

11.0 Pebblebed Heaths Car Parking Concept Designs

The following section gives recommended concept designs for each of the formal car parks considering the Strategy Plan approach. Each Design Concepts has a summary of the cost estimate for the work proposed. A spreadsheet at the end of the section (table 21) gives a summary of the capital and revenue cost estimates for the recommended work proposed in each car park.

During the compilation of the report consideration has been given to two alternative cost options (Section 11.2) , which have been modelled against the recommended proposal, these were Additional capital investment option (increased capital investment for reduced maintenance) and reduced capital investment option (with anticipated increase maintenance as a consequence).

The proposed approach balances the capital cost of undertaking the more expensive work of creating robust parking surface (with focus on the main wear zones at car park entrances) with the revenue cost of undertaking the on-going maintenance of surfaces.

The capital cost of undertaking tarmac surfacing is the most expensive item proposed, the payback in reduced maintenance is just achieved within the 80-year time frame (80 years = in perpetuity for the purposes of Mitigation Strategy). However, it is the disruption caused by car park closures every two years, the management time in administering the contracts, the increased confidence in the wearing ability and reduced likelihood of claims from vehicle damage that make this the preferred option for car park entrances.

Phasing suggestions are given in section 11.3.

It is recommended that a vehicle counter is installed at the entrance to each of the main formal car parks. Counts of the informal/roadside areas should also be carried out at appropriate intervals and included in the monitoring which forms part of the wider Pebblebed Heaths Visitor Management Plan.

A3052

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Closure of roadside parking

Block this track through gorse to road junction.

Retain this path through gorse and along roadside for access to Aylesbeare Common and East Devon Way

Separated area for events trailer

Vegetation management to improve security

Pole barrier with gap to side for horse to pass.

9

New dog bins

Closure of current entrance

8

2 bays for Blue badge holders

11

7

Vegetation management to improve East Devon way and visibility from minor road.

18

Vegetation management at gated entrance to improve visibility from Hawkerland Common.

Closure of wide verge

Relocated dog bins

Height restriction barrier

Lockable barrier

Secondary sign

Site name sign

Drainage remedy to resolve ponding water












Access gate

Vegetation management at gated entrance to improve visibility from Hawkerland Common.

Cattle grid

KEY

Car Park Proposal Components

-  Base Survey
-  Height restriction barrier
-  Lockable security barrier
-  Dog bin
-  Interpretation board
-  Site name board
-  Access gate
-  Pole Barrier
-  Existing Tree
-  Tarmac surfacing
-  Stone parking
-  New areas of stone
-  Pedestrian areas of stone
-  Stone to vegetation
-  Vegetation managed to improve security
-  Bank/Bund

Car Park 1 : Joney's Cross

Undertake design layout as indicated on Concept Design with all components including new entrance sign, information board, dog bins, height restriction barrier, replaced internal security barrier and form small internal events space.

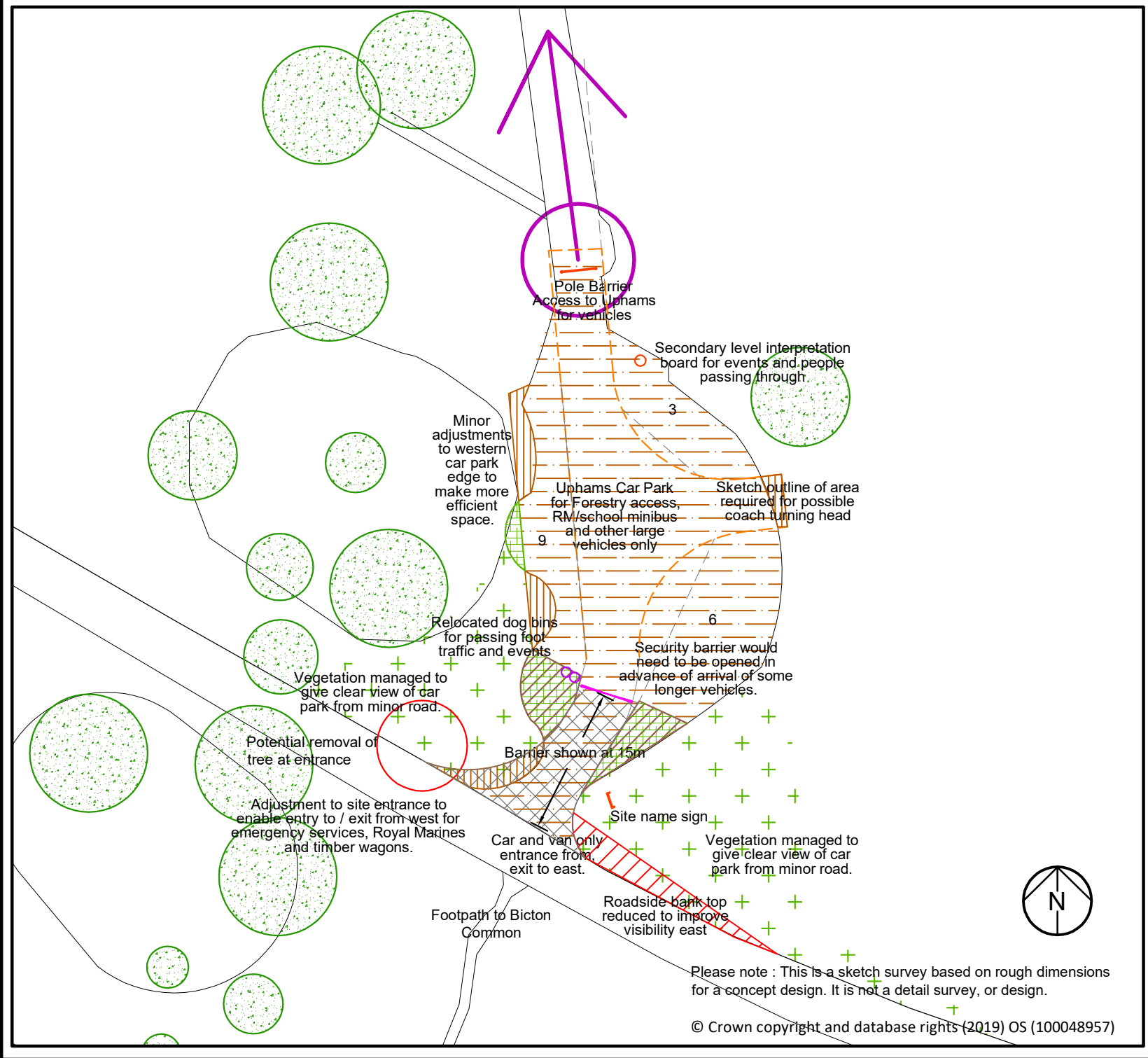
Surfacing option 2 : planing and re-grading the existing pebblebed surface with a top up of imported material to improve the locking of aggregate.

Tarmac new entrance with kerbing.

Bunding within car park to divide parking bays, supplemented with timber rail to prevent 4-wheel drive damage.

**Estimate of capital cost for recommended course of action based on Concept Design at May 2019.
(includes contractor prelims, consultant fees and 10% project contingency).** **£ 46651**

Estimate of revenue costs for maintaining stone surfaces and reforming bunds every 2 years, replacing drainage stone every 5 years, tarmac wearing course every 15 years, replacing signs, posts and dog bins every 20 years and maintaining vegetation every year. **£2950/year**



KEY

Car Park Proposal Components

- Base Survey
- Height restriction barrier
- Lockable security barrier
- Dog bin
- Interpretation board
- Site name board
- Pole Barrier
- Existing Tree
- Tarmac surfacing
- Stone parking
- New areas of stone
- Pedestrian areas of stone
- Stone to vegetation
- Vegetation managed to improve security
- Bank/Bund
- RM/Emerg./Maint. Access

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 Uphams Concept Design
 P3271 - Plan 26 CP2
 1:500@A4, 19 May 2019, R.W.

Car Park 2 : Uphams

Undertake design layout as indicated with all components including new entrance sign, dog bin, security barrier. Forming internal turning space for coaches.

Surfacing option 2 : planing and re-grading the existing pebblebed surface with a top up of imported material to improve the locking of aggregate.

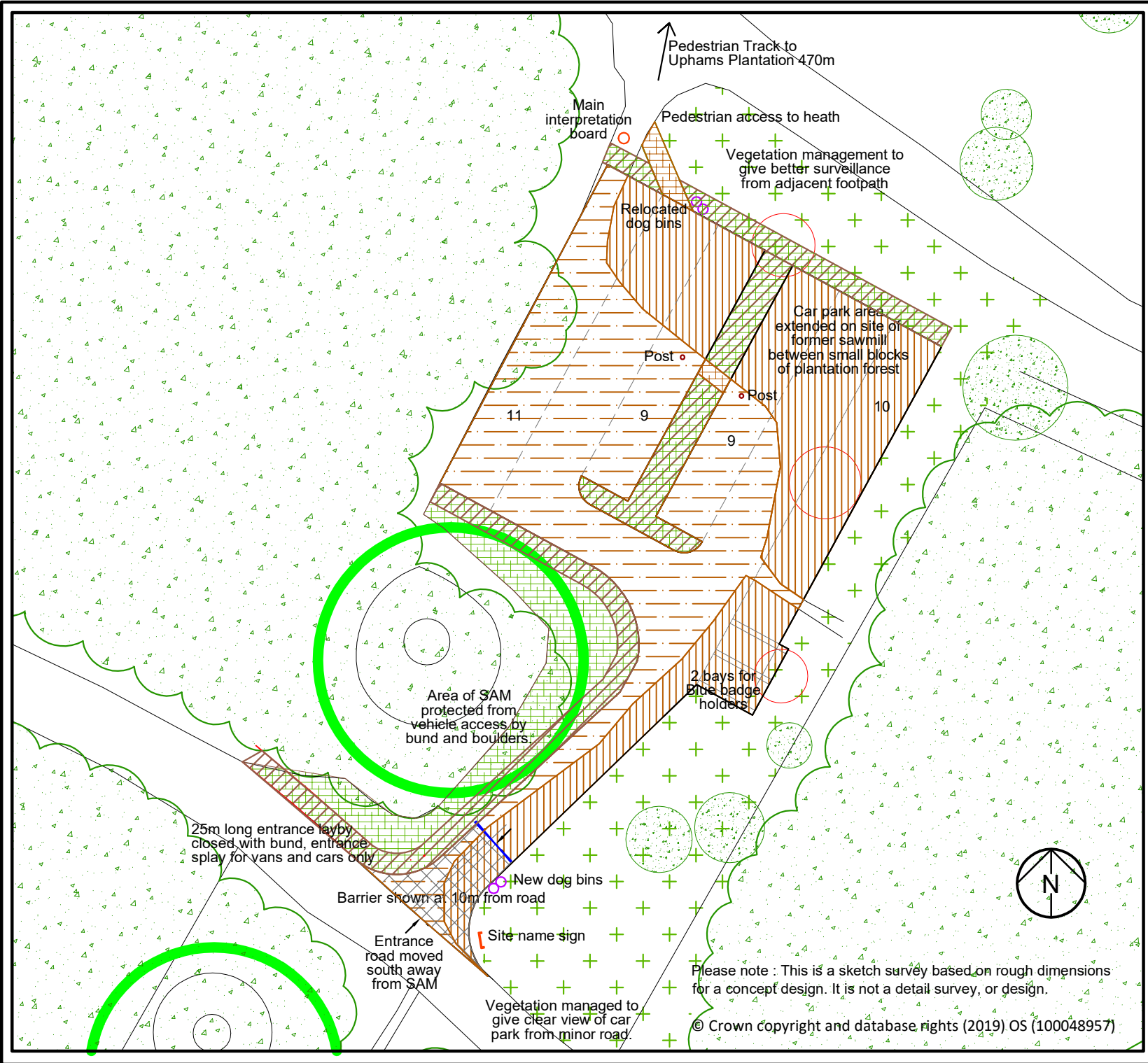
Tarmac new entrance.

