

BARRY WATERFRONT CONSORTIUM

THE QUAYS, BARRY

REPTILE MITIGATION STRATEGY

10 July 2015



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1.0 INTRODUCTION

- 1.1 Soltys Brewster Ecology were commissioned by the Barry Waterfront Consortium to devise a reptile mitigation strategy (method statement) for South Quay Parkside and South Quay at The Quays site (see location plan in Appendix I). Construction works are currently underway on West Pond and no reptiles were found in this area during surveys undertaken prior to commencement of works. Reptiles were however recorded in areas of South Quay during survey work undertaken to inform the Outline planning application and as such a reptile translocation is required to be undertaken before works commence in South Quay Parkside and South Quay. Remediation works (involving importing material to raise existing ground levels and provide a clean capping layer for construction) in Parkside and the western area of South Quay are scheduled to begin from September 2015, with works in the remainder of the South Quay area (in the east) to commence following completion of the reptile translocation (likely spring 2016).
- 1.2 Reptile surveys were first undertaken across The Quays site between April and June 2008 (SBE, 2009) and identified a resident population of Slow Worm *Anguis fragilis* within the South Quay area of the site. Slow Worms were recorded at the eastern end of South Quay, along the base of the cliff and within the grounds of the former NERC building. To update the 2008 surveys, reptile surveys were undertaken between May and July 2015. In 2015, reptiles were recorded in the same locations as 2008, although were found to have spread slightly further west along the cliff base. However reptile numbers were significantly higher, with a peak count of 110 Slow Worms recorded (see survey results in Appendix II).
- 1.3 South Quay and South Quay Parkside currently comprises a mosaic of habitats including semi-improved grassland and scrub with areas of bare ground also present. A number of large spoil heaps are also present on South Quay and this area has been used for storage of spoil during the development on West Pond.
- 1.4 The development benefits from outline planning consent, with outline planning condition 29 stating:
No development shall commence until a detailed mitigation statement and translocation methodology for protected species of reptiles (including assessment of any proposed receptor site and measures to increase carrying capacity) shall be submitted to and approved in writing with the Local Planning Authority and the development shall be implemented thereafter in accordance with the approved scheme, unless any variations are agreed in writing with the Local Planning Authority.
- 1.5 All common species of reptile are protected against killing or injury under Schedule 5 (Sections 9(1) and 9(5)) of the Wildlife and Countryside Act 1981 (as amended). In terms of site development this effectively

translates into a requirement to transfer or exclude reptiles from areas where they could be killed or injured. Based on the extensive nature of the proposed development and the requirement to remediate all areas before commencement of construction retention of the Slow Worms on site was not considered feasible. As such it was agreed with the local authority that Cosmeston Lakes Country Park (approximately 5km to the east of The Quays site) could be used as a receptor site for Slow Worms which require translocation as part of the proposed works.

- 1.6 The current document sets out the strategy to minimise the risk of killing or injuring Slow Worms including appropriate vegetation clearance from the development (or donor site), enhancement works to the receptor sites and translocation of reptiles from within the donor site to the receptor sites.

2.0 METHODOLOGY

Overview

- 2.1. The details of the mitigation strategy are set out in this document and form the basis of a Method Statement for the sensitive clearance of vegetation and the provision of enhancements at the receptor site by a suitably experienced contractor (e.g. log-piles & hibernacula). Based on the layout and scale of the proposed development and the requirement to remediate all areas of The Quays site, translocation of reptiles to an alternative receptor site outside the development boundary is considered the only feasible option to protect reptiles from killing or injury as far as practicable. Cosmeston Lakes Country Park was identified as an appropriate receptor site for reptiles (Figure 1). Cosmeston Lakes Country Park supports a variety of habitats including extensive areas of grassland and scrub mosaic which are considered suitable habitat for the translocated population. Enhancement measures such as creation of log-pile habitat and hibernacula will be undertaken at the receptor site to improve the available habitat and to support an increase in ‘carrying capacity’, although the current habitats and management regime are considered appropriate for the reptile population (Figure 1 & Appendix III).
- 2.2. A successful translocation will require the following elements:
- Removal of above-ground vegetation to ground level within the works footprint using hand-held trimmers or chain saws, with all arisings removed in July/August 2015. Clearance of scrub and woody vegetation will be preceded by a check for the presence of nesting birds;
 - Habitat enhancement at the receptor site to include creation of log-pile habitat and hibernacula (using felled material from donor site if available) in July/August (for locations see Figure 1);

