



G.5 Reptiles

Damhead Creek Phase II Proposed Development **Reptile Survey Results**

Survey Dates: June to October 2006 (see Table 1).

Surveyors: Chloe Pritchard, Paul Fisher, Miranda Cowan and Ceri Griffiths.

Survey Area

The areas included in the survey comprise the Wetland Creation Zone (which forms part of the existing mitigation land), Grassland Area 1 (south west of the Wetland Creation Zone), Grassland Area 2 (adjacent to the existing power station) and Grassland Area 3 (a narrow strip to the south of the existing power station).

The purpose of the survey in respect of the proposed development is to:

- Determine whether reptile species are present;
- Assess the size and importance of the population(s); and
- Inform our understanding of the overall ecological importance and function of the habitats within the development site, in order to develop appropriate mitigation strategies.

Survey Methodology

A total of 249 numbered refugia, (201 pieces of 50cm x 50cm roofing felt and 50 sheets of 0.5m x 1.5m corrugated iron) were placed across the sites in suitable basking areas. The number and density of refugia placed in each section varied according to the habitat quality. These refugia were checked on each survey visit and any reptile species (or other animals) observed were recorded.

Survey timing and weather - generally applicable to all reptiles

The following guidelines were considered when carrying out the reptile surveys:

April, May and September (and early October in the south) are the three key months for reptile surveying. April and May is the reptile mating season, when animals are more obvious and less wary of observers. These are the optimal months for reptile surveying if the weather/temperature conditions are correct (Griffith and Inns, 1998). However, surveys can be undertaken from March to October depending on local site conditions (English Nature, 2004).

Warm, partially cloudy days or spells following rainy weather are often the best periods for reptile survey. If surveys are carried out on very bright sunny days they would be considered sub-optimal (even if undertaken at the correct time of year) because animals very quickly reach their active temperature and move off.

During June, July and August reptiles are active and do not need to spend as much time basking due to high air temperatures. They move more freely and often in deep vegetation, which makes it difficult to observe them (Griffiths and Inns, 1998). A survey carried out during these months would therefore be considered as sub-optimal unless the conditions were good on the days of survey. Starting the survey earlier in the morning or later in the afternoon may alleviate these issues.

The time of day for searches will coincide with the correct temperature window, e.g. 9°C – 18°C. In general this falls between 09.00 and 11.00 in the morning and 16.00 and 19.00 in the evening (Griffiths and Inns, 1998).

Survey Constraints

The main constraints to the reptile surveys were the weather conditions and time of year. Surveys did not begin until June, leading to two of the three optimal months for

reptile surveys being missed. The temperatures were very high in the first few surveys and the mornings heated up very quickly once the sun had risen, leading to reptiles reaching their optimal temperature to be active by early morning. Surveys on site were therefore often split so that one area was surveyed in the late afternoon and the remaining areas the following morning. In addition, the final visit on 26th October did not produce the high number of reptiles previously recorded, and this is likely to be due to the late time of year. However, temperatures were still within the acceptable range for reptile surveys.

These constraints may have led to numbers of reptiles being under-recorded across the sites however, data are considered adequate for evaluation.

Survey Results

Results are presented in full in Table 1 and refugia locations presented in Figure 2.

Grassland Areas 1 and 2

Ten visits were completed on Areas 1 and 2. Areas 1 and 2 were slightly different in vegetation structure, leading to a difference in the amount of use by reptiles. Area 2 had denser, less diverse, vegetation whereas Area 1 was more diverse and had areas which were shorter and more suitable for basking. The mounds on Area 1 also created favourable warmer areas on the south facing sides. Over the ten visits, a larger number of reptiles were found on Area 2, there were however more refugia in this area and the average number of reptiles per refugia was 1.7 in Area 2 compared to 2.3 in Area 1.

Area 1 has a good population of common lizard and slow worm. Juveniles were found in the northern fenced-off section of this site, on both mounds and under Tin 30 in one of the rows of tins in the main section of the site. This indicates breeding is occurring in this area.

Area 2 also had a strong population of reptiles comprising common lizard and slow worm, and common lizards were particularly prevalent. Juveniles were found in the central rows of felts and the row along the western boundary fence, again indicating breeding in this area.

Grassland Area 3

Six visits were completed on Area 3 due to this area being brought into the survey schedule at a later date; therefore, this area cannot be directly compared with its neighbouring sites. This site was connected to Area 2 and separated by a perimeter fence which reptiles would have no problems passing through. A low number of both common lizard and slow worm were found on this section. Two juvenile common lizards were recorded, lower numbers than for either Area 1 or Area 2.

Wetland Creation Area (WCA)

Ten visits were completed for the WCA. As might be expected from the variety and quality of habitats, the WCA had the highest number of reptiles, an average of 2.5 per refugia. Due to the aquatic habitats, grass snakes were also found here, in contrast to Areas 1 – 3. Smooth and great crested newts were also found in small numbers.

