the works. A patch of dense bramble at the southern end of area 4 could not be thoroughly searched, however, and it is possible that a sett is present here. It is unlikely, however, that a main sett would not have been visible so any sett present is likely to be an outlying sett.

Trees on and adjacent to the route were checked for potential bat roosts, using binoculars where necessary. None of the trees has any hole or crevice that could be used. Several trees, however, have moderate growths of ivy that could shelter bats. They therefore have low potential value as bat roosts.

The path would not have a direct impact on any pond. There are, however, several ponds close to the proposed route. Several of these are heavily overgrown by trees and shrubs and probably hold water only intermittently. There are, however, four more substantial ponds close to the path as follows:

Pond 1, to the west of area 1: Partially shaded by trees, water quality appears reasonable, small quantity of Canadian pondweed (*Elodea canadensis*); populations of fish are present.
Pond 2, to the west of area 2: Completely shaded by trees, water quality appears poor, no submerged macrophytes.
Pond 3, to the west of area 4: Small, completely shaded by trees, water quality appears poor, no submerged macrophytes.
Pond 4, to the west of area 4: Small, completely shaded by trees, water quality appears poor, no submerged macrophytes.
Pond 5, to the east of area 6: Partially shaded by trees, water quality appears moderate, moderate

quantity of parrot's feather (*Myriophyllum aquaticum*) and water-crowfoot (*Ranunculus sp*), large population of three-spined stickleback.
Pond 6, to the east of area 6: Partially shaded by trees, water quality appears moderate, moderate quantity of parrot's feather (*Myriophyllum aquaticum*), water-crowfoot (*Ranunculus sp*) and stonewort (*Chara vulgaris*), large population of three-spined stickleback.

A Habitat Suitability Index (HSI) was calculated for each pond, and the roadside ditch, as follows.

Criterion	Pond 1	Pond 2	Pond 3	Pond 4	Pond 5	Pond 6	Ditch
Geographical Location	1	1	1	1	1	1	1
Pond Area	0.8	0.3	0.2	0.2	0.6	0.6	0.2
Permanence	0.9	0.5	0.1	0.1	0.9	0.9	0.1
Water Quality	0.67	0.33	0.33	0.33	0.67	0.67	0.01
Shade	1	0.2	0.2	0.2	1	1	1
Waterfowl	1	1	1	1	1	1	1
Fish	0.01	1	1	1	0.01	0.01	1
Pond Count	0.9	0.9	0.6	0.6	0.67	0.67	0.67
Terrestrial Habitat	0.67	1	1	1	1	1	1
Macrophytes	0.5	0.3	0.3	0.3	0.7	0.7	0.3
Total $^{1/10}$	0.52	0.55	0.43	0.43	0.53	0.53	0.36

Photograph 6: Pond 2, heavily shaded by trees and lacking submerged macrophytes, but appears to hold water for much of the year.

Photograph 6: Pond 3, heavily shaded by trees and lacking submerged macrophytes, appears to dry out annually.

The only wetland habitat immediately adjacent to the proposed path is the roadside ditch. This was checked for any evidence of either water vole or otter activity. None was found.

Further details are given in the Assessment section below.

3.4 Other Fauna

Appendix 2 shows birds recorded in habitats on or adjacent to the route. Some of these species, notably dunnock, are present in large numbers.

There is a rookery in trees at the northern end of area 3, just to the west of the proposed path. Other species recorded in the surrounding area, but not immediately adjacent to the route, include redwing, linnet, meadow pipit and bullfinch.

Due to the early date of the survey the only insect recorded was buff-tailed bumblebee (*Bombus terrestris*), in area 6.

3.5 Adjacent Habitats

For almost its entirety the path adjoins either the road or residential developments to the east. The only significant exception is at area 5, by Berrow Church. The grassland between the proposed path and the road here is species rich, with plants present including common centaury (*Centaurium erythraea*), common bird's-foot trefoil (*Lotus corniculatus*), glaucous sedge and bee orchid (*Ophrys apifera*).

In area 2 there is scrub, similar to that described at 3.2.2 above, to either side of the path. The width of the scrub belt to the west varies between 30m and 50m. Beyond this there are areas of species-rich dune grassland.

In areas 3, 4 and 6 the route is separated by a belt of scrub and woodland, which in places is as narrow as 2m, from grassland on the golf course. The composition of this grassland varies according to management: some areas are species-poor, but there are also significant diverse areas with a mixture of fore- and hind-dune and dune-slack vegetation.

3.6 Data Search

The proposed path runs within 50 metres of the Severn Estuary Site of Special Scientific Interest (SSSI), Special Protection Area (SPA), Special Area of Conservation (SAC) and Ramsar Site. The Estuary is designated for a number of features, which include its populations of migratory birds and fish and important examples of saltmarsh vegetation. The route runs through the edge of the Berrow Dunes SSSI, part of which is also a Local Nature Reserve (LNR). Berrow Dunes is designated for its mix of saltmarsh, sand dune and wetland vegetation, which support an exceptional diversity of rare plants, invertebrates and birds. When last surveyed, in 2010, the units of the SSSI through which the route passes were assessed as being in unfavourable (recovering condition). The Middle Street section of the route runs through the Mead Farm Fields Local Wildlife Site (LWS), which has been designated due to its species-rich network of rhynes.

A large number of notable species has been recorded in Berrow Dunes. These include one of two populations in Britain's of the rush *Juncus subulatus*, which was probably introduced here. Round-headed club rush (*Scirpoides holoschoenus*) is present at one of only two sites in Britain. A large number of other notable plants include populations of several orchid species and some of Somerset's most important populations of coastal plants. Species here that are rare in the county include spring vetch (*Vicia lathyroides*), bulbous meadow-grass (*Poa bulbosa*) and divided sedge (*Carex divisa*). Notable invertebrates recorded include several regionally important moths, most of them associated with either wetland or sand dune vegetation, and soldier-flies, beetles, dragonflies and snails associated with wetland habitats. There are also many records of bird species that are either locally uncommon or of conservation concern; most of these are associated with either coastal or wetland habitats. These include bearded tit, marsh harrier and Cetti's warbler. Most of these records come from areas distant from the route of the path, mostly in the foredunes, saltmarsh and wetland habitats to the west. However, the following have been recorded on or close to the route of the path:

Marsh pennywort (*Hydrocotyle vulgaris*)	2010
Rigid hornwort (*Ceratophyllum demersum*)	2010
Bee orchid (*Ophrys apifera*)	2014
Ruddy darter dragonfly (*Sympetrum sanguineum*)	1986
Hairy dragonfly (*Brachytron pratense*)	1986
Black-tailed skimmer dragonfly (*Orthetrum cancellatum*)	1986
Migrant hawker dragonfly (*Aeshna mixta*)	1986
Common broomrape (*Orobanche minor*)	2009
White-line dart moth (*Euxoa tritici*)	1993
Oblique striped moth (*Phibalapteryx virgata*)	1993