- Installation of temporary exclusion fencing as illustrated in Figure 2. Fencing specification will make use of the simple post/PVC membrane design (Appendix IV) and will be installed following vegetation clearance (i.e. from July/ August 2015);
- Deployment of artificial refugia (e.g. 0.5 x 0.5 squares of roofing felt) within donor site at high density from July/ August 2015;
- Checking of refuges within donor site and transfer of animals to receptor site under suitable environmental conditions;
- Translocation to continue until such time as 10 nil returns have been achieved at the donor site or 'reasonable capture effort' is agreed with the local authority. The end of the translocation period would mark the start of site construction works (i.e. commencement of remediation)
- The external exclusion fence will remain in place, regularly checked for damage and maintained as required until works are completed;

Slow Worm population

- 2.3. The reptile survey work undertaken at The Quays site in 2015 was intended to establish the location/ extent of the of reptile population within the development footprint and, rather than establish the size of the population. However, interpretation of the reptile survey results based on the highest number on sightings on a single visit (110 animals on 19 June 2015) indicated the site is likely to support an 'exceptional' sized population¹.
- 2.4. Approximately 75% of the Slow Worms recorded during the 2015 surveys were found in the area around the location of the former NERC building at the eastern end of South Quay (peak count of 81 individuals in this area). As such the majority of animals are considered likely to be present in this location, with a smaller population present along the cliff base and in the area of remaining vegetation at South Quay Parkside. A peak count of 2 individuals were found in the Parkside area and given the relatively sparse vegetation this area is considered likely to only support a small population. A moderate sized population is considered likely to be present along the cliff base, with the majority of animals recorded towards the eastern end of the cliff base.
- 2.5. Given the differences in the number of reptiles recorded in each area, the site is to be compartmentalised by reptile exclusion fencing as described below and illustrated in Figure 2. Translocation in areas with a smaller population is likely to be completed more quickly than in areas with a larger population. As such some

¹ Froglife 1999 Guidelines indicate that a count greater than 20 animals on a single survey visit equates to an exceptional population.

compartments could be declared free of reptiles which would allow remediation works to commence (from the west, moving eastwards) while the translocation continues in other compartments.

Habitat management – Removal of vegetation

- 2.6. In the interests of optimising reptile capture the woody scrub vegetation would be cut to ground level and remaining grass/non-woody vegetation strimmed to a height of 50mm from July/ August 2015. Some of the felled woody material would be utilized to create the log-pile and hibernacula as indicated on Figure 1. Dependent upon vegetation re-growth, capture rates and the length of the translocation exercise some vegetation maintenance/management may be required during the translocation process. The requirement (or otherwise) for maintenance cutting would be determined by the project ecologist.
- 2.7. The clearance of any woody vegetation will be proceeded by a thorough check for the presence of nesting birds undertaken by a suitably qualified ecologist. Should any active nests be found to be present, clearance of vegetation in the area surrounding the nest will not be undertaken until all the chicks had fledged and the nest becomes inactive.
- 2.8. All vegetation arisings will be immediately removed (within 24 to 48h of cutting) and composted/disposed of off-site or temporarily stored in areas which could not be accessed by reptiles e.g. on large areas of hard standing. Some of the felled woody material will be utilised to create the log-pile and hibernacula at the Receptor site as indicated on Figure 1 and Appendix III.

Exclusion fencing

- 2.9. In order to minimise the risk of movement of reptiles into the development footprint and to effectively ‘fix’ the number of animals to be translocated, temporary exclusion fencing will be installed from July/ August 2015 as illustrated on Figure 2 and Appendix IV. The site will be compartmentalised using existing barriers (e.g. hard standing) as well as exclusion fencing to create a minimum of three compartments (Figure 2). No fencing will be required along the northern boundary of South Quay as this is currently defined by a wide strip of hard standing and the dock wall – i.e. there is no risk of immigration of reptiles into the site from these areas. Similarly the southern boundary is defined by the cliff face and other boundaries at least partially by areas of hard standing. The area of Parkside where reptiles have been recorded is to have a return of fencing along the cliff base as the cliff is shallower in this location and it is considered possible reptiles could access the site from the cliff top. The base of the cliff at the eastern end of South Quay is also to be fenced to prevent reptiles re-colonising the site from the cliff top via the shallower cliff in this location.

- 2.10. Once installed, the fencing will be checked regularly (daily) and any damaged sections immediately replaced or repaired (within 24 - 48h). The relatively simple fence design (Appendix IV) will ensure maintenance and repair is straightforward and achievable in a short timeframe. The maintenance of the exclusion fence is to be the responsibility of the site manager.