Table 1 – Full reptile survey results (see separate Excel spreadsheet)

Table 2 Summary of findings for each different survey area

| | Area (ha) | Total refugia | Slow worm | Common lizard | Grass snake | Smooth newt | Great crested newt | Total No. reptiles | Average no. reptiles per refugia |
|---------------|-----------|---------------|------------|---------------|-------------|-------------|--------------------|--------------------|----------------------------------|
| Area 1 | 2.25 | 49 | 36 | 74 | 0 | 0 | 0 | 110 | 2.2 |
| Area 2 | 3.61 | 94 | 36 | 125 | 0 | 0 | 0 | 161 | 1.7 |
| Area 3 | 0.39 | 21 | 5 | 17 | 0 | 0 | 0 | 22 | 1.0 |
| WCA | 2.67 | 87 | 119 | 85 | 11 | 5 | 1 | 215 | 2.5 |
| Totals | | 251 | 196 | 301 | 11 | 5 | 1 | 508 | 2.0 |

Conclusion

Grassland Areas 1 and 2 appear to be important habitat for common lizard and slow worm, and are also likely to be important breeding sites for these species. These two species were also recorded on Area 3 but in lower numbers, suggesting that it was less favoured (although juvenile common lizards were still present but only in small numbers). The WCA recorded grass snake in addition to common lizard and slow worm, and held good numbers of all three species and juveniles of common lizard and slow worm.

The survey area as a whole supports good numbers of three species of reptiles and would therefore qualify as a Key Reptile Site under the Froglife (1999) guidelines. Individually, most all areas surveyed show good scores under the Key Reptile Sites scoring system (Table 3), although Area 3 does not reach the minimum assemblage score of four.

Table 3 Key Reptile Sites scores

| | Species Score | | | | Assemblage Score ¹ |
|--------|---------------|---------------|-------------|-------|-------------------------------|
| | Slow worm | Common lizard | Grass snake | Adder | |
| Area 1 | 2 | 2 | 0 | 0 | 4 |
| Area 2 | 2 | 3 | 0 | 0 | 5 |
| Area 3 | 1 | 1 | 0 | 0 | 2 |
| WCA | 3 | 2 | 1 | 0 | 6 |

References

- English Nature. 2004. *Reptiles: Guidelines for Developers*. English Nature, Peterborough.
- Gent T. 1998. *Species Conservation Handbook*. English Nature, Peterborough.
- Griffiths R.A., and Inns H. 1998. *Herpetofauna Workers' Manual*. JNCC. Peterborough.
- Froglife, 1999. *Froglife Advice Sheet 10. Reptile survey. An introduction to planning, conducting and interpreting survey for snake and lizard conservation*. Froglife, Suffolk.

¹ Please note that the scores are calculated on more than the 10 refugia per ha recommended by Froglife (1999).

Damhead Creek Reptile Survey Results - 2006. Prepared by Penny Anderson Associates Ltd.

Key:
CL = Common lizard, **SW** = Slow worm
GS = Grass snake, **SN** = Smooth newt
GCN = Great crested newt
J = juvenile

| | | Surveyor: CP 30/06/2006 | Surveyor: CP 13/07/2006 | Surveyor: CP+CG 10+11/08/06 | Surveyor: PF 30/08/2006 | Surveyor: CP+JWe 07/09/2006 | Surveyor: CP+CG 13+14/09/2006 | Surveyor: CP+PF 21/09/2006 | Surveyor: PF 26/09/2006 | Surveyor: PF 27/09/2006 | Surveyor: CG + MC 26/10/2006 |
|-------------------------------------|------|--------------------------------|-------------------------------------|-----------------------------------|--|-----------------------------------|---|----------------------------------|-------------------------------|-------------------------------|--|
| Weather Conditions | | Very hot, early morning survey | Warm, some cloud, light-mod. breeze | Cloudy and windy, showers | Warm, wind BF2. 95% cloud, sun visible | Cool, moderate breeze, thin cloud | Cool breeze, 70-90% cloud, thunderstorm overnight | Warm, cloudy, cool breeze BF3 | Warm, strong breeze | Cool breeze, thin cloud | Mild, sunny spells, windy with patchy cloud. |
| Area/location | | Visit 1 | Visit 2 | Visit 3 | Visit 4 | Visit 5 | Visit 6 | Visit 7 | Visit 8 | Visit 9 | Visit 10 |
| AREA 1 | | | | | | | | | | | |
| | Felt | | | | | | | | | | |
| Fenced off area at north of section | 71 | | | | 1SW 2CL | 2CL | | | 1CL | | |
| | 72 | | | | 3CL | | | | 1CL | | |
| | 73 | | | | 2CL | | | | | | |
| | 74 | | | | 2JCL | 1JCL | | | | | |
| | 75 | | | | 1JCL | 2JCL | | | | | |
| | 76 | | | | 2JCL | | | | | | |
| | 77 | | | | | | | | 2CL 3JCL | | |
| | 78 | | | | | | | | | | |
| | 79 | | | | | | | | | | |
| | 80 | | | | | | | | | | |
| | Tin | | | | | | | | | | |
| | 25 | | | | | | | | | | |
| | 26 | | 1SW | | 3CL | | | | | | |
| | 27 | | | | | | | | | 2CL | |
| Mound at south east | Felt | | | | | | | | | | |
| | 81 | | | | | | | | | 1SW 1CL | |
| | 82 | | | | 1SW | | | | | | |
| | 83 | | | | | | | | 2SW 1CL | | |
| | 84 | | | | | | | | 1SW | | |
| | 85 | | | | | | | | | 2JSW 2CL | |
| | 86 | | | | | | | | | | |
| | 87 | | | | | | | | | | |
| | 88 | | | | | | | | | | |
| | 89 | | | | 1CL | | | 1JCL | 2SW | | |
| | 90 | | | | | | | 1SW | | 1JSW | |
| | Tin | | | | | | | | | | |
| | 41 | | | | 5SW 1JSW | 1SW | | | | 1JSW | |
| Mound at far south east | Felt | | | | | | | | | | |
| | 91 | | | 1SW | | | | | | 1JCL | |