Protected species have been recorded as follows:

- Otter: Pitland Rhyne (c1.5km south-east of the route) 2007 and 2014; Burnham Beach (c200m south of route) 2015; Middle Street (c500m east of route) 2017 and 2014; Pitland (c200m south of route) 2017 and 2015; Ford Common (c200m north-east of route) 2017, 2016, 2015.
- Water Vole: Berrow (c1km south of route) 2005; Lympsham (c1km east of route) 2014.
- Soprano Pipistrelle Bat: Burnham (c500m south-east of route) 2015; Berrow (c300m east of route) 2015; Berrow (c200m east of route) 2011.
- Common Pipistrelle Bat: Burnham (c400m south-east of route) 2015; Berrow (c600m east of route) 2015; Berrow (c200m east of route) 2011.
- Noctule Bat: Berrow (c600m east of route) 2015; Berrow (c200m east of route) 2011.
- Lesser Horseshoe Bat: Berrow (c600m east of route) 2015.
- Long-eared Bat: Berrow (c500m east of route) 2015; Berrow (c100m south of route) 2005.
- Serotine Bat: Berrow (c300m east of route) 2015 and 2011;
- Grass Snake: Berrow (c500m east of route) 2012 and 2004; Berrow (c600m east of route) 2015.
- Great Crested Newt: Lympsham (c1km east of route) 2014; Burnham and Berrow Golf Couse (c200m west of route) 2010.
- Common Toad: Lympsham (c1km east of route) 2014; Berrow Wall (c1km south of route) 2000; Burnham (c500m south of route) 1985.

There are also scattered records of badger from the wider area, but none within 200m of the proposed path.

4 ASSESSMENT

The habitats on the site have been assessed in order to determine whether they are of nature conservation value in a national, regional or county context, are of either high or low value in a local context, or are of minimal nature conservation value. The assessment has used standard ecological criteria, including rarity, diversity, size and fragility. Reference has been made to suitable

guidance, including the UK and Bath and Somerset Biodiversity Action Plans (BAPs). The value of the site for groups not surveyed, such as most invertebrates, has been assessed using information gathered on the nature and structure of the habitats present.

The survey was carried out early in the season; this has been taken into account in making the assessment.

4.1 Habitats

4.1.1 Assessment Criteria

The main criterion used in assessing the habitats has been the extent to which they qualify as habitats for which the SSSI and LNR are designated, primarily dune grassland. This has been evaluated using the presence of indicator species, which are indicated in the species list at Appendix 1, and the structure of the habitat, with features such as banks of bare sand indicating potential value for both plants and insects.

The route passes through or close to several areas of woodland. These have been assessed using a variety of criteria: dominance by native species; the presence of species indicative of ancient woodland; the age diversity of trees and shrubs; and structural diversity, including features such as both standing and dead wood.

The main features that have been used to assess grassland are the presence of indicator species of unimproved grassland and structural diversity, particularly the presence of features indicative of significant value for invertebrates.

Criteria used in assessing wetlands include the presence of a range of emergent, submerged and floating vegetation; the diversity of native wetland species present; and water quality.

It is highly likely that some plant species were not evident at the time of the survey and this has been taken into account when assessing the site.

4.1.2 Dune Grassland

The route passes through or adjacent to small areas of dune grassland in areas 1, 2 and 6.

The most diverse of these is the small patch in area 1. This is dominated by mosses and vascular plants characteristic of dune vegetation, has a reasonable diversity of such plants, and has an open structure likely to be of value for invertebrates. The plants recorded here are all reasonably widespread, but it is possible that less common species may also be present. The value of the area is limited by its very small extent.

This area is of nature conservation value in a county context.

The route passes through or close to other areas that support some species of dune grassland, in areas 1, 2 and 6. In these areas indicator species such as sand sedge and wild thyme are present in small quantity only in swards dominated by more widespread plants such as false oat-grass. The structure of these areas also suggests that less common species are unlikely to be present, and that value for invertebrates is limited.

These areas are of low nature conservation value in a local context.

4.1.3 Other Grassland

The main area of grassland that the route crosses is along the road verge in areas 3 and 4. This is of limited extent, lacks any indicator species of unimproved grassland or other species of note, and lacks any feature that suggests significant value for invertebrates. The fringes of grassland along the edges of the tracks through area 6 have a similar composition.

The grassland here is of negligible nature conservation value.

The grassland the route crosses in area 5 is also low in diversity and lacks species indicative of unimproved grassland. This appears to be largely due to the high level of trampling that this strip of grassland experiences. This heavy trampling also means that features indicative of significant invertebrate interest are absent due to soil compaction. Adjacent parts of the same area of grassland are far more diverse, and support a good diversity of indicator species of unimproved grassland.

The grassland at area 4 through which the route passes is of negligible nature conservation value. However, adjacent areas of grassland are of nature conservation value in a county context.

4.1.4 Woodland

Woodland and scrub are not recognised as an important component of the SSSI or LNR, and reduction of the area that scrub in particular occupies is an objective of management on the site.

The woodlands lack any species or other feature indicative of ecological continuity; they contain a high proportion of non-native species in both the tree and ground layers; they lack any mature or veteran trees; and structural diversity is generally poor. The woodlands appear to be of relatively recent origin, which limits their nature conservation value. They do, however, provide habitat for a variety of birds. These include species of conservation concern such as rook, dunnock, song thrush and bullfinch. They are probably also of some value for invertebrates.

The woodlands and scrub are of low nature conservation value in a local context.

4.1.5 Wetland

The only wetland on or immediately adjacent to the route of the path is the roadside ditch. The vegetation of this ditch, which is dominated by terrestrial species, suggests that it is regularly dry. The water within the ditch at the time of survey was of low quality and is probably largely highway runoff. Submerged and floating plant species are absent and emergent species are present in small quantity only. Few species are present, and those recorded are all common and widespread.

The ditch is of negligible nature conservation value.

There are several ponds within 50m of the route. The potential value of these ponds for great crested newt is assessed separately. Two of these ponds are heavily shaded, hold water temporarily and do not support wetland vegetation. They may, however, be of some value for invertebrates.

Ponds 3 and 4 are of low nature conservation value in a local context.