**Estimate of capital cost for recommended course of action based on Concept Design at May 2019.
(includes contractor prelims, consultant fees and 10% project contingency).**

£ 24447

Estimate of revenue costs for maintaining stone surfaces and reforming bunds every 2 years, replacing drainage stone every 5 years, tarmac wearing course every 15 years, replacing signs, posts and dog bins every 20 years and maintaining vegetation every year.

£1134/year



- ### KEY
- #### Car Park Proposal Components
- Base Survey
 - Height restriction barrier
 - Dog bin
 - Interpretation board
 - Site name board
 - Pole Barrier
 - Existing Tree
 - Tarmac surfacing
 - Stone parking
 - New areas of stone
 - Pedestrian areas of stone
 - Stone to vegetation
 - Vegetation managed to improve security
 - Bank/Bund



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 Model Airfield Concept Design
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Car Park 3 : Model Airfield

Undertake design layout as indicated with all components including new entrance sign, information board, dog bins, height restriction barrier moving entrance road and parking away from scheduled monument.

Surfacing option 4: existing surfaces topped up with imported material to improve the locking of existing aggregate and crossfall drainage.

New areas of stone car park: to full construction depth.

Tarmac new entrance with kerbing to barrier.

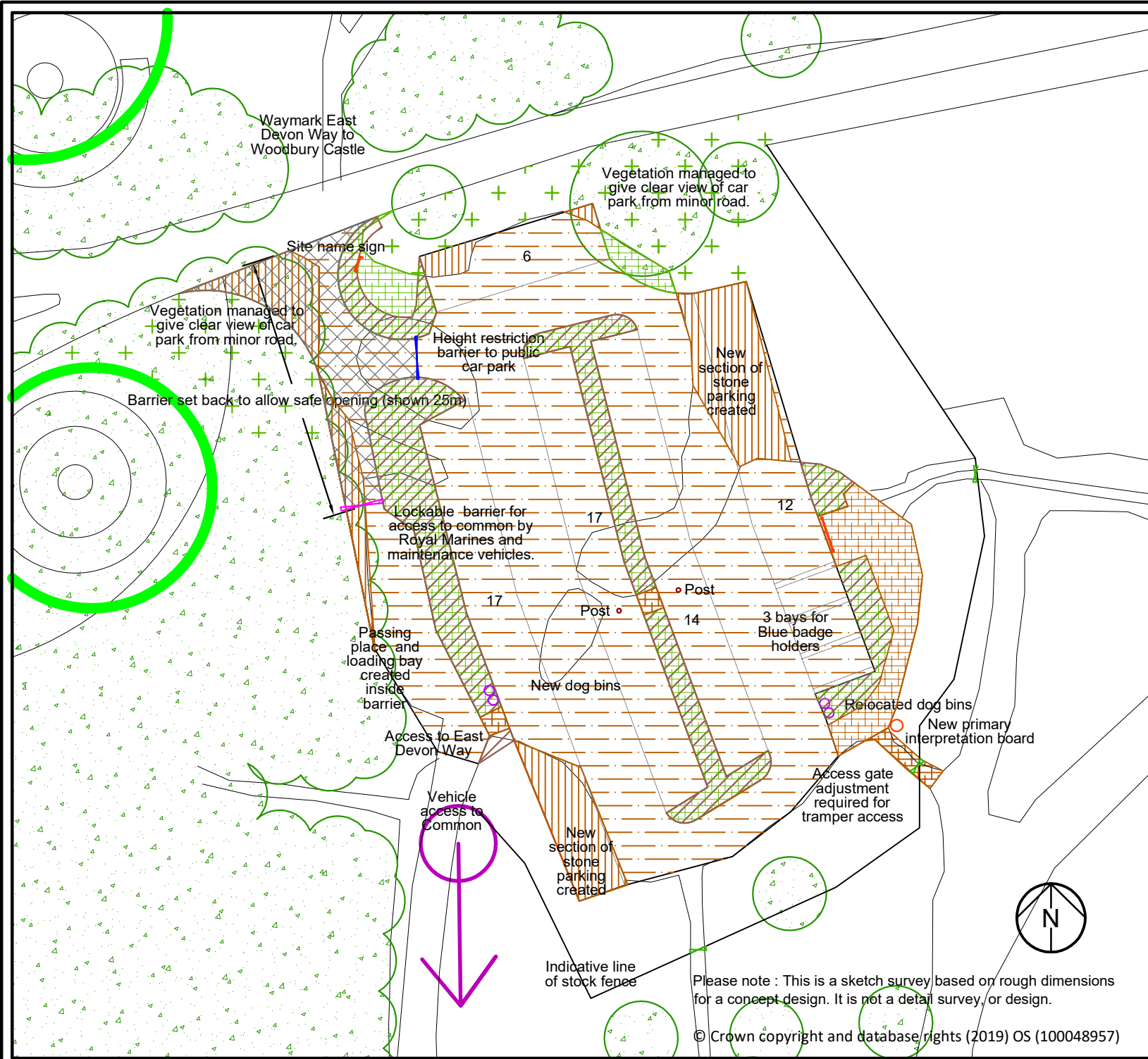
Bunding within car park to divide parking bays, supplemented with timber rail to prevent 4-wheel drive damage.

**Estimate of capital cost for recommended course of action based on Concept Design at May 2019.
(includes contractor prelims, consultant fees and 10% project contingency).**

£ 67534

Estimate of revenue costs for maintaining stone surfaces and reforming bunds every 2 years, replacing drainage stone every 5 years, tarmac wearing course every 15 years, replacing signs, posts and dog bins every 20 years and maintaining vegetation every year.

£2364/year



KEY

Car Park Proposal Components

- Base Survey
- Height restriction barrier
- Lockable security barrier
- Dog bin
- Notice board
- Site name board
- Pole Barrier
- Access gate
- Existing Tree
- Tarmac surfacing
- Stone parking
- New areas of stone
- Pedestrian areas of stone
- Stone to vegetation
- Vegetation managed to improve security
- Bank/Bund
- RM/Emerg./Maint. Access

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 Four Firs Concept Design
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Car Park 4 : Four Firs

Undertake design layout as indicated with all components including new entrance sign, information boards, relocated dog bins, height restriction barrier, alter entrance arrangement to include a separate access to Common for Royal Marines and maintenance vehicles.

Surfacing option 4 : existing surfaces planed, and topped up with imported material to improve the locking of existing aggregate and crossfall drainage, re-profiled, re-graded.

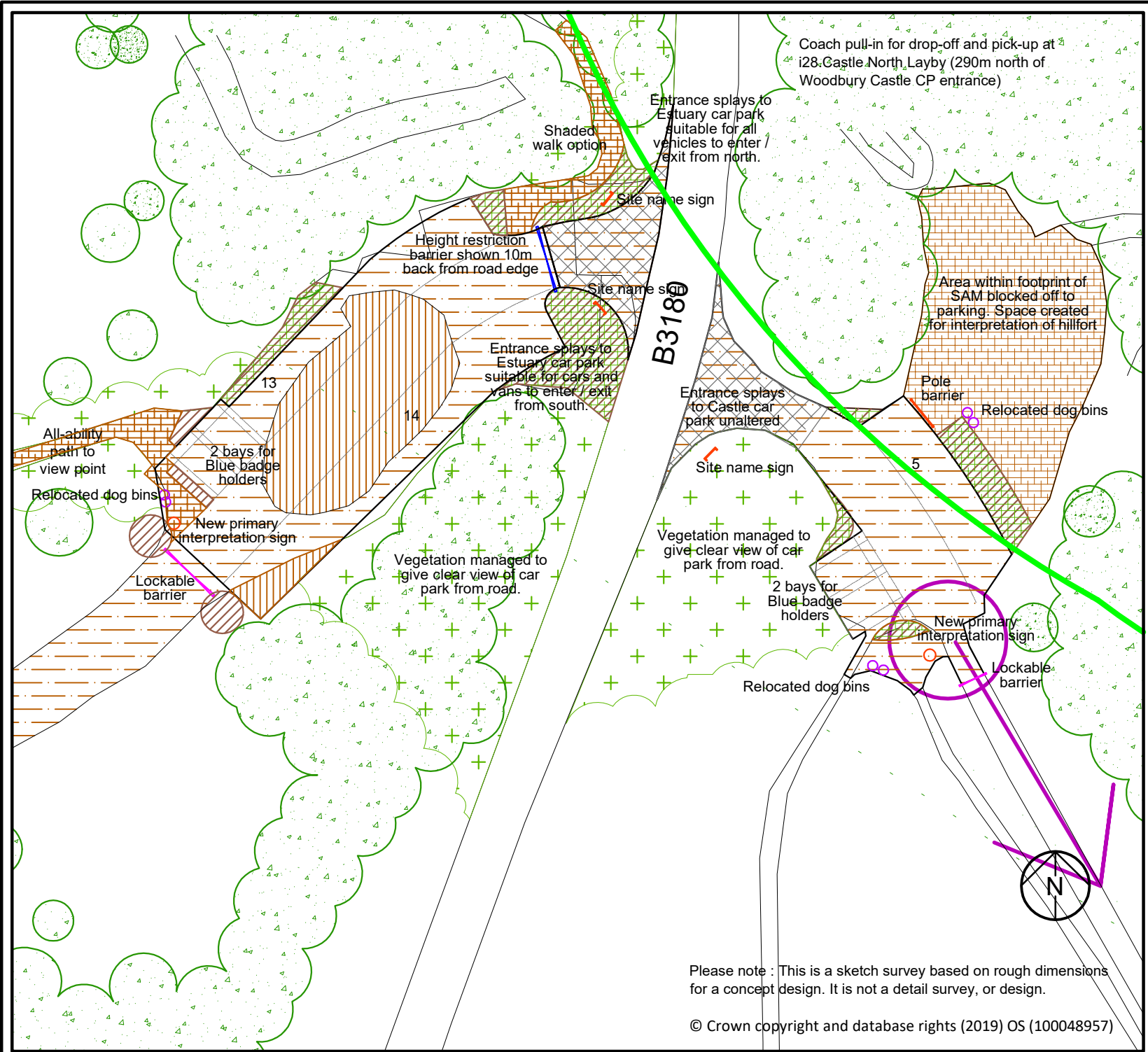
New areas of stone car park : to full construction depth.