Use of refugia & translocation

- 2.11. To facilitate the capture of reptiles from the site, artificial refuges in the form of 0.5 x 0.5 m cut squares of roofing felt will be deployed at high density in July/August 2015 following completion of vegetation clearance and installation of the exclusion fencing.
- 2.12. Following a 'settling-in' period of 5 – 7 days, refuges will be checked by an experienced ecologist - checks will be undertaken up to twice a day under suitable environmental conditions as defined by FrogLife (1999) i.e. little or no rain/wind, temperature between 9 and 18°C. Checks will commence, dependent upon the weather conditions and installation of exclusion fencing, from July/ August and all Slow Worms found would be carefully captured by hand. The reptiles will be transported to the receptor site in appropriate containers lined with vegetation, taking care to ensure they are not subjected to undue stress or allowed to over-heat. The reptiles will be released at the receptor site, in areas where cover from predators is already available. All animals will be released as soon as possible following capture unless environmental conditions were such that the animals had to be held temporarily (e.g. overnight) until release conditions were more suitable. Animals will be released at Receptor site number 1 in the first instance up to a threshold of 200 individuals. Additional captures will be released at the secondary receptor site up to a threshold of 300 individuals, with a third receptor site sought at Cosmeston Lakes if required.
- 2.13. The translocation will be actively managed by the project ecologist, who will monitor the catch results and weather conditions to ensure the number, frequency and timing of visits undertaken is such so as to achieve the maximum catch rate possible. Details of each Slow Worm captured (age class, sex, location etc.) will be recorded throughout the process.
- 2.14. Capture and exclusion of reptiles on the site will continue until a 'reasonable capture effort' (as determined by the project ecologist in consultation with the local authority) had been expended. Typically, a series of 10 'nil returns' – i.e. 10 visits to site with no reptiles found – is taken as a reasonable demonstration that reptiles have been successfully translocated. Capture rates within individual fencing compartments would be separately recorded which could permit a phased commencement of remediation works within individual or groups of fencing compartments. For example, the western part of the site supports comparatively less reptile habitat with fewer reptiles recorded during surveys than the area at the eastern end of South Quay, and 10 nil returns in the western compartments may be achieved whilst reptiles are still being encountered

elsewhere. Given the particularly high numbers of reptiles recorded at the eastern end of the South Quay it is considered possible the translocation may need to continue into spring 2016. If required, and once reptile numbers begin to decline in the autumn at the start of the hibernation period (likely from October 2015) the translocation exercise would be paused and not recommence until spring 2016 when reptiles begin to come out of hibernation (i.e. from late March/ April, weather dependent). The translocation would then continue in spring 2016 until 10 nil return visits were achieved as described above.

3.0 RECEPTOR SITE

- 3.1. Two areas of Cosmeston Lakes Country Park have been identified as a suitable receptor site for translocated Slow Worms. These areas include a mosaic of grassland with Hawthorn *Crataegus monogyna* and Bramble *Rubus fruticosus* agg. scrub (Plate 1-3). The grassland is currently managed via infrequent cutting resulting in a tussocky sward and includes species such as Yorkshire Fog *Holcus lanatus*, Common Bent *Agrostis capillaris*, Cocks Foot *Dactylis glomerata* and False Oat-grass *Arrhenatherum elatius* with herbs including Meadow Buttercup *Ranunculus acris*, Common Fleabane *Pulicaria dysenterica*, Agrimony *Agrimonia eupatoria*, Meadow Sweet *Filipendula ulmaria*, Common Birds-foot Trefoil *Lotus corniculatus*, Ox-eye Daisy *Leucanthemum vulgare*, Red Clover *Trifolium pratense*, Common Knapweed *Centaurea nigra*, Selfheal *Prunella vulgaris* and Ribwort Plantain *Plantago lanceolata*.
- 3.2. Reptile surveys have been undertaken at the Park in the past which revealed the presence of a small population of Slow Worms². No other species of reptile have been recorded.
- 3.3. The grassland/ scrub mosaic at the receptor sites and current management regime were considered appropriate to support Slow Worm with good connectivity into the surrounding landscape to allow Slow Worms to naturally disperse. Localised enhancements will be undertaken at the release sites to provide additional habitat opportunities for Slow Worms and cover following release. These include creation of 2no. hibernacula and 4 no. log piles (Figure 1 and Appendix IV).
- 3.4. As detailed above animals will be released at receptor site 1 in the first instance, a threshold of up to 200 individuals translocated to this area. Additional captures will be released at receptor site 2, up to a threshold of 300 individuals for this area. Should over 500 reptiles be captured at the donor site an additional location within Cosmeston Lakes County Park will be sort as a third receptor site. Large areas of habitat within the Country Park are considered suitable to support reptiles, such as the scrub edge within the West Paddock.