The other ponds are of higher value. Pond 1 has a reasonable mix of emergent, floating and submerged vegetation, although the only submerged species visible during the survey was the introduced Canadian pondweed. Pond 2 does not have submerged vegetation, but it has a good growth of emergent vegetation and is likely to be of some value for invertebrates. Ponds 5 and 6 have a reasonable mixture of emergent, floating and submerged vegetation. Their submerged vegetation includes the invasive non-native parrot's feather, but also stonewort and water crowfoot.

These ponds are of high nature conservation value in a local context.

4.2 Protected Species

Badgers are active in two sections of the route, but no signs of a sett were seen.

Grass snakes have been recorded in the wider area and there are potentially suitable habitats for the species along the route of the path, particularly through area 2. The same habitats are also potentially suitable for slow worm and common lizard.

Great crested newt has been recorded within 200m of the route, and there are ponds within 50m of the route. However, the potential of the ponds for great crested newt is limited due to the presence of fish populations in some, and heavy shading of others. The HSI assessment of these ponds, and the roadside ditch, gives the ponds ratings of below average, and the ditch a rating of poor. There is therefore a possibility that great crested newt breeds in these ponds, particularly in pond 1. The suitability of the terrestrial habitat through which the route passes varies as follows:

Area 1 - low (grassland in agricultural management);
Area 2 - moderate to high (a mixture of scrub and rough grassland)
Area 3 – low (road verge);
Area 4 - moderate to high (woodland edge and road verge);
Area 5 – low (edges of existing path).

Several trees adjacent to the route in area 5 have moderate growths of ivy, which could support roosting bats. No other potential bat roosts are present either on or adjacent to the route. The habitats along the route have moderate to high potential value as bat foraging habitats, with rough grassland, scrub and woodland edge all having potential to be used by bats.

No signs of water vole or otter activity were seen, and the habitats along the route are suboptimal for both species.

5 IMPACTS

Impact evaluation has taken account of, as well as more general criteria, the objectives contained in the 2013 Conservation and Enhancement Plan and the definitions of favourable status within the plan. A reduction in the area of a habitat prioritised in the plan, such as dune grassland, would constitute a significant adverse impact. The opportunity to contribute to the objectives of the plan, such as scrub clearance, would constitute a beneficial impact.

Both direct and indirect impacts acting in either the construction or the operational phase have been considered. On notified sites major impacts are defined as those that would cause a decline of more than 20% in the area of a designated feature or more than 20% decline in the population of a cited species (or species of comparable value that is not listed in the citation); moderate impacts are defined as those that would cause a decline of more than 10% in the area of a designated feature or more than 10% decline in the population of a cited species (or species of comparable value that is not listed in the citation); and minor impacts are defined as those defined as those that would cause a decline of less than 10% in the area of a designated feature or less than 10% decline in the population of a cited species (or species of comparable value that is not listed in the citation).

On non-designated areas impacts have been similarly defined, using proportions of habitats and species for which these sites are of value.

5.1 Severn Estuary SSSI, SPA, SAC and Ramsar Site

5.1.1 Direct Impacts

The proposed path does not run through the designated site at any point and therefore does not have any direct impact on the Estuary's habitats or species, during either the construction or operational phases.

5.1.2 Indirect Impacts

The Estuary as a whole is important for its populations of migratory waders and wildfowl. These species can be particularly vulnerable to disturbance, particularly at their high tide roosts where disturbance can lead to increased mortality by preventing birds from resting.

The stretch of the Estuary adjacent to Berrow and Brean is not of high importance for most species of wildfowl and waders, largely due to the predominantly sandy substrates that provide lower quality foraging habitat than do mudflats. It does, however, have significant concentrations of some species, including shelduck, oystercatcher, ringed plover and sanderling. Other species, including dunlin and knot, occur here in significant numbers on an infrequent basis.

No part of the path is visible from the estuary, so visual disturbance is not an issue. The path will not generate significant levels of noise, and will be well shielded from inter-tidal habitats by tree belts and dune ridges, meaning that noise disturbance will not be an issue in either the construction or the operational phase. The increase in the number of visitors generated by the path will be relatively low compared to the numbers of people already visiting the area, which is close to several large holiday parks as well as the settlements of Burnham and Berrow. The path will incorporate a fence to prevent dogs straying across the golf course and towards the Estuary.

The path's distance from inter-tidal habitats used by birds, as well as the high levels of disturbance that the area already experiences, mean that the path will not cause any impact associated with disturbance.

There are no other potential impacts on the Estuary. The path will not generate any pollution during its operational phase and is sufficiently distant from the SSSI that there is no possibility of pollution reaching the designated site during the construction phase. The Estuary is a tidal system and is therefore not susceptible to any hydrological impact.

The proposals would not have any impact on the Severn Estuary.

5.2 Berrow Dunes SSSI

The path runs along, or close to, the eastern edge of the SSSI. The SSSI is notified for its mixture of saltmarsh, fore-, grey- and yellow-dunes, stable dune grassland, dune slacks, scrub and freshwater lagoon. These support two nationally rare plant species, at least ten that have a restricted distribution in Britain and have a rich invertebrate fauna. The lagoon in particular is of importance for birds.

The Conservation and Enhancement Plan for the Berrow Dunes LNR includes the following objectives:

- To restore the area of dune grassland within the land to favourable ecological condition.
- To carry out a programme of works to reduce sea buckthorn cover to less than 30% of the land area over the five years of the Agreement.
- To implement a mowing regime to improve biodiversity on an area of rank grassland and to control scrub regrowth.
- To maintain a series of dune slack ponds to support populations of Great Crested Newt.
- To reduce the impact of erosion on the fore dunes by erecting sand fencing and marram grass planting.
- The route of the path does not cross any area where works such as scrub control or grass mowing are proposed. The area where enhancement of dune slack ponds is proposed is approximately 20m to the west of the route.
- The Agreement defines favourable condition as follows:
- Sea Buckthorn should cover less than 30% of the Land by the end of the five years of the Agreement.
- There should be no reduction in the area of dune grassland.
- The fixed dunes should be 40-90% herbs which could include stonecrop, stork's bill, bird's-foot trefoil, restharrow, eyebright, lady's bedstraw, yarrow or dovesfoot cranesbill.
- Negative indicators including thistles, docks, nettles and ragwort should remain only occasional in the sward accounting for no more than 5% of cover.

5.2.1 Direct Impacts

For much of its length the path would follow the line of an existing track, and ecological impacts would be very slight.

The table below summarises the impacts that the proposed path would have on the notified features of the site.