Tarmac new entrance with kerbing to barriers.

Bunding within car park to divide parking bays, supplemented with timber rail to prevent 4-wheel drive damage.

Estimate of capital cost for recommended course of action based on Concept Design at May 2019. **£ 77180**
(includes contractor prelims, consultant fees and 10% project contingency).

Estimate of revenue costs for maintaining stone surfaces and reforming bunds every 2 years, replacing drainage stone every 5 years, tarmac wearing course every 15 years, replacing signs, posts and dog bins every 20 years and maintaining vegetation every year. **£3086/year**



KEY

Car Park Proposal Components

- Base Survey
- Height restriction barrier
- Lockable security barrier
- Pole Barrier
- Dog bin
- Interpretation board
- Site name board
- Existing Tree
- Tarmac surfacing
- Stone parking
- New areas of stone
- Pedestrian areas of stone
- Stone to vegetation
- Vegetation managed to improve security
- Bank/Bund
- RM/Emerg./Maint. Access

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 Estuary Entrance & Woodbury Castle Concept
 P3271 - Plan 29, CP5a&6
 1:500@A4, 19 May 2019, R.W.

Car Park 5a : Estuary Entrance

Undertake design layout as indicated with all components including new entrance sign, information boards, dog bins, vehicle security and height restriction barrier.

Surfacing option 2: existing surfaces planed, topped up with imported material to improve the locking of existing aggregate and re-graded.

New areas of stone car park: to full construction depth.

Tarmac new entrance with kerbing to barriers.

**Estimate of capital cost for recommended course of action based on Concept Design at May 2019.
(includes contractor prelims, consultant fees and 10% project contingency).** **£ 42702**

Estimate of revenue costs for maintaining stone surfaces and reforming bunds every 2 years, replacing drainage stone every 5 years, tarmac wearing course every 15 years, replacing signs, posts and dog bins every 20 years and maintaining vegetation every year.

(Includes management cost of 10% and 10% contingency) **£1622/year**

Car Park 6 Woodbury Castle

Undertake design layout as indicated with all components including new entrance sign, information boards, dog bins, vehicle security barrier.

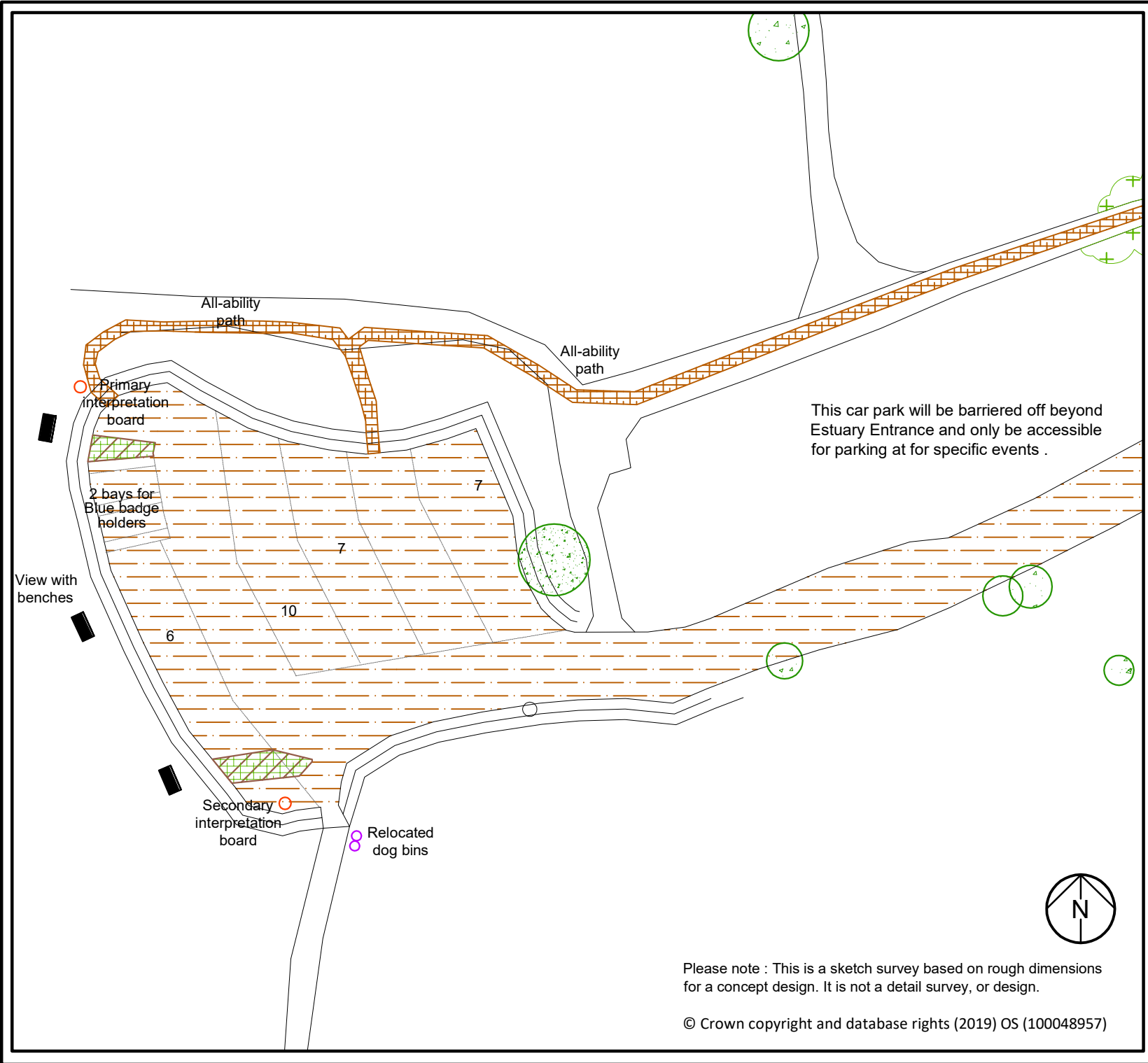
Surfacing option 1: existing potholes repaired.

Tarmac new entrance with kerbing to barriers.

**Estimate of capital cost for recommended course of action based on Concept Design at May 2019.
(includes contractor prelims, consultant fees and 10% project contingency).** **£ 18518**

Estimate of revenue costs for maintaining stone surfaces and reforming bunds every 2 years, replacing drainage stone every 5 years, tarmac wearing course every 15 years, replacing signs, posts and dog bins every 20 years and maintaining vegetation every year

(Includes management cost of 10% and 10% contingency) **£901/year**



- KEY**
- Car Park Proposal Components**
- Base Survey
 - Dog bin
 - Notice board
 - Existing Tree
 - Stone parking
 - New areas of stone
 - Pedestrian areas of stone
 - Stone to vegetation
 - Bank/Bund

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 Estuary View Concept Design
 P3271 - Plan 30 CP5b
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Car Park 5b : Estuary View

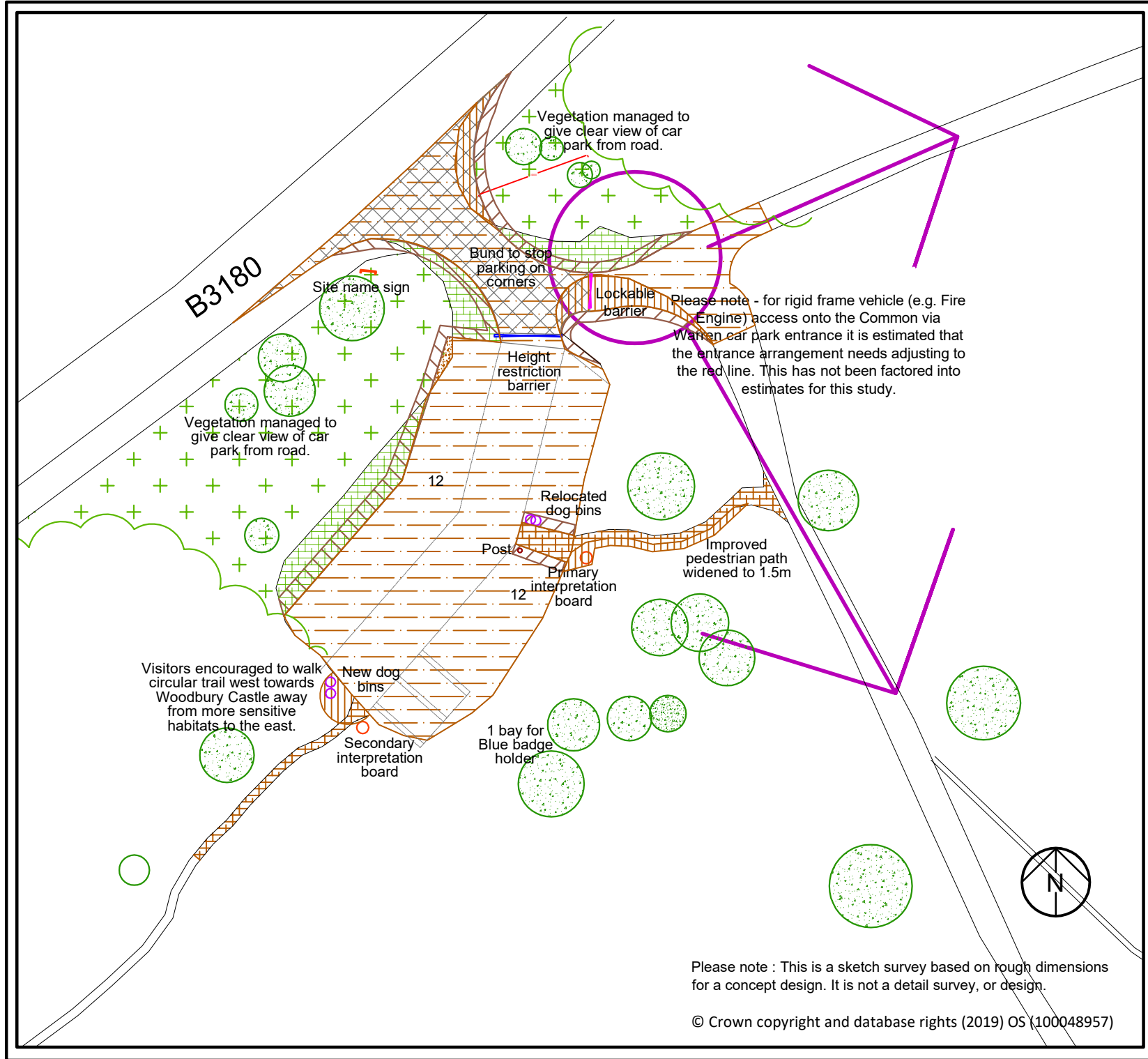
Undertake design layout as indicated with all components including, accessible trail to view point, information boards, three benches, dog bins.