| | | | | | | | | | | | |
|--------------------------------|-----|--|--|-----|---------|------|--|--|-----|----------|----------|
| | 92 | | | | | | | | 3CL | 1CL | |
| | 93 | | | 1SW | | | | | 1SW | | |
| | 94 | | | | 1SW 1CL | | | | 1CL | | |
| | 95 | | | | | | | | | | 1SW 2CL |
| | 96 | | | | | | | | 1CL | | |
| | 97 | | | | 1CL | | | | | | 1JSW 1CL |
| | 98 | | | | | 1JSW | | | 1SW | | |
| | 99 | | | | 1SW | | | | | 2SW 3JCL | 1CL |
| | 100 | | | | | | | | | | |
| | Tin | | | | | | | | | | |
| | 42 | | | | 2SW 1CL | | | | | | 1CL |
| South of Mound 2 | 43 | | | | | | | | 1CL | | |
| East side of site, 2 rows of 6 | Tin | | | | | | | | | | |
| | 28 | | | | 1CL | | | | | | |
| | 29 | | | | 2CL | | | | | | |
| | 30 | | | | 10JCL | | | | | | |
| | 31 | | | | | | | | | | |
| | 32 | | | | 2CL | | | | | | |
| | 33 | | | | | | | | | | |
| | 34 | | | | 1CL | | | | | | |
| | 35 | | | | | | | | | | |
| | 36 | | | | | | | | | | |
| | 37 | | | | | | | | | | |
| | 38 | | | | | | | | | | |
| | 39 | | | | 1CL | | | | | | |
| | 40 | | | | | | | | | | |

| | Surveyor: CP | Surveyor: CP | Surveyor: CP+CG | Surveyor: PF | Surveyor: CP+JWe | Surveyor: CP+CG | Surveyor: CP+PF | Surveyor: PF | Surveyor: PF | Surveyor: PF | Surveyor: CG + MC |
|------------------------------|--------------------------------|-------------------------------------|---------------------------|--|-----------------------------------|---|-------------------------------|---------------------|-------------------------|--|----------------------|
| | 30/06/2006 | 13/07/2006 | 10+11/08/06 | 30/08/2006 | 07/09/2006 | 13+14/09/2006 | 21/09/2006 | 26/09/2006 | 27/09/2006 | 26/10/2006 | |
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| Area/location | Visit 1 | Visit 2 | Visit 3 | Visit 4 | Visit 5 | Visit 6 | Visit 7 | Visit 8 | Visit 9 | Visit 10 | |
| AREA 2 | | | | | | | | | | | |
| | Felts | | | | | | | | | | |
| Along eastern boundary fence | 1 | | | 1CL | | | | | | 1CL | |
| | 2 | 1SW | | 1SW | | 1CL | | 3CL | 1SW 3JSW | 3JCL | |
| | 3 | 1SW | | | | | | | | | |
| | 4 | | | | | | 1JCL | | | | |
| | 5 | | | | 3CL | | | 1CL | | | |
| | 6 | | | | | | | | 1 CL | | |
| | 7 | | | | 1CL | | | | 1CL | | |
| | 8 | | | | | | | | | | |
| | 9 | | 1SW | | 1SW 1CL | | | 2CL | 1CL | | |
| | 10 | | | | | | | | | | |