Feature	Impact of Proposals	Area / Size of Population Affected	Notes
Saltmarsh	Not affected		
Fore-dune	Not affected		
Grey-dune	Not affected		
Yellow-dune	Not affected		
Stable dune grassland (high quality)	Small area lost	<2m^2	<0.1% of total.
Stable dune grassland (degraded)	Small areas lost	c55m^2	c1% of total.
Scrub	Moderate areas lost	c640m^2	Generally species-poor. c0.3% of total.
Freshwater lagoon	Not affected		
Nationally rare plants	Not affected		
Nationally scarce plants	Not affected		Some species may not have been evident during survey, but habitats are not suitable
Notable invertebrates	Not affected		Not possible to carry out surveys due to timing constraints, but the habitats along the route are unsuitable for the species cited, and for other notable species revealed by the data search.
Notable birds	Not affected		The species of note are associated with the freshwater marsh, and to a lesser extent the saltmarsh.

The only substantial areas of habitat loss are scrub and degraded dune grassland, although neither area is significant compared to the total area on the SSSI. The scrub, although a designated feature, does not support the species of conservation significance associated with the SSSI. The LNR management agreement aims at a reduction in the coverage of scrub. The only habitat affected that is regarded as a conservation priority in the agreement is stable dune grassland. An extremely small area of high quality dune grassland is affected, together with a larger but still small area of degraded dune grassland. This degraded grassland supports only very small populations of species indicative of the habitat; these species include sand sedge, wild thyme and thyme-leaved sandwort. They are, however, dominated by more widespread species that are not indicative of habitats of conservation concern.

For most of its length through the SSSI the proposals involve improvements to an existing track, with minor loss of species-poor grassland, scrub and woodland edge.

The direct impact on the SSSI would be minor.

5.2.2 Indirect Impacts

Potential indirect impacts on the SSSI that have been considered are hydrological effects, disturbance and trampling.

There are wetland habitats within the SSSI in the freshwater marsh and also within dune slacks. These habitats support many of the species of interest on the site, including the two nationally rare plants and many of the invertebrates of note, including soldier-flies and water beetles. Significant interest on the site is therefore dependent on a suitable supply of fresh water. The proposed path is approximately 100m from the main freshwater marsh, and within 50m of some of the more significant dune slacks. The proportion of the overall catchment area that will be occupied by the path is relatively small, less than 1% of the total, and for most of its length this is currently occupied by a surfaced path. Water falling on the path would be allowed to run off into the surrounding ground – there are no proposals to drain water away from the site – and its route to the ground water system would therefore be very similar to the present situation. The water quality will not be affected by the presence of the path. Any impact on water run-off or quality will be far lower than that associated with ongoing golf course management.

There will be no impact associated with hydrological effects.

Some features of interest on the site, notably bird populations on the freshwater marsh, are potentially vulnerable to disturbance. However, access from the proposed path to the marsh is largely prevented by the golf course and the path is not visible from the marsh. Public footpaths that cross the SSSI are currently well used and the proposed path will not add significantly to levels of disturbance. The species that use

Habitats adjacent to the proposed path, including birds nesting in the scrub, are largely tolerant of disturbance. However, there could be some impact on the rookery within the LNR during the construction phase, if noisy activities take place here during the bird breeding season. These birds are currently accustomed to disturbance from the road and the car park, and are unlikely to be affected by use of the path. The section of the path past the golf course will have a fence to prevent dogs straying across the site, which will make access for dogs more difficult than it is at present.

There will be very few impacts associated with disturbance, but there may be some adverse impact on the rookery during the construction phase.

Trampling in sand dunes can have complex impacts. Heavy levels of access can damage foredunes in particular, but moderate levels can be beneficial by arresting scrub encroachment and keeping early successional habitats open. The proposed path is separated from the most sensitive areas by other habitats, largely dense scrub and woodland, which will limit access, and will be fenced for most of its length. It is unlikely that the path will add significantly to levels of access across the dunes, which already experience high levels of use where accessible to the public.

There will be no impact associated with trampling.

5.3 Other Habitats

The habitats affected outside the SSSI are parts of the road verge and some adjacent scrub, and area 4 by the church.

These areas are of negligible nature conservation value and the loss of small amounts of habitat here will not have a significant ecological impact.

At area 4 the path would be constructed close to areas of grassland that are of significant nature conservation value, and there would be potential adverse impacts during the construction phase.

5.4 Protected Species

No known badger sett would be affected by the proposals, but there is some possibility that a sett may be present under dense bramble. Use of the path is unlikely to have any impacts on badgers in the area, but there may be potential impacts during the construction phase.

Grass snakes and other reptiles, if these are present, could be harmed during construction of the path. There are unlikely to be any impacts on these species associated with use of the path.

There is some possibility that great crested newts might use habitats along the route, although the ponds close to the proposed path are all suboptimal for this species. Mitigation measures would therefore be required. Operation of the path would not have any impact on great crested newt.

Depending on the details of path construction there might be impacts on trees that have some potential for roosting bats due to the presence of ivy. Lighting of the path is not proposed. The loss of bat foraging habitat would be very slight and would not have any significant impact on bats. In places the creation of a cleared route through scrub and woodland might have a beneficial impact on bats by opening up sheltered foraging corridors.

It is unlikely that otters will cross the route of the path, but if they do so there is a minor risk that they might become trapped during construction works.

6 MITIGATION

The loss of grassland should be minimised through careful construction methods through areas of interest, so that incidental damage to areas adjacent to the path is avoided. Mitigation should be achieved by carrying out additional scrub clearance around the grassland patches in the LNR at area 2, so that additional areas of grassland are protected from scrub encroachment and are restored.

Loss of scrub and secondary woodland should also be minimised through careful construction methods. There are no opportunities for replacement planting on the site, since open habitats are more ecologically valuable than any new planting. Some degree of mitigation could be provided by retaining any felled timber as dead wood habitat and by fitting bird and bat boxes to trees.

Potential impacts on the rookery should be avoided by programming any noisy activity in this area outside the nesting season, which for this species runs from February to July.

The working corridor through area 5 should be kept as narrow as possible to avoid impacts on adjacent areas of species-rich grassland. Disposal of spoil, storage of materials, lighting of fires, use of vehicles and similar activities should not be allowed on this grassland.

The bramble scrub at the southern end of area 4 should be checked for badger setts by an ecologist as clearance proceeds. In order to prevent badgers becoming trapped during construction works any trench, pit or other excavation should be filled or securely covered overnight or provided with an exit ramp. These measures would also prevent impacts on otters.

The mitigation works for reptiles and great crested newts are similar. Vegetation should be cut progressively, first to 30cm and then, 48 hours later, to 10cm. If necessary vegetation should be kept at this height until works in the area commence. The route through areas 1 and 2 should be checked by an ecologist on the morning that ground clearance commences, so that any animals found can be safely removed. Any excavations left open overnight should be provided with exit ramps. Construction materials should be stored on pallets.