Surfacing option 1 : for entrance track and rearranged car park : existing potholes repaired.

It is deemed not to be worth including internal bunding to divide car park. Whilst this would discourage misuse (e.g. people spinning cars in a wide-open space) it would restrict the use of the space for events, for timber harvesting operations and with a security barrier for closure after hours would be of limited use.

**Estimate of capital cost for recommended course of action based on Concept Design at May 2019.
(includes contractor prelims, consultant fees and 10% project contingency).** **£ 10978**

**Estimate of revenue costs for maintaining stone surfaces and reforming bunds every 2 years, replacing drainage stone every 5 years, tarmac wearing course every 15 years, replacing signs, posts and dog bins every 20 years and maintaining vegetation every year
(Includes management cost of 10% and 10% contingency)** **£1682/year**



KEY

Car Park Proposal Components

- Base Survey
- Height restriction barrier
- Lockable security barrier
- Pole Barrier
- Dog bin
- Notice board
- Site name board
- Existing Tree
- Tarmac surfacing
- Stone parking
- New areas of stone
- Pedestrian areas of stone
- Stone to vegetation
- Vegetation managed to improve security
- Bank/Bund
- RM/Emerg./Maint. Access

Car Park 8 : Warren

Undertake design layout as indicated with all components including new entrance sign, information boards, relocated dog bins, height restriction barrier, alter entrance arrangement to include a separate access to Common for Royal Marines and maintenance vehicles.

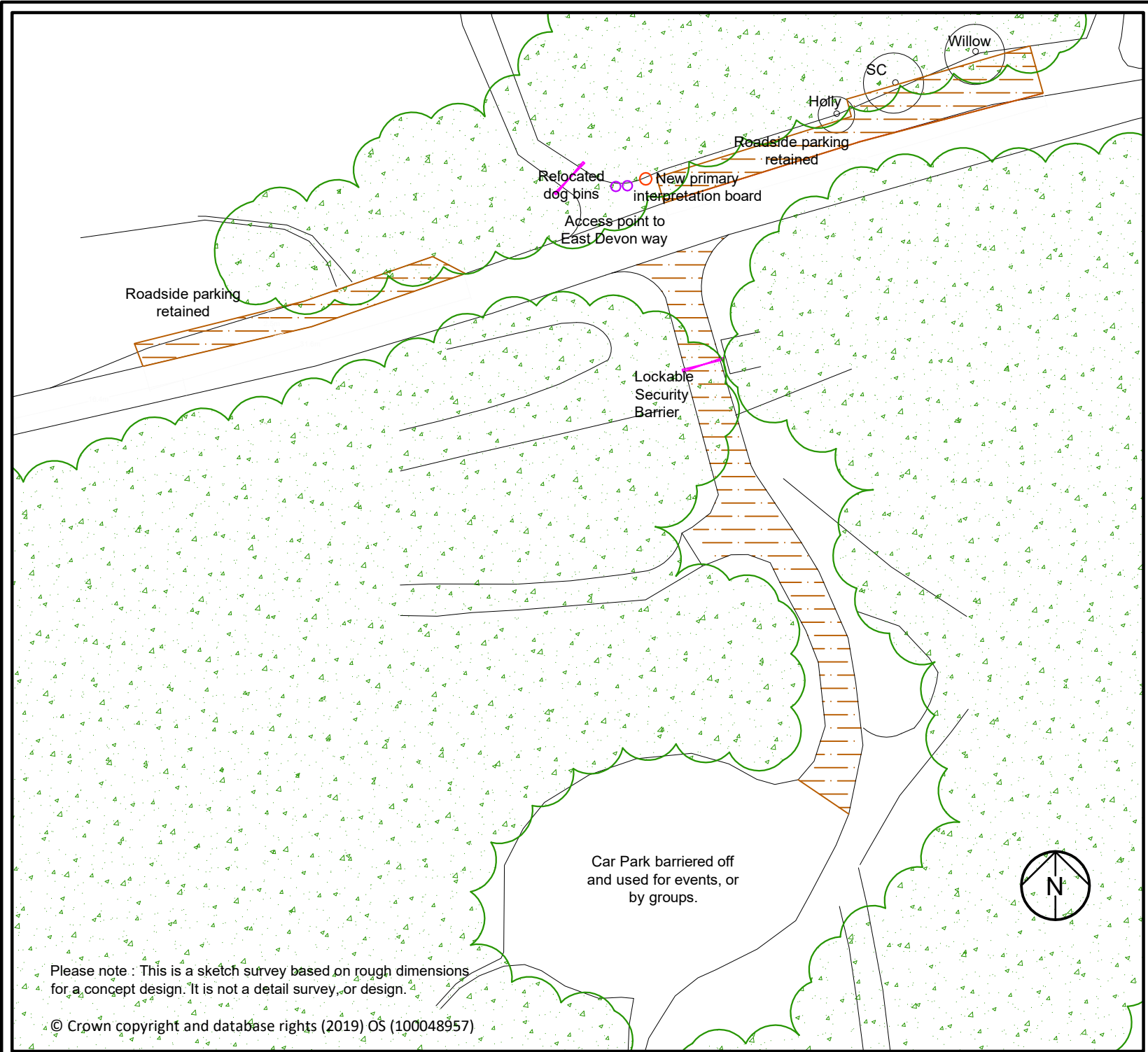
Surfacing option 2 : existing surfaces planed, and topped up with imported material to improve the locking of existing aggregate and re-graded.

Tarmac new entrance with kerbing to barriers.







Estimate of capital cost for recommended course of action based on Concept Design at May 2019. **£ 46037**
(includes contractor prelims, consultant fees and 10% project contingency).

Estimate of revenue costs for maintaining stone surfaces and reforming bunds every 2 years, replacing drainage stone every 5 years, tarmac wearing course every 15 years, replacing signs, posts and dog bins every 20 years and maintaining vegetation every year

(Includes management cost of 10% and 10% contingency) **£1768/year**



KEY
Car Park Proposal Components

-  Base Survey
-  Lockable security barrier
-  Dog bin
-  Notice board
-  Existing Tree
-  Stone parking

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 Frying Pan Concept Design
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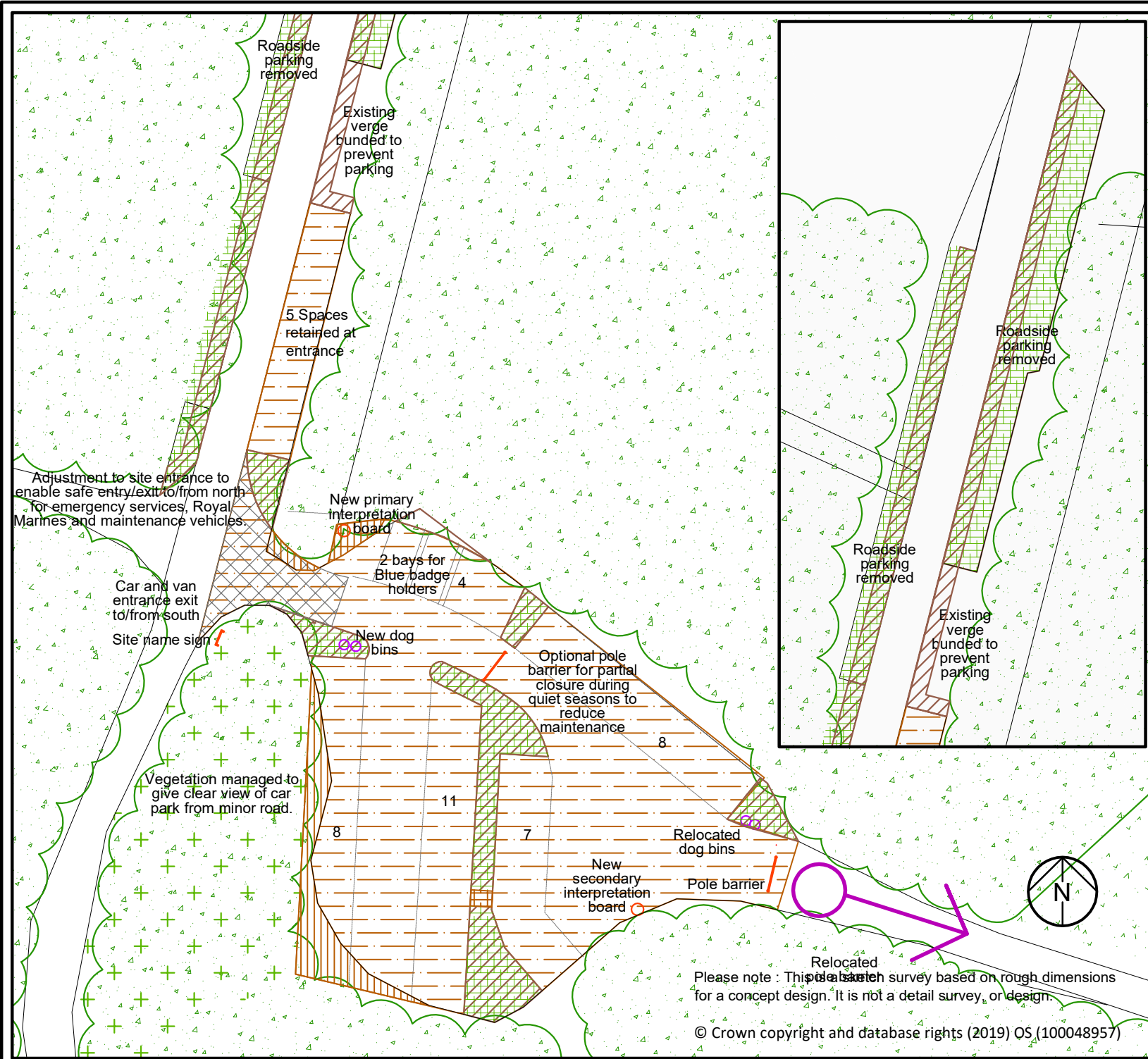
Car Park 9 : Frying Pans

Undertake design layout as indicated with all components including new entrance sign, information board, relocated dog bins, security barrier, alter entrance arrangement to include a separate access to Common for Royal Marines and maintenance vehicles.