| | | | | | | | | | | |
|----------------------------------|-----|-----|-----|---------|------|----------|------|-----------|------|-----|
| | 11 | | | | | | | | | |
| | 12 | | | | | | | | | |
| | 13 | | | | | | | | | |
| | 14 | | 2SW | | | | | | 1SW | |
| | 15 | | 1SW | | | | | | | |
| | 16 | | | | | 1SW | | 1CL | 2CL | |
| | 17 | | | | | | | | | |
| | 18 | | | | | | | | | |
| | 19 | | | | | 1SW | | | | |
| | 20 | 1SW | | | | | | | | |
| | 21 | | | | | | 1CL | | | |
| | 22 | | | | 1CL | | | 1CL | | |
| | 23 | | | | | | | 1JCL | 1JCL | |
| | 24 | | | | | | | | | |
| | 25 | | | | 2CL | | 1JSW | | | |
| | 26 | | | | | 1SW | | | | |
| | 27 | | | | | | | | 1CL | |
| | 28 | | | | | | | 3CL | | |
| | 29 | | | | 1SW | | | | | |
| | 30 | | | | | | | | | |
| Paralell with above on west side | 31 | | | | | | | | 2CL | |
| | 32 | | | | | | | | 3CL | |
| | 33 | | | | | | | 1CL | | |
| | 34 | | 1CL | 1SW | | | | | 3CL | |
| | 34A | | | 4SW | | | 2JCL | | | |
| | 35 | | | 1SW 1CL | | | | | | |
| | 36 | | | 2CL | | 4CL | | | | |
| | 37 | | | 1CL | | | 1CL | | | |
| | 38 | | | 2CL | | 1CL 2JCL | | | | |
| | 39 | 1CL | | 2CL | | | | 3 CL 2JCL | | |
| | 40 | | | | | | | | | |
| | 41 | | | | | | | | | |
| | 42 | | | | | | | 1CL | | |
| | 43 | | | | | | | 1SW 2CL | | |
| | 44 | | | | | | | | | |
| | 45 | | | | | | | | | |
| | 46 | | | 1CL | | | | | | |
| | 47 | | | | | | | | | |
| | 48 | | | 1SW | 1JCL | | | | | 1CL |
| | 49 | | | | | | | | | |
| | 50 | | | 7CL | | 1CL | | | | 1SW |
| Open area - south western corner | 51 | | | | | | 1CL | | | |
| | 52 | | | | | | | | | |
| | 53 | | | | | | | | | |
| | 54 | | | | | | | | | |
| | 55 | | | | | | | | | |
| | 56 | | | | | | | | | |

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|----------------------------------|----|-----|--|-----|-----|-----|-----|-----|------|-----|
| | 57 | | | | | | | | | |
| | 58 | | | | | | | 1CL | | |
| | 59 | | | | | | | | | |
| | 60 | | | | | | | 1CL | | |
| | 61 | | | | | | | | | |
| | 62 | | | | | | | | | |
| | 63 | | | | | | | | | |
| | 64 | | | | | | | 1CL | | |
| | 65 | | | | | | | | | |
| | 66 | | | | | | | 1CL | 1CL | |
| | 67 | | | | | | | | | |
| | 68 | | | | | | | | 1CL | |
| | 69 | | | | | | | | | |
| | 70 | 1SW | | | | | | | | |
| Along eastern perimeter fence | 1 | | | | 3CL | | | | | |
| | 2 | | | | | | | | | |
| | 3 | | | | 2CL | | 1CL | | | |
| | 4 | | | | 2SW | | | | | |
| | 5 | | | | | | | | | |
| | 6 | | | | | | | | | |
| | 7 | | | | 2CL | | | | | |
| Paralell with above on west side | 8 | | | 2CL | | | | | | |
| | 9 | 1SW | | 1CL | | | | | | |
| | 10 | | | | | 1CL | | | | |
| | 11 | | | | | | | 2SW | | |
| | 12 | | | 1CL | | | 1CL | | | |
| | 13 | | | | | | | | | |
| | 14 | | | 1CL | | 1SW | | | | |
| Paralell with western fence | 15 | | | | | | 1CL | | | |
| | 16 | | | | | | | | 4JCL | |
| | 17 | | | | | | | 2CL | | |
| | 18 | | | | 2CL | | 1CL | | | 3CL |
| | 19 | | | | 1SW | | 1CL | 1CL | | |
| | 20 | | | | | | | | | |
| | 21 | | | | | | | | 2CL | |
| | 22 | | | | | | | | | |
| | 23 | | | | | | | | | |
| | 24 | | | | | | | | | |

| | Surveyor: CP | Surveyor: CP | Surveyor: CP+CG | Surveyor: PF | Surveyor: CP+JWe | Surveyor: CP+CG | Surveyor: CP+PF | Surveyor: PF | Surveyor: PF | Surveyor: CG + MC |
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| Area/location | Visit 1 | Visit 2 | Visit 3 | Visit 4 | Visit 5 | Visit 6 | Visit 7 | Visit 8 | Visit 9 | Visit 10 |

| AREA 3 | | | | | | | | | | | No findings in this section. |
|------------------------------------|------|--|--|--|--|--|------|-----|-----|------|------------------------------|
| One row zig-zagged along grassland | | | | | | | | | | | |
| | Felt | | | | | | | | | | |
| | 181 | | | | | | | | | | |
| | 182 | | | | | | | | | | |
| | 183 | | | | | | 1JCL | | 1CL | 1SW | |
| | 184 | | | | | | | | | | |
| | 185 | | | | | | 1CL | 1CL | | 1JCL | |
| | 186 | | | | | | | | 1CL | 1CL | |
| | 187 | | | | | | 1JCL | | | | |
| | 188 | | | | | | 1JCL | | | | |
| | 189 | | | | | | | | | | |
| | 190 | | | | | | | | | | |
| | 191 | | | | | | | | | 1CL | |
| | 192 | | | | | | | | | | |
| | 193 | | | | | | 1CL | | | | |
| | 194 | | | | | | | | | 1SW | |
| | 195 | | | | | | 1JCL | | | | |
| | 196 | | | | | | 1CL | | | 1SW | |
| | 197 | | | | | | | | | | |
| | 198 | | | | | | | | | | |
| | 199 | | | | | | | 1CL | 1CL | | |
| | 200 | | | | | | 1CL | | | | |
| | 201 | | | | | | 1CL | | | | |