If any tree with a growth of ivy is likely to be affected by the works then this ivy should be cut at the base at least four months before the works commence, and then left to die so that any bats using the tree can leave as it becomes unsuitable. If this is not possible then the trees should be checked for bat activity before works commence.

Trees, scrub and denser areas of tall herb vegetation should be cleared outside the bird breeding season, which usually runs from 1st March to 31st August. If this is not possible then the area should be checked by an ecologist for nesting birds before it is cleared. If active nests are found then works should be delayed until a further check shows the area to be clear of occupied nests.

7 RESIDUAL IMPACTS

Feature	Impact	Temporary / Permanent	Scale	Mitigation	Residual Impact
Stable dune grassland	Habitat loss	Permanent	Minor	Minimise working corridor; clear back scrub to restore other areas of grassland	None
Scrub and secondary woodland	Habitat loss	Permanent	Minor	Minimise working corridor, create dead wood piles, install bird and bat boxes	Minor
Nesting birds (rookery)	Disturbance	Temporary	Moder-ate	Avoid noisy activities adjacent to rookery during nesting season	None
Species-rich grassland	Construction effects	Permanent	Minor	Carefully delineate working corridor, avoid damaging ac-tivities on grassland	None
Badgers	Construction effects	Temporary	Minor	Check bramble as it is cleared. Take measures to pre-vent animals being trapped in excavations	None
Reptiles	Construction effects	Temporary	Minor	Carry out progressive veg-etation clearance, check suitable areas before works commence	None
Great crest-ed newt	Construction effects	Temporary	Minor	Carry out progres-sive vegetation clearance, check suitable areas be-fore works com-mence	None
Bats	Construction effects	Temporary	Minor	Cut ivy on trees so that it dies gradually	None
Otters	Construction effects	Temporary	Minor	Take measures to avoid animals being trapped in excava-tions	None
Nesting birds	Construction effects	Temporary	Minor	Carry out clearance outside nesting sea-son, or check before works commence	None

Rupert Higgins,
Wessex Ecological Consultancy,
9th March 2018

APPENDIX 1: PLANT SPECIES LISTS

The lists below show those plant species recorded on 6th March 2018 in the areas potentially affected by path construction, rather than in the wider areas adjacent to the proposed works.

Abbreviations used: D – dominant; A – abundant; F – frequent; O – occasional; R – rare; L – locally; V – very. NN – non-native species; DG- indicator species of dune grassland

		Area Number						Notes
		1	2	3	4	5	6	
TREES AND SHRUBS								
Acer pseudoplatanus	Sycamore				R		R	NN
Alnus glutinosa	Alder						R	
Betula pendula	Silver birch						R	
Crataegus monogyna	Hawthorn	R	R	R	R		O	
Euonymus japonicas	Evergreen spindle						R	NN
Fraxinus excelsior	Ash				R		R	
Hippophae rhamnoides	Sea buckthorn		O		R		R	NN
Ligustrum vulgare	Wild privet						R	
Lonicera japonica	Japanese honeysuckle				R			NN
Pinus nigra	Black pine						R	NN
Populus x canadensis	Hybrid poplar		R		R		R	NN
Populus x cansescens	Grey poplar	R	R		OLF		F	NN
Prunus spinosa	Blackthorn		O		R		R	
Quercus ilex	Holm oak						R	NN
Rosa rugosa	Japanese rose						R	NN
Rubus fruticosus agg	Bramble		F	R	F	R	F	
Salix cinerea	Grey sallow		R		O		O	
Salix fragilis	Crack willow				R		R	
Salix x reichardtii	Sallow				R		R	
Sambucus nigra	Elder		R		R		R	
GRASSES								
Agrostis stolonifera	Creeping bent	OLF	R	RLF		O	R	
Arrhenatherum elatius	False oat-grass	R	R	O	R		RLF	
Brachypodium sylvaticum	Wood false-brome						R	
Bromus hordaceus	Soft brome						R	
Dactylis glomerata	Cocksfoot		R	R		R	R	
Festuca arundinacea	Tall fescue	R		R				
Festuca rubra	Red fescue	OLF	RLF			R	RLF	
Holcus lanatus	Yorkshire fog	R	R		R	R	R	
Leymus arenarius	Lyme grass						R	DG
Lolium perenne	Perennial rye-grass	OLF	R	O	R	R	R	
Phragmites australis	Common reed				R			
Poa annua	Annual meadow grass			R		R	R	
Poa trivialis	Rough-stalked meadow grass	O	O	O	R	O	R	

		Area Number						Notes
		1	2	3	4	5	6	
HERBS								
Achillea millefolium	Yarrow	RLF				R		
Aegopodium podagraria	Ground elder			R				NN
Alliaria petiolata	Hedge garlic						R	
Allium triquetrum	Three-cornered leek						R	NN
Allium vineale	Crow garlic				R		R	
Anthriscus sylvestris	Cow parsley	R	R	R	O		R	
Arenaria serpylifolia	Thyme-leaved sandwort	R						DG
Arum italicum	Italian arum						R	NN
Arum maculatum	Cuckoo-pint	RLF	O	O	RLF		O	
Ballota nigra	Black horehound		R					
Bellis perennis	Common daisy	OLF		R				
Cardamine hirsuta	Hairy bittercress	R		R			R	
Carex arenaria	Sand sedge	R					R	DG
Carex flacca	Glaucous sedge		RLF					DG
Carex otrubae	False fox-sedge				R			
Carex pendula	Pendulous sedge						R	
Carex remota	Remote sedge						R	
Carex riparia	Greater pond sedge				R			
Centranthus ruber	Red valerian						R	NN
Cerastium fontanum	Common mouse-ear	R	R			R		
Cerastium glomeratum	Clustered mouse-ear					R		
Cerastium tomentosum	Snow-in-summer						R	NN

Chelidonium majus	Greater celandine		R				R	NN
Cirsium vulgare	Spear thistle		R	R	R			
Conium maculatum	Hemlock				R			
Crepis capillaris	Smooth hawksbeard	O	RLF	R				
Crocus sp	Crocus						R	NN
Epilobium hirsutum	Hairy willowherb		R		R			
Erodium cicutarium	Common storksbill	RVLF						DG
Ficaria vesca	Lesser celandine	R		R			R	
Fumaria sp	Fumitory						R	
Galanthus nivalis	Snowdrop	R			R		R	NN
Galium aparine	Goosegrass		R	O		R	O	
Geranium dissectum	Cut-leaved cranesbill						R	
Geranium lucidum	Shining c ranesbill				R		R	
Geranium molle	Doversfoot cranesbill	OLF	R	R		R		
Geranium x oxonianum	Druce's cranesbill						R	NN
Geranium robertianum	Herb Robert				R		R	
Geum urbanum	Wood avens						RLF	
Glechoma hederacea	Ground-ivy	R						
Hedera helix	Ivy		OLF	R	F		F	
Heracleum sphondylium	Hogweed		R	R				
Hermodactylus tuberosus	Widow iris				R			NN
Hesperis matrionalis	Dame's-violet						R	NN
Hirschfeldia incana	Hoary mustard	R						NN
Hyacinthoides x massartiana	Hybrid bluebell	R			R		R	NN
Hypochaeris radicata	Common catsear	R						
Iris foetidissima	Stinking iris		R				R	