Surfacing option 4 : surface of existing entrance road planed and topped up with 100mm suitable imported material to improve the locking of existing aggregate and create crossfall drainage, re-profiled, re-graded. Filter drain installed along one edge of entrance road.

Estimate of capital cost for recommended course of action based on Concept Design at May 2019. **£ 9425**
(includes contractor prelims, consultant fees and 10% project contingency).

Estimate of revenue costs for maintaining stone surfaces and reforming bunds every 2 years, replacing drainage stone every 5 years, tarmac wearing course every 15 years, replacing signs, posts and dog bins every 20 years and maintaining vegetation every year
(Includes management cost of 10% and 10% contingency) **£980/year**



KEY

Car Park Proposal Components

- Base Survey
- Existing Tree
- Lockable security barrier
- Pole Barrier
- Dog bin
- Notice board
- Site name board
- Tarmac surfacing
- Stone parking
- New areas of stone
- Pedestrian areas of stone
- Stone to vegetation
- Vegetation managed to improve security
- Bank/Bund
- RM/Emerg./Maint. Access

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 Wheathill Concept Design
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Car Park 10 : Wheathill

Undertake design layout as indicated with all components including new entrance sign, information boards, relocated dog bins, height restriction barrier, alter entrance arrangement to include access to Common for Royal Marines and maintenance vehicles.

Surfacing option 2 : Over most of south and eastern area of existing car park where the existing cross fall is providing sufficient drainage to keep surface free of ponding water: existing surfaces planed, topped up with imported material to improve the locking of existing aggregate and re-graded.

Surfacing option 4 : Entrance area where cross fall is not providing sufficient surface drainage: existing surface planed and topped up with 100mm suitable imported material to improve the locking of existing aggregate and create crossfall drainage, re-profiled, re-graded.

New areas of stone car park : to full construction depth.

Tarmac new entrance with kerbing to barriers.

Bunding within car park to divide parking bays, supplemented with timber rail to prevent 4-wheel drive damage.

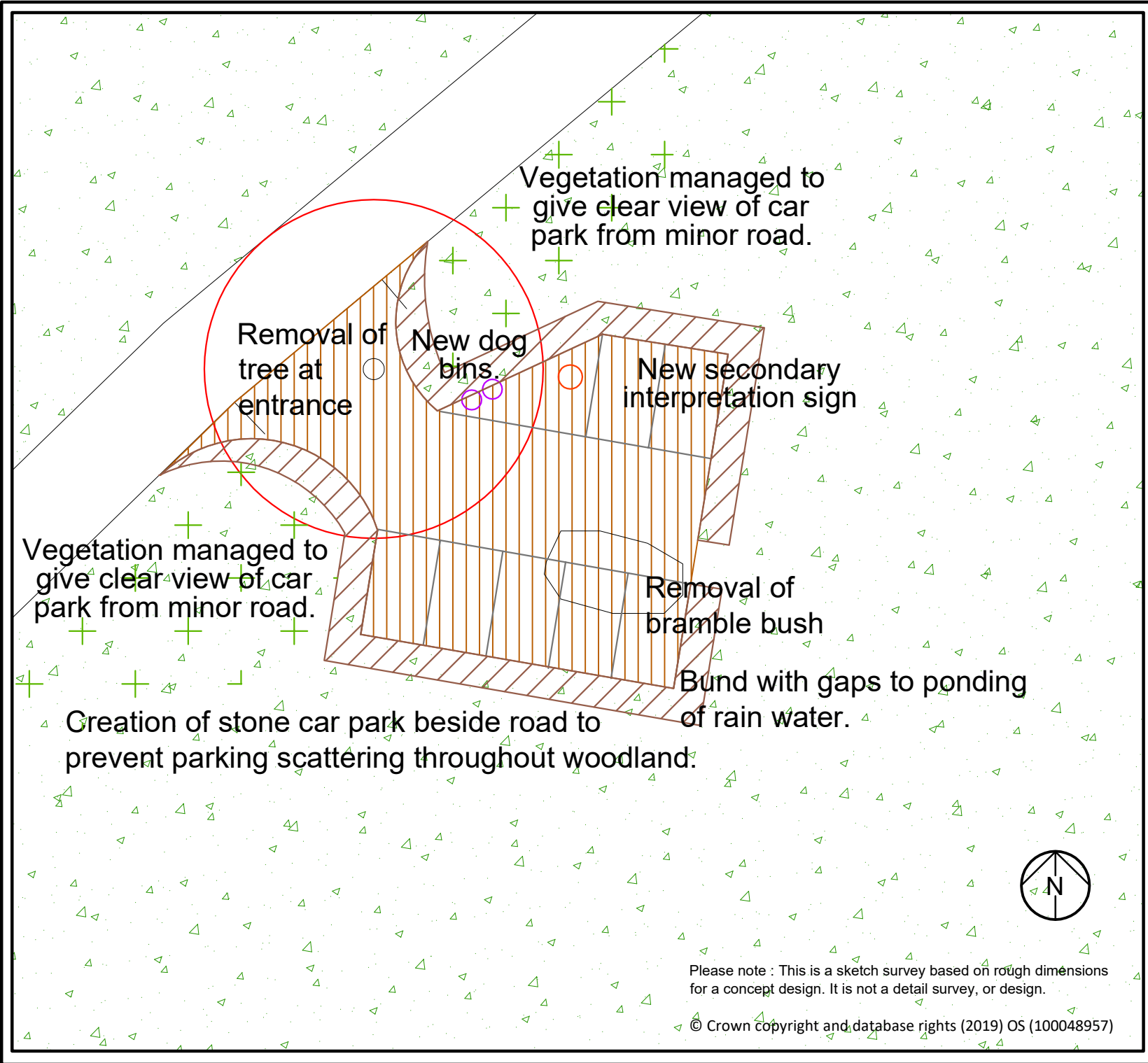
**Estimate of capital cost for recommended course of action based on Concept Design at May 2019.
(includes contractor prelims, consultant fees and 10% project contingency).**

£ 41528








Estimate of revenue costs for maintaining stone surfaces and reforming bunds every 2 years, replacing drainage stone every 5 years, tarmac wearing course every 15 years, replacing signs, posts and dog bins every 20 years and maintaining vegetation every year

(Includes management cost of 10% and 10% contingency)

£2341/year



KEY
Car Park Proposal Components

-  Base Survey
-  Dog bin
-  Notice board
-  Existing Tree
-  New areas of stone
-  Vegetation managed to improve security
-  Bank/Bund

Removal of tree at entrance

New dog bins

New secondary interpretation sign

Vegetation managed to give clear view of car park from minor road.

Vegetation managed to give clear view of car park from minor road.

Removal of bramble bush

Bund with gaps to ponding of rain water.

Creation of stone car park beside road to prevent parking scattering throughout woodland.



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 Squabmoor Concept Design
 P3271 - Plan 34 CP11
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Car Park 11 : Squabmoor

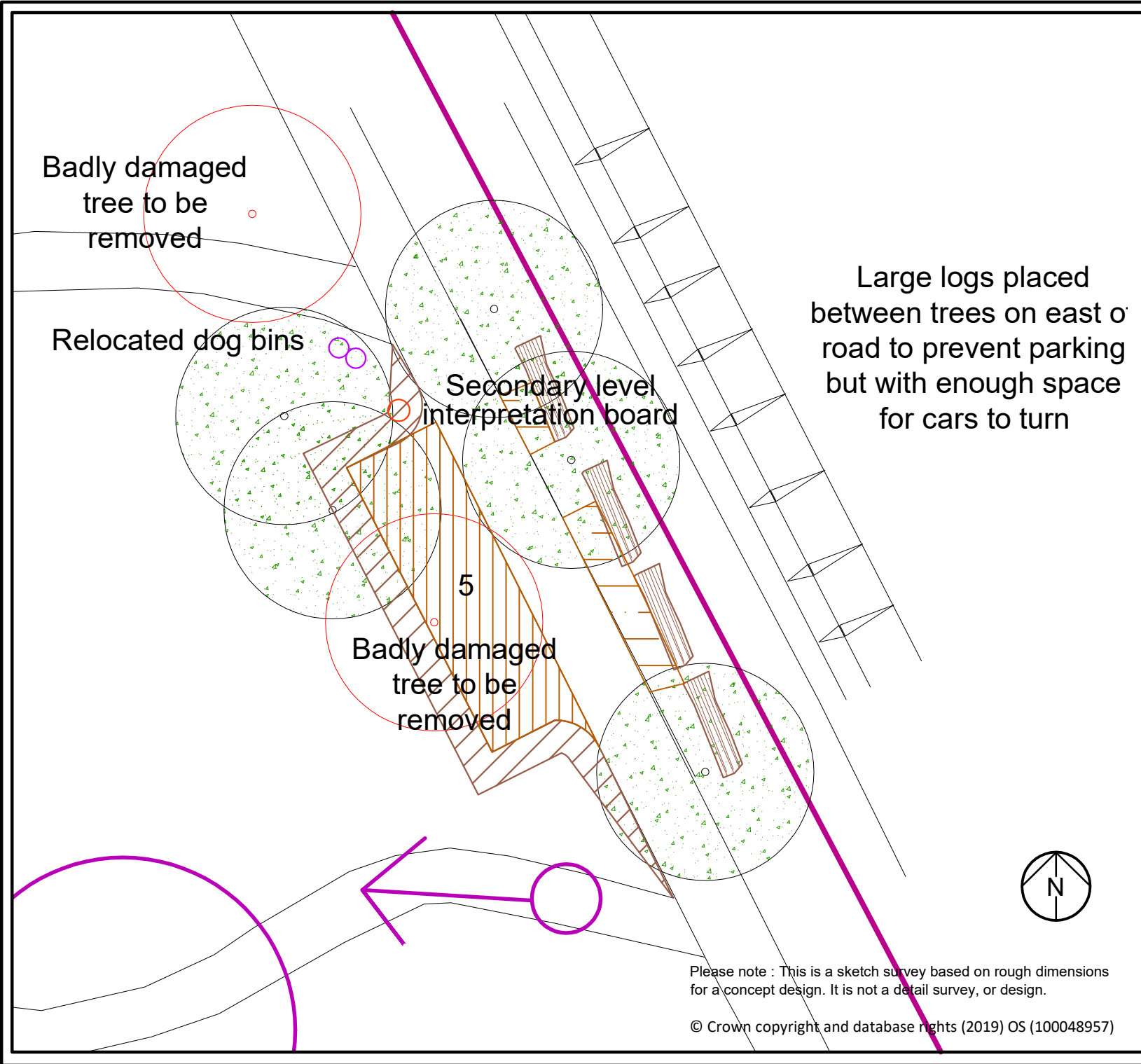
Undertake design layout as indicated with all components including new entrance sign, information board, dog bins.