² Steve Pickering (Senior Country Park Ranger, Vale of Glamorgan Council)

Plate 1. Receptor Site 1 - Grassland and scrub edge habitat within the ‘Sculpture Trial’ area



Plate 2. Receptor Site 1 - Longer grassland and ruderal habitats in the sculpture trail area



Plate 3. Receptor Site 2 – Grassland/ scrub interface along western bank



4.0 POST-TRANSLOCATION REPORTING AND UPDATE SURVEYS

- 4.1. Following the completion of translocation, a report would be issued documenting the translocation process, the number and species of reptiles transferred. No specific reptile monitoring of the receptor site is proposed as any reptiles transferred would be able to move of their own accord into surrounding habitats and would be able to access a comparable range of habitats/resources as per the donor site. However should the translocation continue into 2016, presence absence surveys for reptiles would be undertaken in the receptor site via the deployment and subsequent checking of artificial refugia (0.5m x 0.5m roofing felt squares).

5.0 TIMETABLE OF PRE-CONSTRUCTION ACTIVITY

5.1. The remediation works in Parkside and the western end of South Quay are targeted to commence from September 2015. A summary timetable of activities is provided in Table 1.

Table 1. Proposed timetable of works

Date	Activity
From July/ August 2015	Scrub/Woody vegetation cut to ground level and removed from site. Vegetation cut to ground level only (no grubbing up of roots). Felled material retained to create log pile and hibernacula at receptor site. Vegetation will be checked for presence of nesting birds prior to felling.
	Remaining tall herb and grassland vegetation within boundary cut/strimmed to height of approximately 50 - 100mm. All arisings to be removed within 24-48h.
	Log pile habitat and hibernacula created within receptor site (using felled material from site if suitable resources exist).
	Following vegetation clearance, reptile exclusion fencing to be installed (refer to Figure 2 & Appendix IV)
July/August 2015, following completion of above	Reptile refugia deployed at high density and allowed to 'settle in' for a period of 5 – 7 days. Start of refuge checks dependent on weather conditions. Reptiles captured and transferred from within development footprint to receptor site. Reptile captures from individual fence compartments recorded separately. Translocation to continue until a minimum of 10 checks have been undertaken or a 'reasonable capture effort' has been agreed with the local authority.
From August/ September 2015	Following 10 nil returns compartments declared free of reptiles. Remediation works to commence in cleared compartments.
	Translocation to continue in any compartments where reptiles are still being encountered. Pause in translocation (if required) over winter hibernation period.
	Exclusion fence to remain in place and repaired as required.
From late March/ April 2016 (if required)	Translocation to continue until 10 nil returns in any compartments not cleared in 2015. Presence/ absence surveys undertaken at receptor site. Exclusion fence to remain in place and repaired as required.

Key:

- ⊠ Indicative hibernacula location
- Indicative log-pile location

Receptor Site 2 - Western Bank

Receptor Site 1 - Sculpture Trail Area



client/project
Barry Waterfront Consortium
 The Quays, Barry

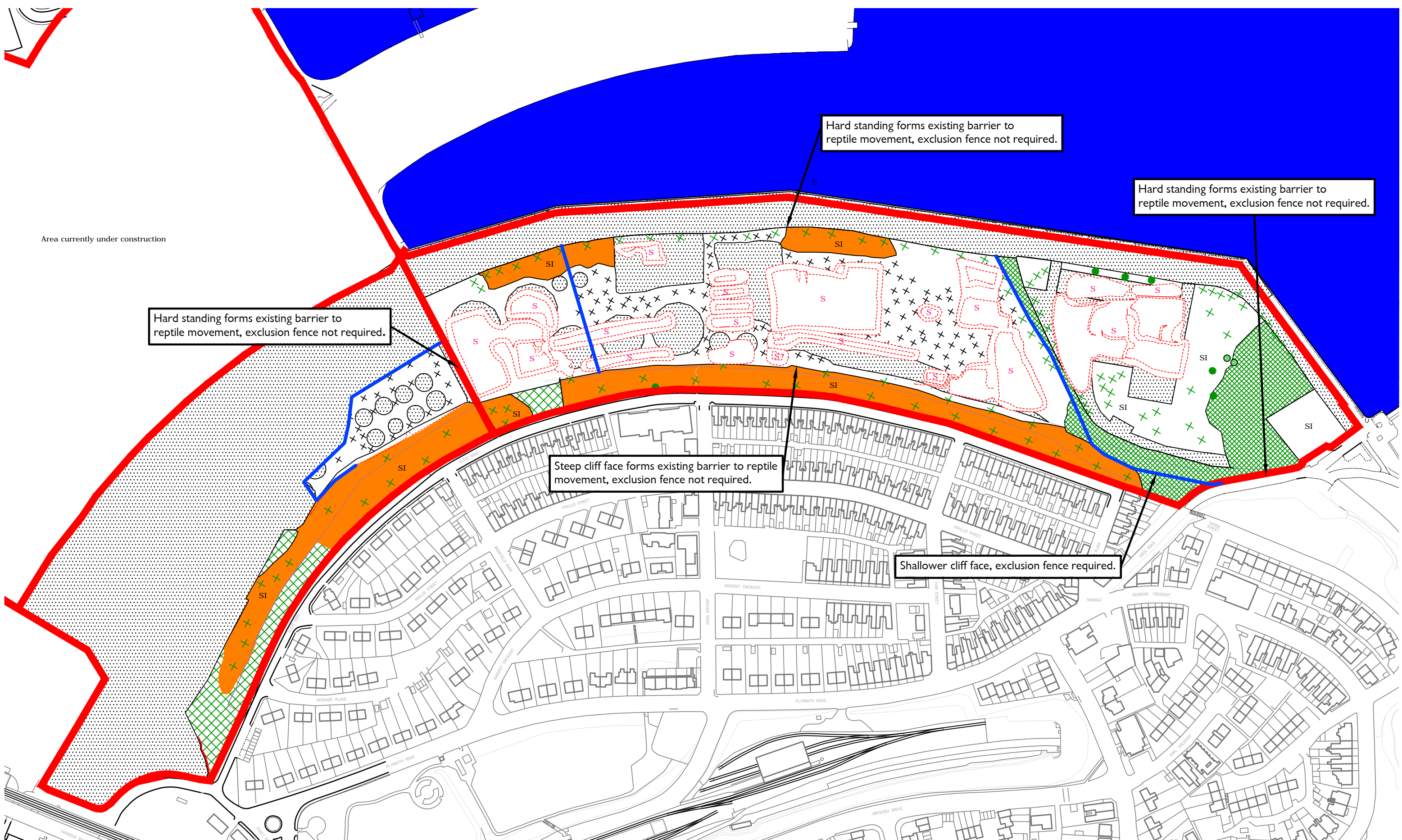
drawing
 Figure 1.
 Cosmeston Lakes Country Park -
 Receptor Site