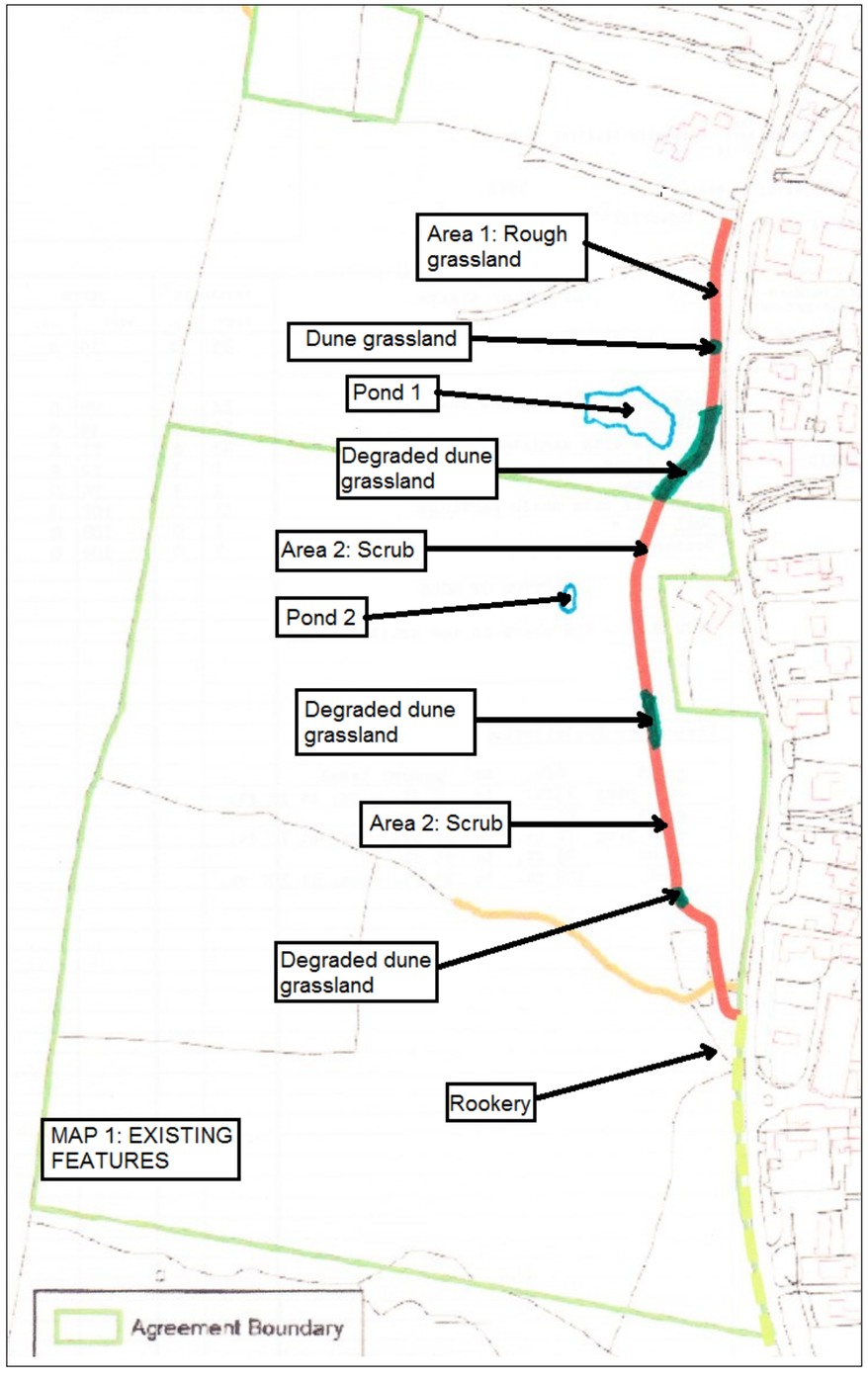
		Area Number						Notes
		1	2	3	4	5	6	
Juncus inflexus	Hard rush						R	
Lamium album	White dead-nettle				R			
Lamium purpureum	Red dead-nettle	R		R			R	
Leucojum vernale	Spring snowflake						R	NN
Linaria purpurea	Purple toadflax						R	NN
Malva arborea	Tree mallow	R						NN
Myosotis arvensis	Field forget-me-not	RLF	R					
Narcissus sp	Daffodil	R		R	R		R	NN
Oenanthe crocata	Hemlock water drop-wort				R			
Oenothera sp	Evening primrose	OLF	RLF					NN
Pastinaca sativa	Wild parsnip		R					
Pentaglottis sempervirens	Evergreen alkanet				R			NN
Phyllitis scolopendrium	Hart's-tongue fern		R				R	
Plantago coronopus	Buckshorn plantain	R						DG
Plantago lanceolata	Ribwort plantain	RLF	R				R	
Polypodium interjectum	Polypody		R					
Ranunculus acris	Meadow buttercup						R	
Ranunculus repens	Creeping buttercup					O	R	
Rumex acetosa	Common sorrel						R	
Rumex obtusifolius	Broad-leaved dock			O	R			
Rumex sanguineus	Wood dock						R	
Scrophularia nodosa	Water figwort						R	
Sedum acre	Biting stonecrop	RVLF					R	DG
Sedum album	White stonecrop	RLF	RLF					NN
Senecio jacobaea	Common ragwort	R		R				
Senecio vulgaris	Groundsel			R				
Sison amomum	Stone parsley				R			
Sonchus asper	Prickly sow-thistle		R	R				
Sonchus oleraceus	Smooth sow-thistle	R						
Stachys sylvatica	Hedge woundwort		R				R	
Stellaria media	Chickweed		R				R	
Taraxacum vulgare agg	Dandelion	O		R			R	
Thymus polytrichus	Wild thyme	RVLF						DG
Trifolium dubium	Lesser trefoil	RVLF				R		
Trifolium repens	White clover						R	
Typha latifolia	Greater reedmace				R			
Urtica dioica	Stinging nettle	R	RLF	R	OLF		O	
Valerianella sp	Corn-salad	RVLF	R					DG
Veronica hederifolia	Ivy-leaved speedwell						O	
Veronica persica	Common field speed-well						R	NN
Vicia sepium	Bush vetch						R	
Vinca major	Greater periwinkle						R	NN
Viola odorata	Sweet violet						R	
MOSSES								
Amblystegium serpens		R	R	R	R		R	
Brachythecium albicans		RVLF						DG
Brachythecium mildeanum		R	R				R	
Brachythecium rutabulum			R	R	OLF		RLF	