| | | Surveyor: CP | Surveyor: CP | Surveyor: CP+CG | Surveyor: PF | Surveyor: CP+JWe | Surveyor: CP+CG | Surveyor: CP+PF | Surveyor: PF | Surveyor: PF | Surveyor: CG + MC |
|--------------------|------|--------------------------------|-------------------------------------|---------------------------|--|-----------------------------------|---|-------------------------------|---------------------|-------------------------|--|
| | | 30/06/2006 | 13/07/2006 | 10+11/08/06 | 30/08/2006 | 07/09/2006 | 13+14/09/2006 | 21/09/2006 | 26/09/2006 | 27/09/2006 | 26/10/2006 |
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| Area/location | | Visit 1 | Visit 2 | Visit 3 | Visit 4 | Visit 5 | Visit 6 | Visit 7 | Visit 8 | Visit 9 | Visit 10 |
| WCA | | | | | | | | | | | |
| Pond 2 | Felt | | | | | | | | | | |
| | 101 | | | | | | | 1CL | | 1GS | |
| | 102 | | | | | | | | | | |
| | 103 | | | | | | | | | | |
| | 104 | | | | | | | 1SW | | | |
| | 105 | | | | | | | | | | |
| | 106 | | | | | 1GS | | 1SW 1CL | | 1JCL | |
| | 107 | | | | | 2SW | | 1SW | | | |
| | 108 | | | | | 3SW | | | | | |
| | 109 | | | | | | | 1SW | | 1CL | |
| | 110 | | | | 1GS | | | 1CL | | | |
| | 111 | | | | | 1SW | | | | | |
| | 112 | | | | | | | 1SW | | | |
| | 113 | | | | | 1SW | | 1CL | 1CL | 2CL | 1CL |
| | 114 | | | | | 1SW 1GS | | 1CL | | 1CL | 1CL |