drawing no. E0811602	revision *	scale NTS@A4	drawn AP	date July 2015
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Area currently under construction

Hard standing forms existing barrier to reptile movement, exclusion fence not required.


Hard standing forms existing barrier to reptile movement, exclusion fence not required.

Hard standing forms existing barrier to reptile movement, exclusion fence not required.

Steep cliff face forms existing barrier to reptile movement, exclusion fence not required.

Shallower cliff face, exclusion fence required.

Key

 Reptile exclusion fencing to be used to compartmentalise site

o client/project	Barry Waterfront Consortium The Quays, Barry		o drawing	Figure 1. Exclusion Fencing Location Plan	
o drawing no.	o revision	o scale	o drawn	o date	
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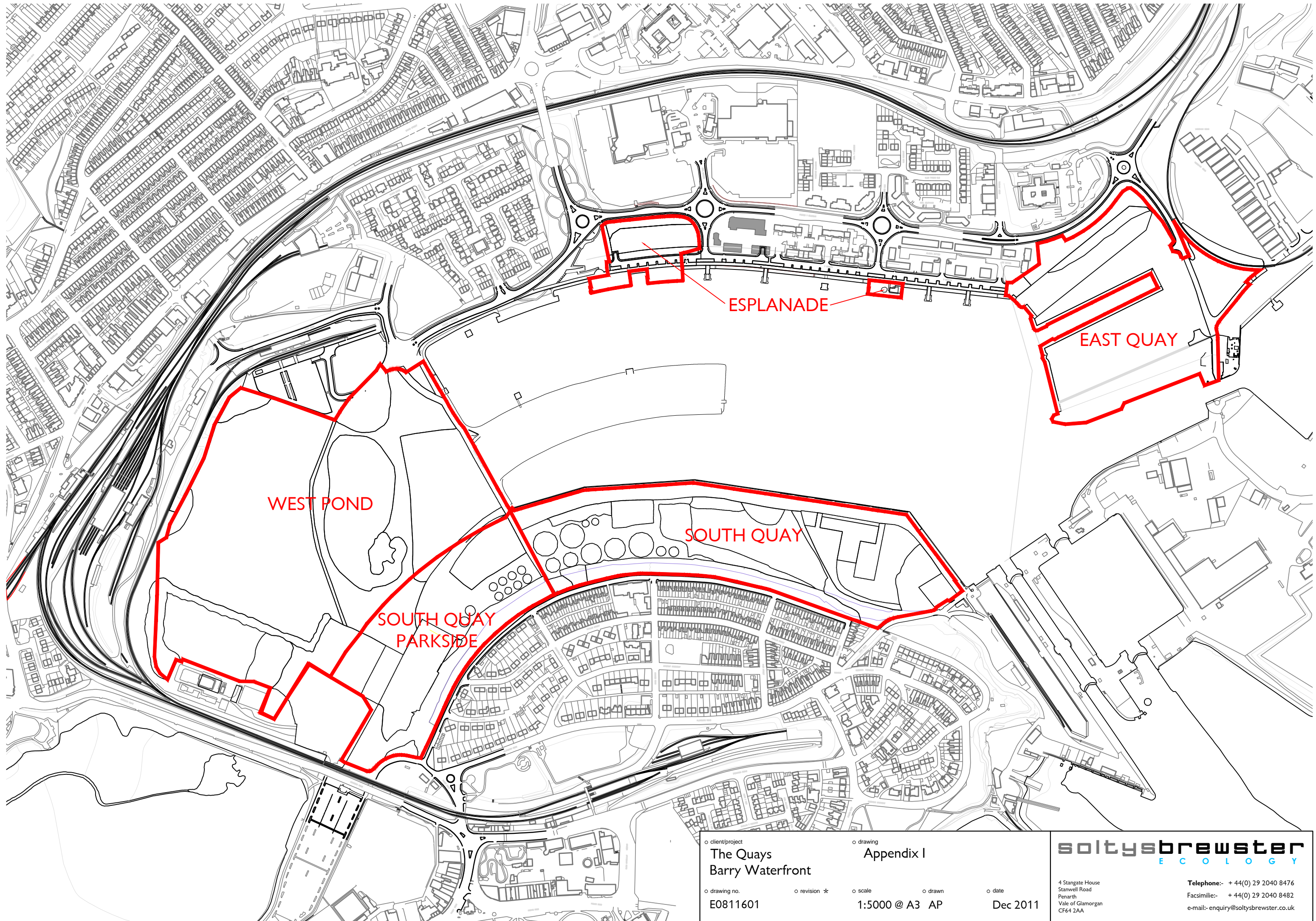
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APPENDIX I SITE LOCATION PLAN