		Area Number						Notes
		1	2	3	4	5	6	
Bryum capillare							R	
Calliergonella cuspidata		OLF					R	
Cratoneuron filicinum			R		R			
Homalothecium lutescens							R	
Kindbergia praelonga		O	O	R	R		R	
Oxyrrhynchium hians							R	
Pseudoscleropodium purum		R	RLF					
Rhynchostegium confertum							R	
Rhytidiadelphus squarrosus		RLF						
Syntrichia ruraliformis		RVLF					R	DG
LICHENS								
Buellia punctata		R			R		R	
Peltigera didactyla		R	R					DG
Phaeophyscia orbicularis		R	R		R		R	
Physcia tenella		R	R		R	R	R	
Xanthoria parietina		R	R		R		R	

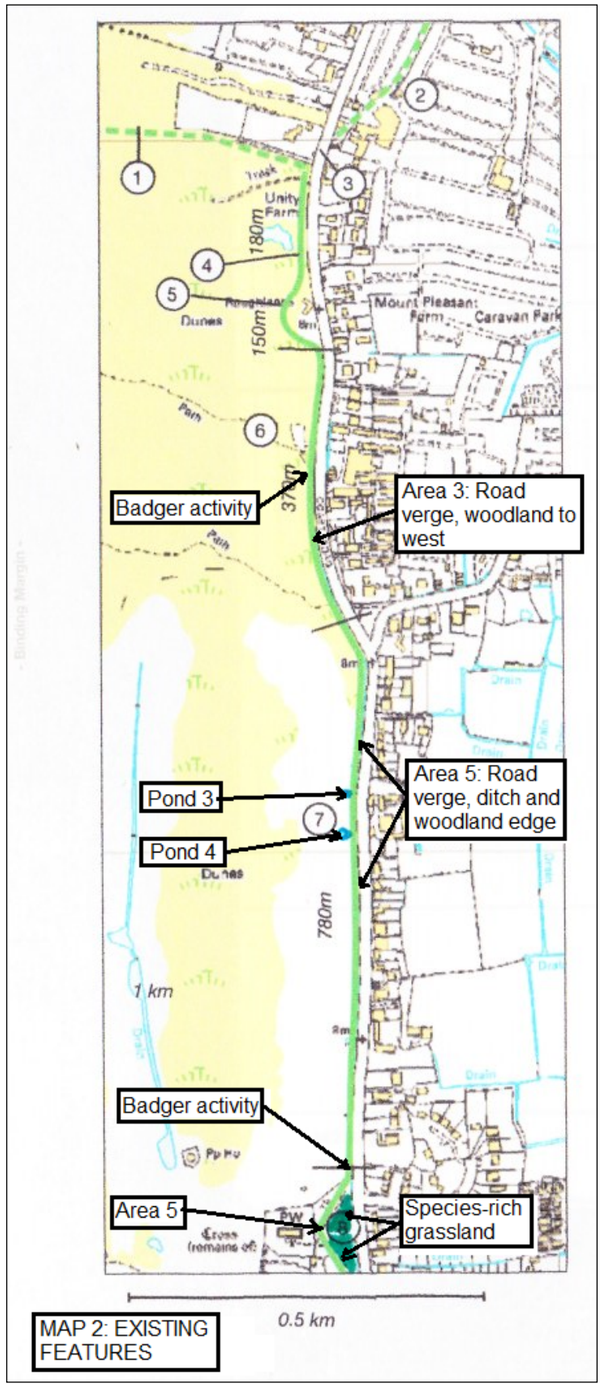
Abbreviations used: D – dominant; A – abundant; F – frequent; O – occasional; R – rare; L – locally; V – very. NN – non-native species; DG- indicator species of dune grassland

APPENDIX 2 BIRD SPECIES RECORDED

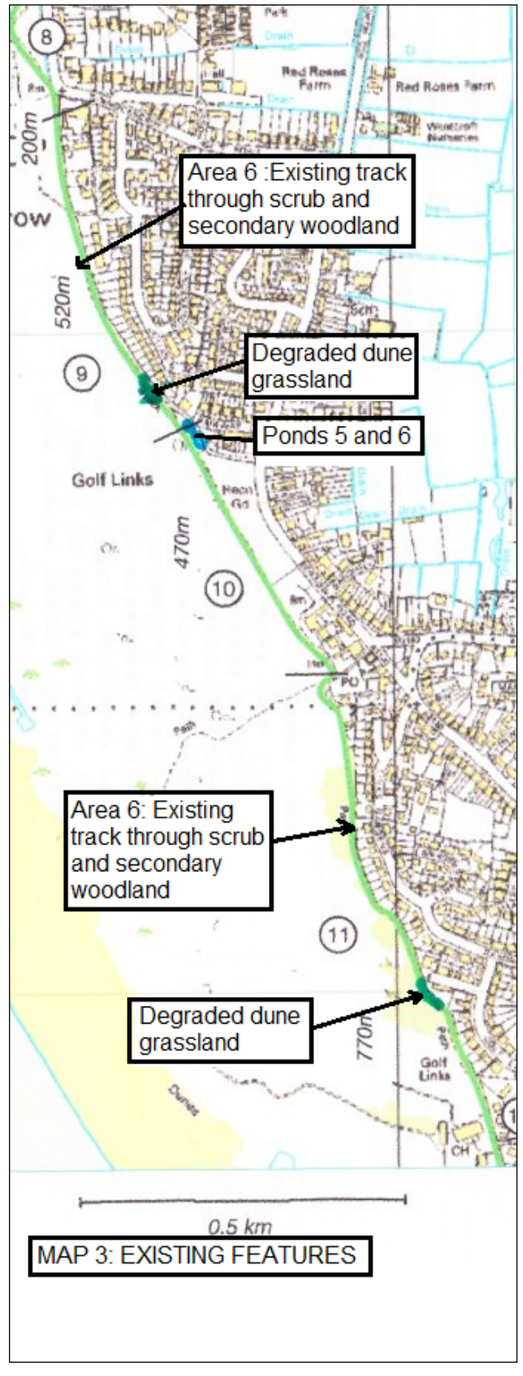
	Area Number					
	1	2	3	4	5	6
Blackbird		X		X		X
Blue tit				X		X
Carrion crow				X		
Chaffinch						X
Collared dove						X
Dunnock	X	X		X		X
Goldcrest						
Goldfinch	X	X				X
Great tit		X				X
Greenfinch		X				X
House sparrow				X		X
Long-tailed tit		X		X		X
Magpie	X					X
Reed bunting						X
Robin	X	X		X		X
Rook				X		
Song thrush						X
Sparrowhawk				X		X
Starling						X
Wood pigeon	X	X		X		X
Wren						X