Surfacing option : New car park area to full construction.

**Estimate of capital cost for recommended course of action based on Concept Design at May 2019.
(includes contractor prelims, consultant fees and 10% project contingency).** **£ 19412**









Estimate of revenue costs for maintaining stone surfaces and reforming bunds every 2 years, replacing drainage stone every 5 years, tarmac wearing course every 15 years, replacing signs, posts and dog bins every 20 years and maintaining vegetation every year

(Includes management cost of 10% and 10% contingency) **£747/year**



KEY

Car Park Proposal Components

-  Base Survey
-  Dog bin
-  Notice board
-  Existing Tree
-  New areas of stone
-  Vegetation managed to improve security
-  Bank/Bund
-  RM/Emerg./Maint. Access

Large logs placed between trees on east of road to prevent parking but with enough space for cars to turn



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 Stowford Concept Design
 P3271 - Plan 35 CP i21
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Car Park i21: Stowford Woods

Undertake design layout as indicated with all components.

Surfacing option : New car park area to full construction.

**Estimate of capital cost for recommended course of action based on Concept Design at May 2019.
(includes contractor prelims, consultant fees and 10% project contingency).** **£ 7873**

Estimate of revenue costs for maintaining stone surfaces and reforming bunds every 2 years, replacing drainage stone every 5 years, tarmac wearing course every 15 years, replacing signs, posts and dog bins every 20 years and maintaining vegetation every year

(Includes management cost of 10% and 10% contingency) **£510/year**

11.1 Cost Estimate

The Capital Cost of the recommended proposals come to a total of £412,281 (excluding any VAT chargeable and inflationary costs). This includes 10% for fees (design development, tendering, contract management, but does not include planning application costs.) 10% contractor prelims and 10% project contingency.

The Revenue Costs associated with maintaining the formal car parks as proposed is £19,784 per year, over the life of the mitigation strategy (80 years) this equates to £1,582,720. This includes 10% for management costs in administering contracts and 10% for project contingencies but excludes VAT chargeable and inflationary costs.

It is hard to gauge the precise level of maintenance required to stone surfaces, which account for the largest cost of work, as much depends on the weather conditions and the level of use, particularly for large vehicles such as Royal Marine lorries and harvesting wagons.

The breakdown of these capital and revenue cost estimates for the proposed course of action is given in Appendix 2 and 3.

11.2 Cost Options

Two alternative cost options have been modelled against the recommended proposal and the summary of the outputs is shown in table 21.

- **Additional capital investment option** - this tested a full new construction depth of stone over existing car park surfaces to create a more uniform surface of known material, on the basis that this work is a once in a lifetime opportunity to make the car parks as durable and robust over the long term as possible.

This option may result initially in a smoother, fine-grained surface for an estimated additional capital cost of £34,061. Whilst it has proven hard to be precise about the comparable maintenance costs for this intervention it is thought that the smoother surface would result in higher traffic speeds that would cause more wear and marginally increased maintenance costs over the long term (estimated to be between £500-£1,600 per year extra).

- **Reduced capital investment option:** this tested-
 - a. the cost implications of re-grading existing car parks surfaces, except those where only pothole repairs were required at low-use sites, rather than undertaking new stone surfacing. Cost reduction of £36,823. For this relatively low-cost saving (as a percentage of the overall project cost) this cost saving was deemed unsuitable, as it does not set the formal car parks up for their future and perpetuates increased maintenance year on year estimated to be in the order of £700-1500/year. The cost saving related to the additional stone used to create the gradients required to shed water from car park surfaces. Without this improvement potholes and ponding will continue to occur.
 - b. Excluding tarmac entrance splays. Tarmac with the edging required is always the costliest of car park construction components. Over the project area this doing away with tarmac entrances to car parks results in a cost reduction of £96,278 (including on-costs). However, this option is deemed unsuitable as it results in higher long-term maintenance costs at car park entrances where the most damage is occurring due to traffic turning, braking and pulling away. This situation is further worsened by the use by heavy military vehicles and timber

wagons. Car park entrances are the key locations where wear currently occurs, and potholes are evident. Investment in these junctions will reduce the annualised project maintenance cost by between £800-1600/year for the life of the mitigation strategy. It will also avoid the need for regular car park closures whilst maintenance work is taking place every two years and the management costs of managing regularly occurring works. Tarmac surfaces are estimated to last between 15-20 years when it will be necessary to replace the wearing course, this cost has been factored into the annualised maintenance cost of the recommended proposal.

Table 21 : Costs of recommended scenario against alternatives

	Capital Cost including contractor prelims, fees, and 10% contingency.	Annual Maintenance: including 10% management costs and 10% contingency	Total over 80 years
Recommended Option	£415,141	£19,994	£1,599,520
Additional Capital Investment Option	£448,292 Adding £33,151	£20,542 Adding £548	£1,643,360 Adding £43,840
Reduced Capital Investment Option	£281,740 Reducing £133,401	£21,728 Adding £1,734	£1,738,240 Adding £138,720

11.3 Phasings/Groupings

As this study has been driven by the protection of the habitats and protected species the prioritisation of investment should be first and foremost to embark on those elements that nudge visitors towards the car parks where habitats are more robust and messages about responsible behaviour can be shared, and nudge visitors away from dispersed access points or sensitive areas by verge closure. All the car parking proposals in this report fundamentally align with this overall aim, so prioritising the work for phasing has benefit. However, there are some groupings of formal car park works that may help shape how the work is best planned.

- Grouping 1 : Creating the greatest opportunities for messaging.** The four, principal, formal car parks (Joney’s Cross, Warren, Four Firs and Wheathill) provide a north, central and south start point for visitors. Upgrading these sites will provide a positive improvement for visitors where key messages are about protecting the designated features on the Pebblebed Heaths and directing people away from sensitive features. Embarking on these car parks in the first instance provides some capacity for when other works are under way and car parks are closed for improvement.
- Grouping 2 : Car park extensions to compensate for reductions and closures.** The following locations, Uphams with Model Airfield and Estuary Entrance/View with Woodbury Castle need to be undertaken in tandem. They are in close proximity to one another and the purpose of their redesign is to change the use between the two. In expanding capacity and efficiency at Model Airfield the use of Uphams car park will become limited to permit holders. Likewise, the creation of formal parking at Estuary Entrance/View will be in compensation for the reduction in car park spaces available at Woodbury Castle due to the protection of the scheduled monument. In both cases, work on the new public parking provision at Model Airfield/Estuary Entrance should be undertaken in the first instance to provide a positive destination for people to adopt, before the partial closure/change of use of Uphams/Woodbury Castle/Estuary View. Critically provision for alternative parking at Estuary Entrance would need to be provided before closure of vehicle access to Estuary View, otherwise the public reaction is likely to be negative.

- **Grouping 3 : Smaller isolated car parks** - Stowford Woods, Frying Pans and Squabmoor are smaller in nature and sufficiently isolated that they stand alone. In both instances relatively minor works are required to reduce their use and improve neighbouring conflicts.

Table 22 : Table of potential car park groupings

Group 1 Capital Cost		Group 2 Capital Costs		Group 3 Capital Costs	
Joney's Cross	46651	Model Airfield & Uphams	91981	Stowford Woods	7873
Four Firs	77180	Estuary & Woodbury Castle	72199	Squabmoor	19412
Warren	46033	Total Group 2	164180	Frying Pans	9425
Wheathill	41528			Total Group 3	36710
Total Group 1	211391				

Further planning work during the development phase may identify opportunities for cost savings on various grouping options, such as material reuse, contractor set-up, storage and bulk purchase of materials. With the right contractor cost savings may be identified during tendering, as contractors have the best knowledge of cost saving opportunities.

Inevitably the biggest driver for all projects such as this one is the availability of capital.

The most cost-efficient programme delivery is to undertake all the work in one large package, or programme of work. This would enable a contractor to gain efficiencies of bulk purchase, phasing work the most efficient way to make the most of creating, relocating and re-using materials between sites and mobilising machinery and staff to the same effect. This would give a contractor the option of deploying larger equipment and/or more cost-effective methods of working, e.g. crushing pebble material planed from car park surfaces to create a more tightly binding aggregate when re-laid.

However, the 12 individual car park revamps also lend themselves neatly to being undertaken as individual projects or packaged in a variety of ways to suit budget, avoiding disturbance to habitats and ground nesting birds.

Careful consideration needs to be given in phasing work to ensure some car parking options remain open for visitors to use, whilst other car parks are closed for refurbishment. Programming work to coincide with quiet times of the year (outside school holidays) can minimise visitor disruption but can result in lost time for contractors due to poor weather. Imposing too many restrictions on contractors about working each individual site at a time is likely to result in higher pricing. However, programming needs further development throughout subsequent project work stages.

11.4 Consultation

The Strategy Plans and Concept designs were presented and reviewed by stakeholders at two workshops as detailed below. Those in attendance are listed in the Acknowledgements (Section 2).

Principle Stakeholder Workshop : 7th March 2019 1-5pm. At Clinton Devon Rolle Office.

Officer Working Group Workshop : 23rd April 2019 10am-1pm. At Clinton Devon Rolle Office.

Comments were incorporated into SWOT analysis and the revised Concept Designs.

11.5 Feedback from Consultation

The most contentious proposal identified at the stakeholder consultation was the complete or partial closure of Woodbury Castle, which is a popular location. There are many benefits to this proposal including minimising disturbance on Woodbury Common, protection of SAM, the car park not being big enough to accommodate the demand and the barrier to the common being blocked to emergency vehicles by badly parked cars. A potentially significant drawback is that visitors wishing to access the castle area would have to cross the road from Estuary Entrance.

The recommendation of this report is to have a long-term aim of closing Woodbury Castle car park to protect ground nesting bird territories and the SAM once improvement works have been undertaken at Estuary Entrance, with trails to the viewpoint. Over time the closure of the remaining spaces at Woodbury Castle can occur as habits change.

Further consultation will be required with Devon County Highways to understand how improvements to road safety may be undertaken generally across the commons and specifically in relation to more people potentially crossing the A3180, between Estuary Car Park and Woodbury Castle Car Park.

Stakeholder consultation identified that the proposals for changes to common land must take place under Section 38 of the Commons Act 2006, this is briefly outlined under section 13.2 of this report but is beyond the scope of this commission. Natural England stated that changes to the car park footprint that involved heathland being removed or relocated would require consent.

Stakeholder consultation also identified public engagement as a critical issue, with debate over what form of public consultation was appropriate for a project with specific recommendations delivering against a clearly defined brief to mitigate impacts on the SPA/SAC through the development of a Visitor Access Advisory Report . The general agreement was that extensive public consultation would need to take place on the proposals put forward through the Section 38 of the Commons Act 2006; this is beyond the scope of this commission but is outlined briefly in Section 13.1 of this report.