o client/project	o drawing
The Quays	Appendix I
Barry Waterfront	
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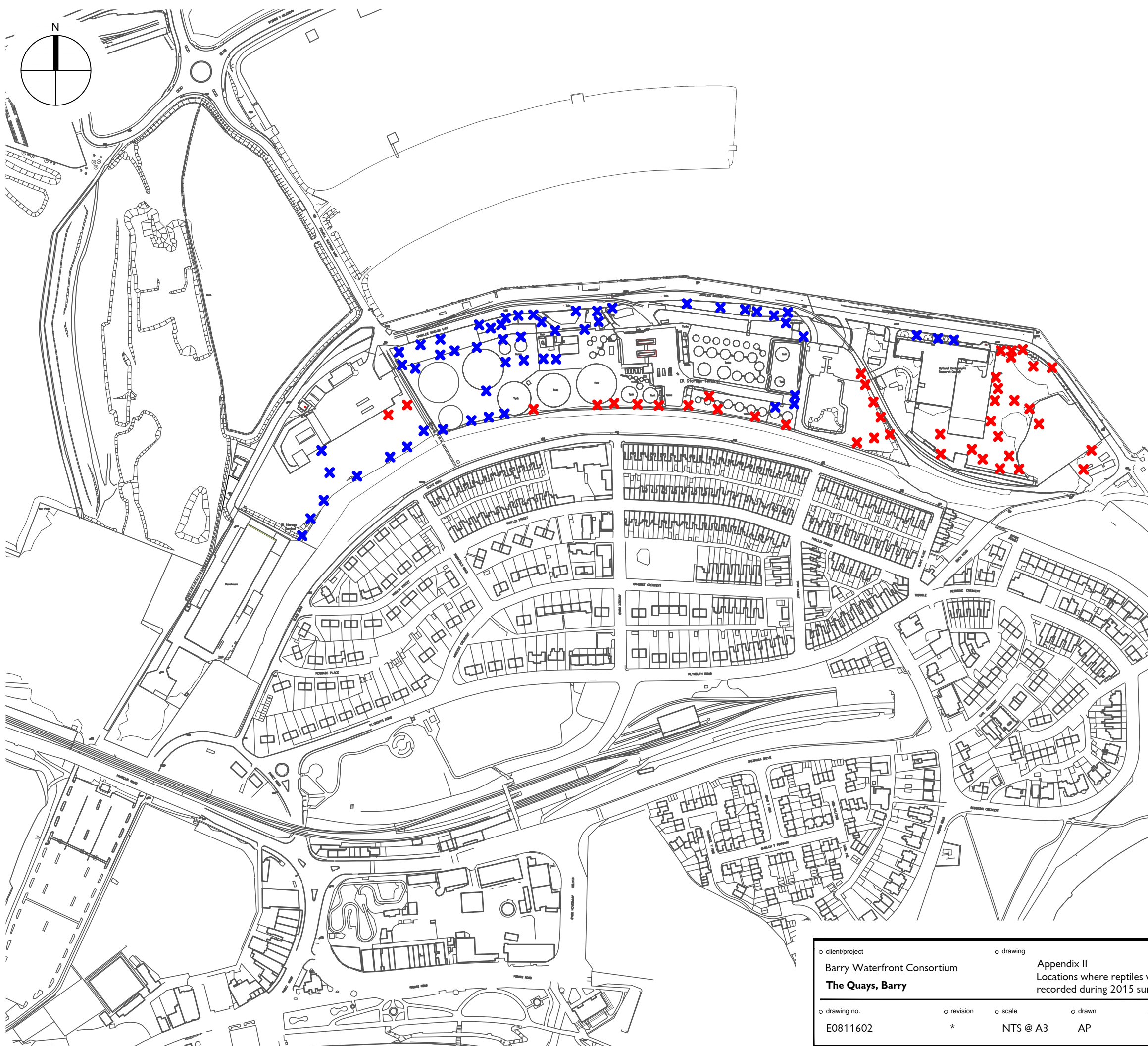
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APPENDIX II 2008 AND 2015 REPTILE SURVEY RESULTS
2008 SURVEY RESULTS