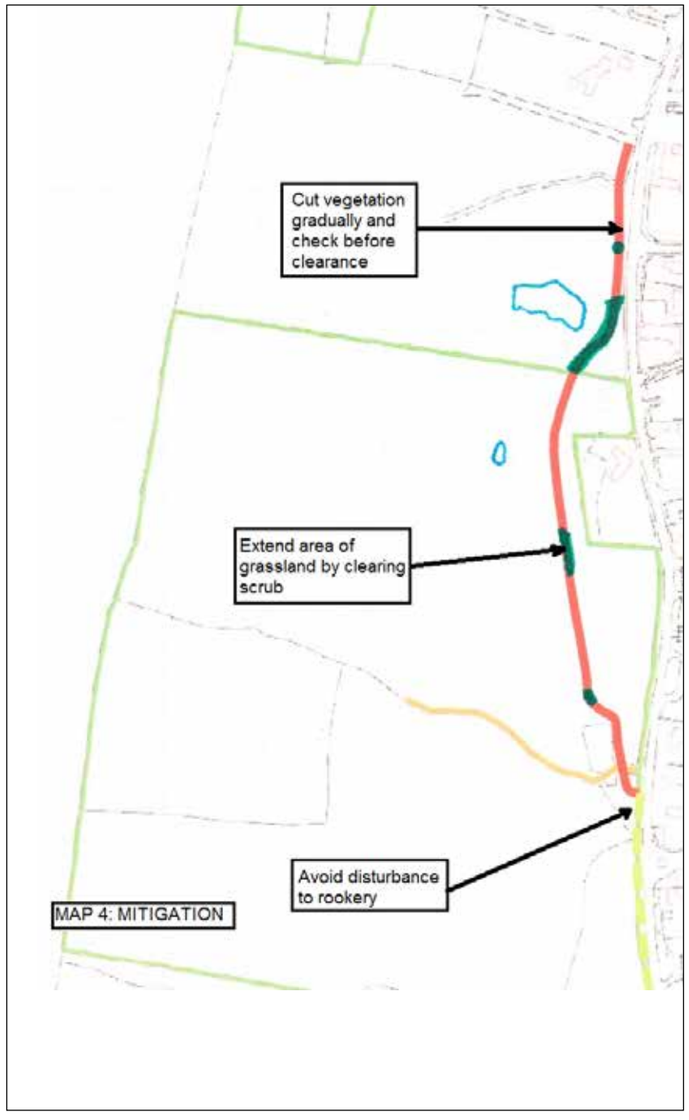
MAP 1: EXISTING FEATURES



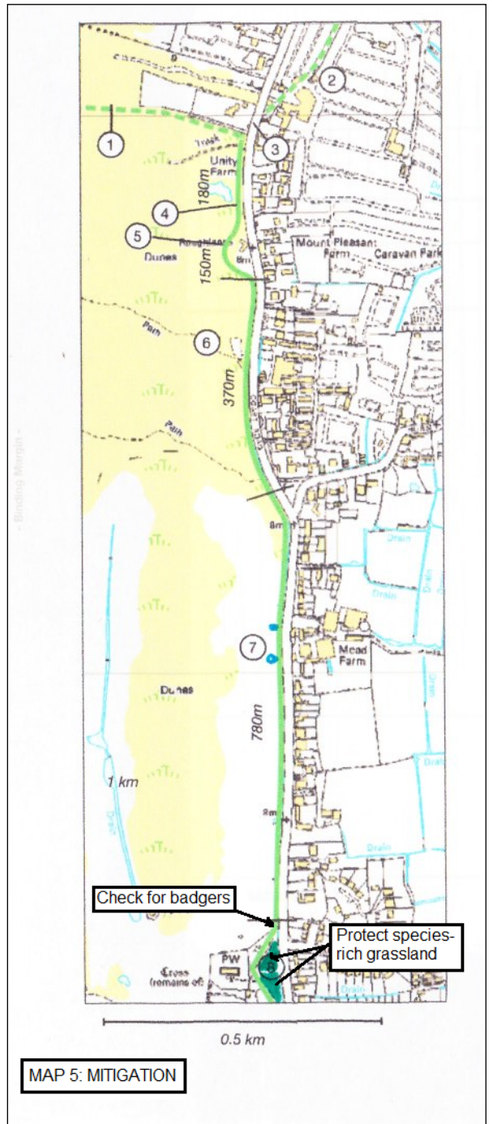
MAP 2: EXISTING FEATURES



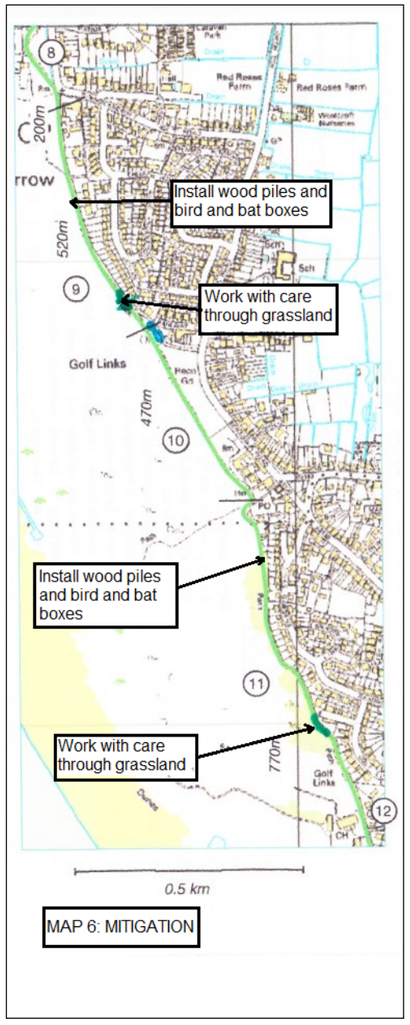
MAP 3: EXISTING FEATURES



MAP 4: MITIGATION



MAP 5: MITIGATION



MAP 6: MITIGATION