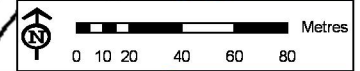
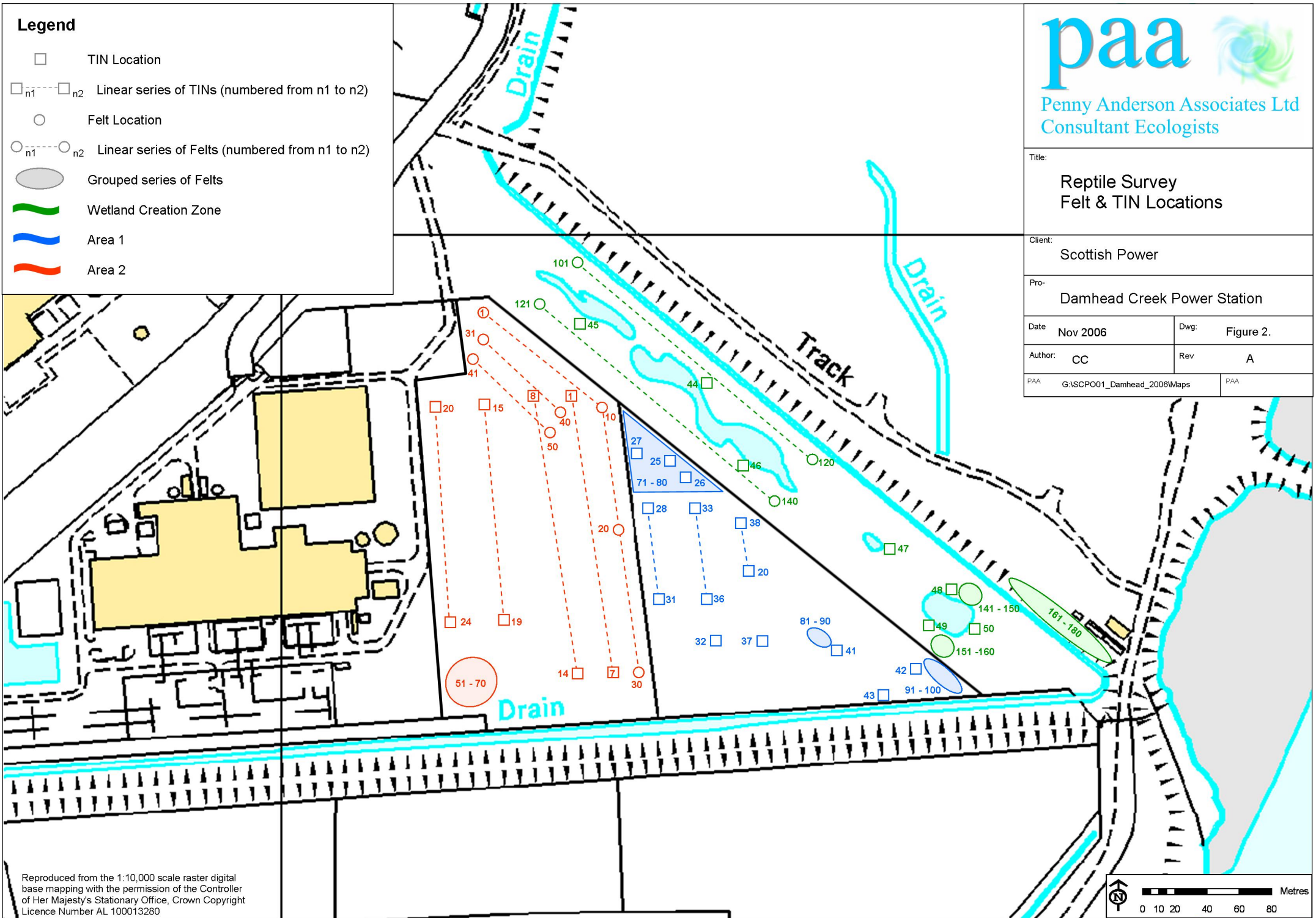
| | | | | | | | | | | |
|-------------|------|--|-----|---------|------|------|-----|---------|----------|---------|
| | 115 | | | 1SW | | | | 2CL | 1SW 1JCL | |
| | 116 | | 3SW | 3SW | | | 2SW | | | |
| | 117 | | | 2SW 1GS | | 1CL | 1SW | 1SW 4CL | | |
| | 118 | | | 3SW | | | | 1SW | | |
| | 119 | | | 2SW | 1GS | 1CL | 2SW | | 2CL | |
| | 120 | | | | | | | 2SW | | |
| | 121 | | | | | | | | | |
| | 122 | | | | | | | | | |
| | 123 | | | | | | | | | |
| | 124 | | | | | | | 1SW | | |
| | 125 | | | | | | | | | |
| | 126 | | | | 2JSN | 2JSN | | | | |
| | 127 | | | | 1JCL | | | | | |
| | 128 | | | | | | | | | |
| | 129 | | | | | 1GS | | 1CL | 1GCN (f) | |
| | 130 | | | 1GS | | | | | | |
| | 131 | | | | 1SW | 1SW | | | | |
| | 132 | | | | | | | | | |
| | 133 | | | | | | | 2CL | | |
| | 134 | | | | | | | | | |
| | 135 | | | | | | | | | |
| | 136 | | | | | | | | | |
| | 137 | | | | | 1CL | | | | |
| | 138 | | | | | | | | | |
| | 139 | | | | | | | | | |
| | 140 | | | | | | | | | |
| | Tin | | | | | | | | | |
| | 44 | | 1CL | | | | | | | |
| | 45 | | | | | 1SW | 1SW | | | |
| | 46 | | | 1SW | | 1SW | 1SW | | | |
| Middle Pond | Tin | | | | | | | | | |
| | 47 | | | | | | | | | |
| Pond 1 | Felt | | | | | | | | | |
| | 141 | | | | | | | 1SW | 1SW | |
| | 142 | | | | | | 1CL | | | |
| | 143 | | | | | | | 1JCL | | |
| | 144 | | | | | | | | | |
| | 145 | | | 1SW | 1SW | | | | | |
| | 146 | | | | 3SW | 1CL | | | | 2JSW |
| | 147 | | | 1CL | | 2SW | | 1JCL | 2SW | 1CL 1CL |
| | 148 | | | | 3SW | | 1SW | 1CL | | |
| | 149 | | | | | | | | | |
| | 150 | | | | | | | | | |
| | 151 | | | | | | | | | 2JCL |
| | 152 | | | | | | | | | |
| | 153 | | | | 2SW | | | 2CL | 1CL | |

| | | | | | | | | | | |
|-----------------|------|--|-----|---------|-----------|------|------|----------|------|----------|
| | 154 | | 1CL | | 1CL | | | | 1JSW | |
| | 155 | | | | | | | | | 2JSW |
| | 156 | | | 1SW 1CL | 1SW | | | | | |
| | 157 | | | 1SW | | | 1JCL | 1SW 1CL | | |
| | 158 | | | | 2SW | | 1JSW | 2CL | 1SW | |
| | 159 | | | | | | | | | |
| | 160 | | | 1SW | | | | | | |
| | Tin | | | | | | | | | |
| | 48 | | | | | | | | | |
| | 49 | | 2CL | | | | | | | |
| | 50 | | | | | | | | | |
| WCA Cont | Felt | | | | | | | | | |
| Pump house | 161 | | | | | | | | | 5JSW/2CL |
| | 162 | | | 1SW | | | | | | 1SM |
| | 163 | | | | | | | | | 3CL |
| | 164 | | | | | 1CL | | | | |
| | 165 | | | 1SW | | 2CL | | 1CL | 1CL | |
| | 166 | | | | | | | | | |
| | 167 | | | 1SW | | | | | | |
| | 168 | | | 1SW | | | | 1JSW | 1CL | |
| | 169 | | | | | | | | | |
| | 170 | | | 2CL | | | | 1JSW | 1JSW | |
| | 171 | | | 3CL | 2CL | 1JCL | | 1JSW | 1CL | |
| | 172 | | | 1JCL | | | | | | |
| | 173 | | | 1SW | 2JSW 2JCL | 4JCL | | 3JSW 1CL | 8JSW | 10JSW |
| | 174 | | | 1SW 2CL | | | | | | |
| | 175 | | | | | | | | | |
| | 176 | | | | | | | | | |
| | 177 | | | | | | | | | 1SW |
| | 178 | | | | | | | | | |
| | 179 | | | | | | | | | |
| | 180 | | | | | | | | | |