Visit	Date	Time	Temp	Weather	Slow Worm			Total
					Female	Male	Juv	
1	28/04/2008	11:42 AM	22.0	Warm/cloudy	11	10	0	21
2	01/05/2008	10:00 AM	21.0	clear/breezy	10	10	4	24
3	08/05/2008	10:00 AM	24.0	clear/breezy	4	6	1	11
4	20/05/2008	8:45 AM	20.0	Clear/breezy	10	9	4	23
5	12/06/2008	10.00 AM	20.0	Clear/warm	3	5	3	11
6	19/06/2008	10.00AM	17.0	Clear/ Breezy	7	8	6	21
7	26/06/2008	9.00 AM	20.0	Clear/ breezy	9	5	3	17
TOTAL	-	-		-	54	53	21	128

2015 SURVEY RESULTS

Visit	Date	Time	Temp (oC)	Weather	Slow Worm			Total
					Female	Male	Juv	
	29/04/2015	14:00	Refugia deployed					
1	13/05/2015	09:00	11	Overcast	7	9	5	21
2	18/05/2015	14:00	13.0	Sunny spells, rain in morning before survey	23	21	21	65
3	03/06/2015	14:30	16.0	Sunny	20	6	15	41
4	08/06/2015	09:00	14.0	Overcast, sunny spells	19	14	13	46
5	11/06/2015	09:00	14.0	Sunny	32	7	15	54
6	19/06/2015	09:00	14.0	Sunny	44	16	50	110
7	03/07/2015	09:00	16.0	Sunny	52	18	25	95
TOTAL	-	-	-	-	198	91	146	435



- Key**
- ✗ Refugia location - reptiles recorded
 - ✕ Refugia location - reptiles not recorded

o client/project	Barry Waterfront Consortium		o drawing	Appendix II	
	The Quays, Barry			Locations where reptiles were recorded during 2015 surveys	
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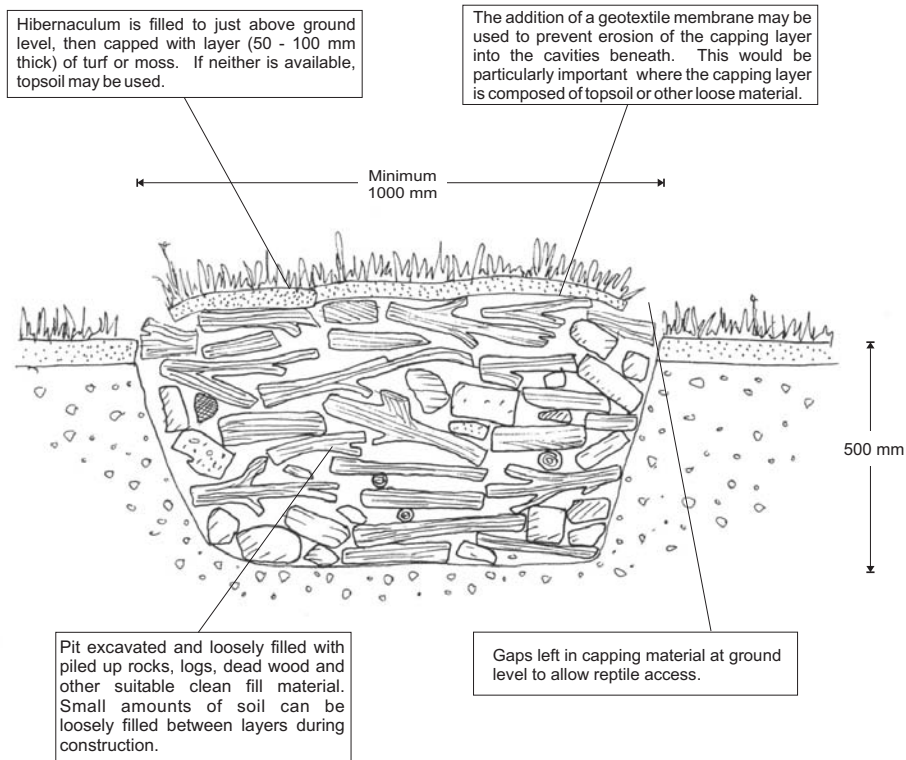
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APPENDIX III HIBERNACULA DESIGN