Planning and consultation will need to be factored into future plans as they are likely to have a bearing on the time scales.

12.0 Discussion points

12.1 External Funding

It has been identified, in consultation with a funding advisor, that there are opportunities for external funding for certain aspects of the proposed work programme: -

- Conserving heritage (including natural heritage), where heritage is at risk or threat. This could provide a significant match-funding opportunity, particularly if, as advised, the whole programme of work is presented to the funding body in the context of the Habitat Regulations mitigation.
- Interpretation across all the sites in relation to natural heritage.
- Alterations to Model Airfield and Woodbury Castle car park (and potentially Estuary Entrance where this is being done to move parking from the SAM) to protect the natural heritage.
- Interpretation and place-making improvements at the foot of the hill fort at Woodbury Castle.
- The all-ability trail for Estuary Entrance to the viewpoint, including any seating, resting point, interpretation, waymarking or shelter at the viewpoint.
- Other all-ability access improvements for disabled ramblers, wheelchair users, including gates, interpretation and signage.
- Volunteering and training opportunities.

A funding advisor would be able to clarify any opportunities currently available and ensure that the requirements of the potential funding body are met during the programme development.

12.2 Potential for Public Access and Recreation off the SPA/SAC

During the development of this report several local woodlands, close to neighbouring towns and villages were identified as potential sites for providing dog walking opportunities for local people; some of these are identified on the Project Area Analysis (Plan 4).

Most notable of these opportunities are the former quarries under restoration at the northern and southern ends of the strategy area (Venn Ottery Hill and Blackhill), as well as some woodlands on the edges of the SPA/SAC which offer potential for future recreation opportunities such as visitor parking and public access in these less-sensitive habitats.

Recommendations for these woodlands did not come under this commission, but their significance for providing alternative access is worthy of note and future consideration for accommodating potential future increases in visitor numbers.

12.2 Car park charging

As stated previously, this report is not recommending the introduction of car parking charges on the Pebblebed Heaths, nor is it currently proposed by the managers of the land, as doing so is likely to receive a negative public response and potential for visitors to disperse across the area to park on verges to avoid payment – the very thing that this report is seeking to reduce.

The following information outlines some alternatives for car park charging as a visitor management tool, as suggested by Footprint Ecology in their report. East Devon Pebblebed Heaths Visitor Management Plan (Liley et al., 2016). There are several car parks charging approaches that might be considered (and discounted) in a

countryside context. The over-arching downside is that the introduction of any charging system in formal car parks is likely to displace motorists into any available gateway or verge and undo the aim of getting people to access the Commons from designated locations where behavioural messages can be conveyed to visitors.

Voluntary donation boxes

Many remote National Trust sites have historically had a box buried in the ground with a coin slot in a stone cairn. These will generate a modest income that may in the long term cover the cost of installation and emptying.

Automatic Number Plate Recognition

No car park on the Heaths is currently of a sufficient size to warrant this approach. The system needs power, a data connection and staffing to over-ride the system. As such, it is not viable.

Cash pay and display machines.

The purchase and installation of pay and display machines can be a costly option (£5-7,000 installation and replacement) for countryside locations where they are prone to acts of vandalism that can result in more damage occurring than the income generated. Some sites install security shuttering to deter vandalism, but these require someone to go around twice a day to open and close.

Machines require emptying by companies such as G4S, who for a fee will empty 3 or 4 times per week with safe cash handling procedures. If they don't collect on time and the machine becomes full it will stop working.

Car parks really need to be of a sufficient size to generate the income to make the investment worthwhile. Comparable countryside recreation sites where the investment in a machine has been made are for car parks of about 60-80 spaces.

For these reasons cash pay & display machines should be discounted as a viable proposition.

Card and Contactless Pay and Display machines

Cashless systems are gradually becoming more common, but these too can be prone to vandalism, breakage, failure or just being ignored by visitors.

As an option card and/or contactless machines can be discounted because they currently require a hard wired electric and data connection to work effectively. Solar/battery can also be limited in application if tree cover obscures solar panels and mobile connections in the area, although present, are not currently reliable.

Pay-by-Phone

The current practice is for car park systems to generally offer more than one option for payment, including 'pay-by-phone'. However, if there is good mobile phone coverage this is a possible standalone consideration for the Heaths. The 'meter' would therefore not need to be anything more than the notice board with a phone number, instructions and pricing structure. It would not require power, or data connection and not be prone to (expensive) damage. This could be presented as a voluntary request with clear messaging as to what the income supports (maintenance of car parking).

A pricing structure in a 60-80 space car park might be in the order of £2 for 2 hours, £3 all day for a car and £4 for a minibus, yielding a potential annual income of £12-15,000 across the site. An administration charge is usually levied along with a small transaction charge for each payment made.

Such a system, based on number plate registration via the pay-by-phone system could potentially be applied across all the car parks of the Pebblebed Heaths and might be considered in conjunction with a Pebblebed

Heath passholder scheme, where an annual charge of about £30 would allow unlimited parking at any car park throughout the year. This would be comparable with other countryside recreation sites.

Pay by phone voluntary contributions are currently under consideration for some other large conservation bodies. How effective this will be is currently under debate.

Enforcement

A third-party enforcement company who have access to the pay-by-phone data can administer tickets.

12.3 Bay Marking

Formally marking car parks in a countryside setting on natural materials is not practical. Paints need to be applied to sealed surfaces like tarmac. Surfaces like compacted stone need to be regularly maintained by grading, which would lift surface paint or embedded sets. Marked spaces with timber post or paint on logs are invariably ignored by motorists who can sometimes take two spaces when an allocated space seems too small.

This report allocates 3.0m wide spaces for unmanaged parking. If tarmac running surfaces are installed within car parks a white line 'tag' at 2.5m on the edge of the bays can improve parking efficiency by 20%. Whilst this additionally would reduce future maintenance in the case of the Pebblebed Heaths this has not been recommended due to the high capital cost of tarmac. During an event at peak visitor time wardens can aid parking early in the day to establish the pattern of parking, which is then repeated throughout the remainder of the day.

12.4 Clearway



The Clearway sign, a red cross on a blue background, denotes no stopping on a road carriageway within a designated zone. Vehicles parked in Clearway restricted areas may be issued with a Penalty Charge Notice by a Civil Enforcement Officer; this applies also to blue badge holders. Whilst road markings are not required, repeater signs should be placed at approximately one-mile intervals. Vehicles may stop in a layby (unless there is a sign), or on a verge if the stopped car is not on the carriageway. In the context of the Pebblebed Heaths this means that a Clearway on its own will not prevent verge, layby or roadside parking unless accompanied by physical measures such as bunds, ditches, dragon's teeth, or other obstacles.

A recent Clearway order on the roads around Haldon Forest Park was granted by the courts to prevent roadside parking, which was happening at busy times due to people wanting to avoid paying the parking charge at Forestry England's forest centre. This was having a knock-on impact for local residents. FE paid a sum of £5000 through a Section 106 payment connected to a planning application for the redevelopment of the forest centre, which in turn funded the process of applying the Clearway. Roadside bunding already provides a physical obstacle to people parking on the verges and existing passing places will have signs installed.

On the Pebblebed Heaths, car parking charges do not apply at any of the formal car parks so the inclination for visitors to seek free roadside alternatives does not exist. Therefore, upgrading formal car parks as proposed will create a positive experience where visitors will feel their car is parked in a safe and well observed spot. This combined with the creation of physical obstacles to prevent roadside/verge parking will likely achieve the desired goal without the need for a Clearway. Passing places should have signs installed to indicate no parking

and could be reduced in size to the minimum requirements. Should these measures be insufficient, and parking becomes a problem that needs to be addressed Clearway Orders may then be an option to consider, by which time it will be apparent where the problem exists and over what area the restriction order needs to be applied.

13 Next steps

13.1 Consultation

Some discussion has occurred during stakeholder workshops about approaches to public consultation. This strategy is presented to the commissioning body as a recommendation. There are very limited areas that might be suited to public selection and those that are should be presented in the context of cost and maintenance implications.

This commission did not include for wider public consultation.

Contact with Devon County Highways would be beneficial to establish what options exist for traffic calming, speed restrictions or road crossings between Estuary Entrance and Woodbury Castle.

Consultation will need to be factored into plans as it is likely to have a bearing on the time scales.

13.2 Planning

Section 38 of the Commons Act 2006 provides that 'restricted works' on registered common land requires the consent of the Secretary of State if they prevent or impede access to the land, or *involve the resurfacing of land with a 'hard' surface (such as concrete or tarmacadam)*.

Consent is not needed for the resurfacing of a common with loose material (e.g. gravel, shingle, crushed stone) so long as it does not impede or prevent public access or does not interfere with rights over the common, e.g. commoners' rights to graze livestock.

However, consent is required for the resurfacing of a common with a hard surface (e.g. concrete, tarmacadam, coated roadstone), or for the creation of new areas of stone parking, as is the proposal for: -

- Joney's Cross
- Uphams
- Model Airfield
- Four Firs
- Estuary Entrance
- Wheathill
- Squabmoor

The Pebblebed Heaths Visitor Access Advisory Report Plans and the individual car park Concept Designs have been developed to a level of detail that is deemed suitable for planning, though there would be some additional work required beyond this report to convert these into an acceptable planning format.