Legend

- TIN Location
- _{n1} --- □_{n2} Linear series of TINs (numbered from n1 to n2)
- Felt Location
- _{n1} --- ○_{n2} Linear series of Felts (numbered from n1 to n2)
- Grouped series of Felts
- ~ Wetland Creation Zone
- ~ Area 1
- ~ Area 2

| | | | |
|---------|-----------------------------|--|-----------|
| Title: | | Reptile Survey Felt & TIN Locations | |
| Client: | | Scottish Power | |
| Pro-: | | Damhead Creek Power Station | |
| Date | Nov 2006 | Dwg: | Figure 2. |
| Author: | CC | Rev | A |
| PAA | G:\SCPO01_Damhead_2006\Maps | PAA | |



Damhead Creek Phase II Proposed Development **Additional Reptile Survey, 2007**

Prepared by Penny Anderson Associates Ltd

Survey Dates: 2nd and 30th May 2007, 2nd, 6th (am and pm), 7th and 8th June 2007, 10th July 2007.

Surveyors: Paul Fisher, Chloe Pritchard, Helen Hamilton and Sarah Ross.

Introduction

The disused car-park (proposed lay-down area) and grassland adjacent to Ditch 10 were surveyed to ascertain the presence and estimate the population size of any reptiles in these areas. These areas were not included in the 2006 survey for reptiles, and these data should therefore be combined with the 2006 survey results.

Methodology

The survey used the placement of artificial refugia (50cm x 50cm roofing felt pieces) to identify the presence and numbers of reptiles in each area. A total of 90 and 22 felts were positioned in the disused car park and the grassland around Ditch 10 respectively. A total of eight survey visits were conducted between May and July in the Ditch section, however, only two visits were conducted for the disused car park area due to limited access permissions.

Survey timing and weather - generally applicable to all reptiles

The following guidelines were considered when carrying out the reptile surveys:

April, May and September (and early October in the south) are the three key months for reptile surveying. April and May is the reptile mating season, when animals are more obvious and less wary of observers. These are the optimal months for reptile surveying if the weather/temperature conditions are correct (Griffith and Inns, 1998). However, surveys can be undertaken from March to October depending on local site conditions (English Nature, 2004).

Warm, partially cloudy days or spells following rainy weather are often the best periods for reptile survey. If surveys are carried out on very bright sunny days they would be considered sub-optimal (even if undertaken at the correct time of year) because animals very quickly reach their active temperature and move off.

During June, July and August reptiles are active and do not need to spend as much time basking due to high air temperatures. They move more freely and often in deep vegetation, which makes it difficult to observe them (Griffiths and Inns, 1998). A survey carried out during these months would therefore be considered as sub-optimal unless the conditions were good on the days of survey. Starting the survey earlier in the morning or later in the afternoon may alleviate these issues.

The time of day for searches should coincide with the correct temperature window, e.g. 9°C – 18°C. In general this falls between 09.00 and 11.00 in the morning and 16.00 and 19.00 in the evening (Griffiths and Inns, 1998).

Survey Constraints

The limited access permission to the former car-park for the survey means that a full evaluation of the use of this area by reptiles was not possible. However, given the knowledge of the overall use of the DHC site by reptiles, and the type of habitats on this particular area, it is considered that a good estimation of the use of the area by reptiles

can be prepared from the limited data collected. Otherwise, survey conditions were good for reptile checks, with the key month of May being included in the survey.

Results

Two records of common lizard (*Lacerta vivipara*) were recorded from the former car-park. These animals were both observed on the north westerly edge of the car-park, near to the grassy verge of the adjacent road.

A maximum count in any one survey was of 19 common lizards, 14 slow-worms (*Anguis fragilis*) and a single record of a grass snake (*Natrix natrix*) were recorded from the Ditch 10 grassland area. The full results are presented in Table 1 (separate Excel spreadsheet). Juveniles of common lizard and slow worm were recorded, along with a gravid female common lizard, indicating that breeding habitat was either present or in close proximity. The majority of the records were taken from the grassy bank to the west of the ditch (with exception of the grass snake record) which provided the most suitable habitat for reptiles. The remaining flat, rabbit-grazed area between the ditch and the bank offered little cover for reptiles.

Conclusions and Recommendations

Due to the limited number of visits to the car-park area it is difficult to comment on the reptile population. However, due to the open, sparsely vegetated nature of the majority of the area it is likely that it would only support a small population of reptiles. Proposals for this area are likely to result in temporary disturbance of the habitat, and the capture and temporary displacement of reptiles through a capture and exclusion scheme would ensure that reptiles are not harmed during construction. There may be opportunities to re-instate more ecologically diverse habitat on this site following construction, which would benefit reptile populations.