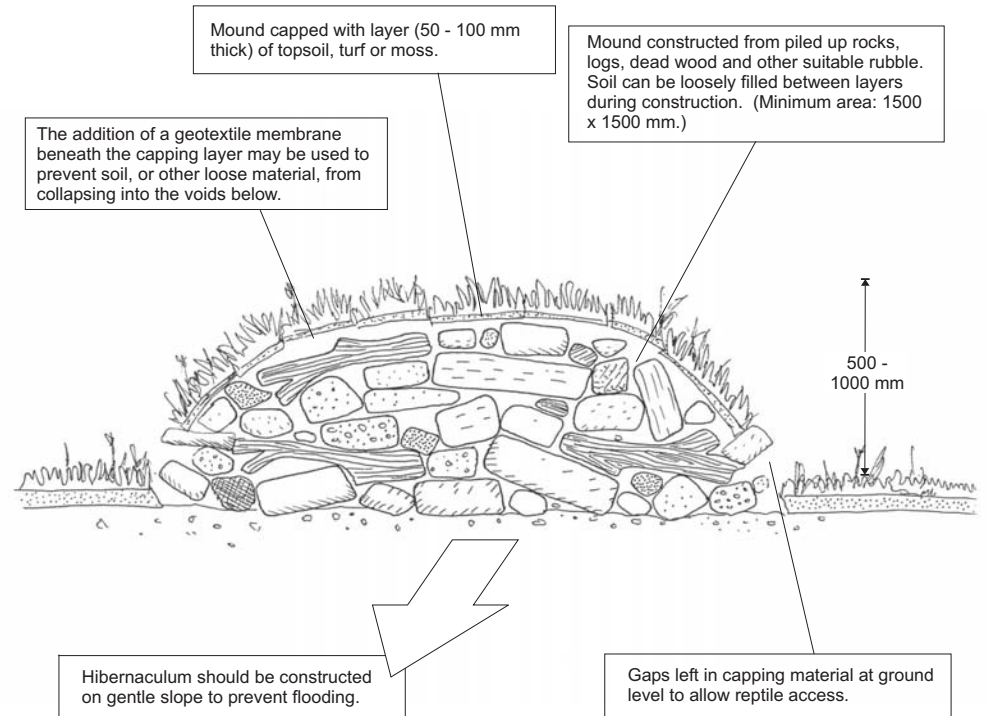
Hibernaculum on free-draining ground

Where ground conditions allow, the hibernaculum should be incorporated into a shallow pit. This design is more likely to remain frost-free, and will be less obtrusive and thus unlikely to be subject to interference.



Hibernaculum on impermeable ground

Where ground conditions are impermeable, then an 'above-ground' or mounded design should be utilised in order to prevent the hibernaculum from flooding. This design should also be used if it is not possible to excavate a pit for any other reason.



APPENDIX IV EXAMPLE SPECIFICATION FOR TEMPORARY EXCLUSION FENCING

Temporary Reptile Fence

This is a standard temporary fence design which can be utilised in situations where it is necessary to create a reptile-proof barrier for periods usually not exceeding a single season. Although this design will effectively prevent the passage of reptiles in either direction, the 'returns' on the fence should face outwards, i.e. facing the direction from which the majority of any reptiles are expected to approach. It can be constructed from relatively inexpensive materials, but is easily damaged or vandalised, and will degrade over time. Fences of this type are less appropriate in windy situations where damage will be more frequent. Also if placed close to areas where plant operate regularly and/or earthworks are taking place, a membrane fence of this kind is usually best protected by a more robust fence, for example a wooden paling fence.

Care needs to be taken when undertaking the necessary maintenance works to ensure that vegetation does not grow over the fence. If undertaken mechanically, this can easily damage the membrane.

The use of a nail gun is recommended to attach the battens securely to the posts. Not only is this advantageous for speed, but prevents any loosening of the posts which can be associated with the repeated impacts of a hammer.

Some practitioners prefer the use of flexible plastic washers to hold the membrane in place, as an alternative to softwood battens. (An example of this is shown inset.) The result is similar in strength and durability to that of the previous design, but precludes the use of a nail gun, as the washers require a large headed nail and cannot withstand the force produced by the gun.