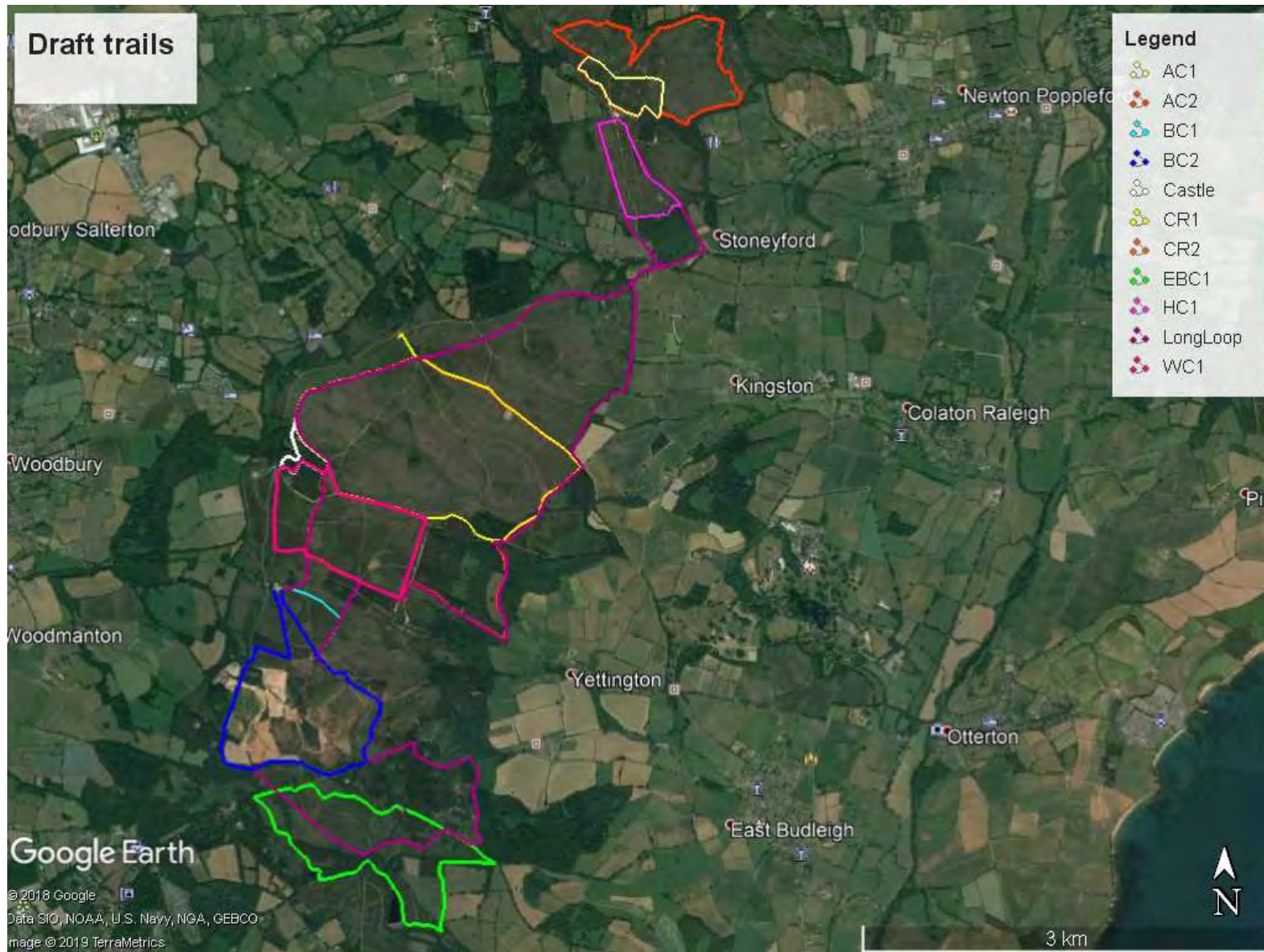
We advise that the services of a Town Planner is sought to fully determine the likely planning requirements and any possible requirements with regards to Habitat Regs Assessments and EIAs. Planning could potentially have a significant bearing on the delivery timescale.

13.3 Design Development

The car park Concept Designs have been developed in a CAD format that makes them suitable for contract documents and tendering, though there is a phase of additional work to develop designs, specifications and bills of quantity to a level of detail suitable for tendering.

Appendices

Appendix 1 : Draft Trails Map



Appendix 2 : Capital Cost Breakdown of Recommended Proposal

CAPITAL COST ESTIMATE From Concept	Unit	Rate	1 Joney's Cross		2 Uphams		3 Model Airfield		4 Four Firs		5a Estuary Entrance		5b Estuary View		6 Castle		7 Warren		9 Frying Pans		10 Wheathill		11 Squabmoor		i21 Stowford Woods		Total	
			£	M	£	M	£	M	£	M	£	M	£	M	£	M	£	M	£	M	£	M	£	M	£	M		£
Removal of	nr	100	0	0	1	100	3	300	3	300	0	0	0	0	0	0	0	0	0	0	0	0	2	200	2	200	1100	
Removal of existing mound or Option 1. Potholes	m2	4	85	340	86	344	653	2612	271	1084	247	988	0	0	0	0	0	0	0	0	0	75	300	263	1052	72	288	7008
Option 2. Existing stone reworked	nr	30											30	900	15	450												1350
Option 4. Additional stone	m2	3.5	1590	5565	789	2762	0	0	0	0	250	875	200	700	0	0	900	3150	230	805	817	2860	0	0	21	73.5	16790	
New stone surface. Currently	m2	8	0	0	0	0	724	5792	1725	13800	275	2200	0	0	0	0	0	0	115	920	450	3600	0	0	0	0	26312	
Filter Drain	m2	35	51	1785	53	1855	653	22855	271	9485	280	9800	0	0	0	0	90	3150	0	0	85	2975	265	9275	72	2520	63700	
French Drain	lm	25	60	1500	50	1250	70	1750	100	2500	40	1000	60	1500	0	0	66	1650	55	1375	100	2500	15	375	0	0	15400	
New bund in car	lm	65	30	1950	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1950	
Timber rail along	m2	15	308	4620	0	0	320	4800	350	5250	140	2100	33	495	57	855	60	900	0	0	187	2805	102	1530	50	750	24105	
New tarmac	m2	35	78	2730			42	1470	120	4200			10	350			0	0			63	2205			0	0	10955	
Concrete kerb to tarmac entrance	m2	70	72	5040	101	7070	66	4620	160	11200	93	6510	0	0	87	6090	185	12950	0	0	89	6230	0	0	0	0	59710	
Edging to tarmac	lm	35	0	0	0	0	0	0	0	0	30	1050	0	0	30	1050	30	1050	0	0	0	0	0	0	0	0	3150	
New site sign (CP)	lm	25	51	1275	59	1475	50	1250	88	2200	31	775	0	0	34	850	81	2025	0	0	54	1350	0	0	0	0	11200	
New Primary Interpretation	nr	300	1	300	1	300	1	300	1	300	2	600	0	0	1	300	1	300	0	0	1	300	0	0	0	0	2700	
New Secondary Interpretation	nr	2700	1	2700	0	0	1	2700	1	2700	1	2700	1	2700	1	2700	1	2700	1	2700	1	2700	1	2700	0	0	0	24300
Blue badge holder	nr	2000	1	2000	1	2000	0	0	0	0	0	0	1	2000	0	0	1	2000	0	0	1	2000	1	2000	1	2000	14000	
Dog bins new (FE)	nr	100	2	200	0	0	2	200	3	300	2	200	2	200	2	200	2	200	0	0	2	200	0	0	0	0	1700	
Bench for view	nr	500	1	500	0	0	1	500	1	500	0	0	0	0	0	0	1	500	0	0	1	500	1	500	0	0	3000	
Dog bins relocation	nr	500											3	1500														
Height restriction	nr	100	1	100	1	100	1	100	1	100	1	100	1	100	2	200	1	100	1	100	1	100	0	0	1	100	1200	
Lockable security	nr	2500	1	2500	0	0	1	2500	1	2500	1	2500	0	0	0	0	1	2500	0	0	0	0	0	0	0	0	12500	
Internal pole	nr	1250	1	1250	1	1250	0	0	1	1250	1	1250	0	0	1	1250	1	1250	1	1250	0	0	0	0	0	0	8750	
Access gate (1.5m)	nr	300	1	300	1	300	0	0	1	300	0	0	0	0	1	300	0	0	0	0	2	600	0	0	0	0	1800	
Post to keep verges	nr	500	1	500	0	0	0	0	3	1500	0	0	0	0				500	0	0	0	0					2500	
Contractor	nr	100			0	0	2	200	2	200	2	200	2	200	2	200	2	200	1	100	0	0	0				900	
Contingency	lm	5	146	730													77	385	20	100	144	720	0		25	125	2060	
Total				35885		18806		51949		59369		32848		10645		14245		35410		7250		31945		14932		6057	319340	
Contractor	%	10		3589		1881		5195		5937		3285		1065		1425		3541		725		3194		1493		606	31934	
Consultant fees (design dev. planning support, Contingency)	%	10		3589		1881		5195		5937		3285		1065		1425		3541		725		3194		1493		606	31934	
Capital Cost Total				46651		24447		67534		77180		42702		13839		18519		46033		9425		41528		19412		7873	415141	

Appendix 3 : Annualised Maintenance Cost Breakdown of Recommended Proposal

MAINTENANCE COST ESTIMATE From Concept Plans	Unit	Rate	Life span	Annualised Cost	1 Joney's Cross		2 Uphams		3 Model Airfield		4 Four Firs		5a Estuary Entrance		5b Estuary View		6 Castle		7 Warren		9 Frying Pans		10 Wheathill		11 Squabmoor		i21 Stowford Woods		Total
					M	£	M	£	M	£	M	£	M	£	M	£	M	£	M	£	M	£	M	£	M	£	M	£	
Stone regrade/roll every 2yrs	m2	0.5	2	0.25	1590	398	741	185	1311	328	1836	459	682	171	1900	475	330	83	805	201	785	196	1263	316	265	66	100	50	2927
Tarmac (resurface)	m2	25	15	1.67	72	120	101	168	66	110	160	267	93	155	0	0	90	150	81	135	0	0	89	148	0	0	0	0	1253
Drain (replace every 5yrs)	lm	25	5	5	90	450	50	250	70	350	100	500	40	200	60	300	0	0	66	330	55	275	100	500	15	75	0	0	3230
Bund (reform every 2yrs)	m2	5	2	2.5	308	770	0	0	320	800	350	875	140	350	33	83	57	143	60	150	0	0	187	468	102	255	50	125	4018
Bench for view	nr	500	30	17									3	50															50
Site sign (replace every 20yrs)	nr	300	20	15	1	15	1	15	1	15	1	15	2	30	0	0	1	15	1	15	0	0	1	15	0	0	0	0	135
Interp. sign (replace 20yrs)	nr	2000	20	100	2	200	1	100	1	100	1	100	1	100	2	200	1	100	2	200	1	100	2	200	1	100	1	100	1600
Dog bin (replace every 20yrs)	nr	500	20	25	2	50	1	25	2	50	1	25	1	25	4	100	2	50	2	50	1	25	2	50	1	25	1	25	500
Barrier (repair every 5yrs)	nr	500	5	100	2	200	1	100	1	100	2	200	2	200	0	0	1	100	2	200	1	100	0	0	0	0	0	0	1200
Posts (replace every 20 yrs)	nr	100	20	5	2	10	0	0	4	20	5	25	4	20	4	20	2	10	3	15	0	0	2	10	0	0	0	0	130
Roadside bunds (reform 2yrs)	lm	2	2	1	146	146		1		1		1		1		1		1	77	77	20	20	144	144		1	25	25	419
Vegetation management	n1	100	1	100	1	100	1	100	1	100	1	100	1	100	1	100	1	100	1	100	1	100	1	100	1	100	1	100	1200
Maintenance Cost Sub-Total						2459		945		1974		2567		1402		1279		751		1473		816		1951		622		425	16662
Management	%	10				246		94		197		257		140		128		75		147		82		195		62		43	1666
Contingency	%	10				246		94		197		257		140		128		75		147		82		195		62		43	1666
Management Cost Total						2950		1134		2369		3080		1682		1534		901		1768		980		2341		747		510	19994