Considering the small size of the suitable habitat in the Ditch 10 grassland, the population of both common lizard and slow worm were good, suggesting this is an important locality on site for these species. The presence of three species of reptile (common lizard, grass snake and slow-worm) along with the good¹ population sizes for both slow-worm and common lizard identifies this site as a Key Reptile Site (Froglife 1999).

Although this area will not be directly affected by the development proposals, there are opportunities to increase the carrying capacity of the habitat for reptiles. This may allow new habitat for at least some of those reptiles displaced by the loss of grassland to the new power station. In order for the area to hold a larger number of reptiles the large rabbit-grazed grassland area would need to be managed sympathetically to encourage a taller more structurally diverse sward to provide suitable reptile habitat. This would require the exclusion of grazing rabbits.

References

- English Nature. 2004. *Reptiles: Guidelines for Developers*. English Nature, Peterborough.
- Gent, T. 1998. *Species Conservation Handbook*. English Nature, Peterborough.
- Griffiths, R. A., and Inns, H. 1998. *Herpetofauna Workers' Manual*. JNCC. Peterborough.
- Froglife, 1999. *Froglife Advice Sheet 10. Reptile survey. An introduction to planning, conducting and interpreting survey for snake and lizard conservation*. Froglife, Suffolk.

¹ Please note that the scores are calculated on more than the 10 refugia per ha recommended by Froglife (1999).

Damhead Creek Reptile Survey Results 2007

Prepared by Penny Anderson Associates Ltd

| Weather Conditions | | Surveyor: | Surveyor: | Surveyor: | Surveyor: | Surveyor: | Surveyor: | Surveyor: | |
|--------------------|----------|--------------------------|---------------|------------------|------------------------|------------------------|---------------------------------------|--|------------------------------|
| | | PF | HH | PF | PF | HH | SRs + HH | CP+ PF | PF |
| | | 02/05/2007 | 30/05/2007 pm | 02/06/2007 am | 06/0607 | 06/0607 | 07/06/07 am | 08/06/2007 | 10/07/2007 |
| | | Overcast, cool | Drizzle | Warm, thin cloud | Overcast, light breeze | Overcast, light breeze | 100% cloud. Wet ground (rain earlier) | 80% cloud, overcast, recently rained. 18°C | 85% cloud, cool breeze. 17°C |
| Location | | Visit 1 | Visit 2 | Visit 3 | Visit 4 | Visit 5 | Visit 6 | Visit 7 | Visit 8 |
| | Felt | | | | | | | | |
| Juncus | 91 | 1 SW | | | 4SW | 1♀ SW | | 1♂ CL | 2 ♀ + 2 ♂ CL |
| Juncus | 92 | | | | | 1CL | | | |
| Bank | 93 | 1♂CL | 1CL | | | 1CL | 1 ♀ + 1 ♂ CL | 1♂CL | 4SW + 1 CL |
| Bank | 93a+(16) | | 3 SW | | | 1CL + 1♂ SW | 1 ♂ CL | | |
| Bank | 94 | 1♀CL | 1 SW (small) | | 1SW | 1CL + 1♀ SW | 1 ♀ + 1 ♂ SW | | 2♂ + 1 ♀ CL |
| Bank | 95 | 1CL | 2CL, 1SW | | 1♂CL, 6 juv SW, 1 SW | 2 SW | 1 ♂ + 1 juv SW | 1♀CL + 2SW | 1 CL |
| Bank | 96 | | | | | | | | |
| Bank | 97 | | | | | | | | |
| Bank | 98 | 1♀CL + 1 1st yr adult CL | | 1♂CL | 2♂ CL, 1SW | 1♂ SW | 1 ♀ + 1 ♂ CL | 2 ♂CL | 1SW + 2CL |
| Bank | 99 | 1♂CL | 1CL | | 1♀CL, 1SW | | 1 ♀ + 1 ♂ CL | | 2♂ + 2♀ CL + 1SW |
| Bank | 100 | | 3CL | | 4 ♂CL, 1 CL | 1CL | 2 juv CL | | |
| Bank | 101 | | | | | | | | |
| Ditch | 102 | | | | | | | | |
| Bank | 103 | | | | | | | | 3CL |
| Ditch | 104 | | | | | | | | |
| Bank | 105 | | | | | | | | |
| Ditch | 106 | 1♂CL | | | 1♀CL | | | | 1♀CL (gravid) |
| Ditch | 107 | | | | | | | | |
| Ditch | 108 | | | | | | | | |
| Ditch | 109 | | | | 2CL | | 1♀ CL | | 1 GS (c. 60cm) |
| Ditch | 110 | | | | | | | | 1CL |
| Totals | | 7CL + 1SW | 7CL + 5SW | 1CL | 11CL + 14SW | 5CL + 6SW | 10CL + 4SW | 5CL + 2SW | 19CL + 6SW + 1GS |

KEY

CL = Common lizard

SW = Slow worm

GS = Grass snake

juv = Juvenile

♂ = Male

♀ = Female

