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ARDS & NORTH DOWN BOROUGH COUNCIL

ECOLOGICAL BASELINE SURVEY  
FOR ENVIRONMENTAL IMPROVEMENT SCHEME  
AT WARD PARK, BANGOR

SEPTEMBER 2016

PREPARED IN CONJUNCTION WITH

**Dr Karl Partridge**  
*Ecology and Birds*



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| CONTENTS                         | PAGE NO. |
|----------------------------------|----------|
| 1 INTRODUCTION                   | 1        |
| 2 SUMMARY OF HABITATS            | 2        |
| 3 PHASE 1 HABITAT SURVEY         | 5        |
| 4 TREE SURVEY                    | 6        |
| 5 JAPANESE KNOTWEED              | 7        |
| 6 BADGERS AND OTHER MAMMALS      | 11       |
| 7 BATS                           | 12       |
| 8 BIRDS                          | 13       |
| 9 FISH                           | 14       |
| 10 AQUATIC FAUNA & WATER QUALITY | 15       |

APPENDICES

|            |   |
|------------|---|
| APPENDIX A | Site Location Plan  |
| APPENDIX B | Habitat Inventory by Shaun Wolfe-Murphy of WM Associates    |
| APPENDIX C | Tree Survey and Report by Dr Philip Blackstock              |
| APPENDIX D | An Assessment of Badger Activity by ATEC                    |
| APPENDIX E | Bat Survey Report by Blackstaff Ecology                     |
| APPENDIX F | Breeding Birds Survey by Dr Karl Partridge                  |
| APPENDIX G | Electrofishing Survey by Paul Johnston Associates           |
| APPENDIX H | Biological Assessment of Water Quality by Dr Karl Partridge |

## ECOLOGICAL BASELINE SURVEYS FOR ENVIRONMENTAL IMPROVEMENT SCHEME AT WARD PARK, BANGOR

### 1.0 INTRODUCTION

1.1 Doran Consulting was commissioned by Ards and North Down Borough Council to prepare a planning application for an Environmental Improvement Scheme at Ward Park in Bangor. A site location plan is included at Appendix A. The initial focus of the work was to remove the considerable quantities of silt from the three ponds within the park. The undertaking of this work will provide an opportunity to improve the ecology of the ponds and to create a more diverse range of aquatic habitats. In addition, there is scope for improving the terrestrial habitats within the park so as to provide better quality habitats for wildlife. As part of the baseline assessment of the ecology of Ward Park, Dr Karl Partridge was commissioned to undertake a baseline ecological survey of Ward Park in order to ascertain what habitats, fauna and flora occur in the Park prior to any work being carried out. Specialist surveys have, therefore, been carried out during the period March – August 2015 covering different aspects of the Park's ecology, including fish.

1.2 The present report has been prepared in order to summarise the findings of the ecological surveys and to include the individual survey reports under one cover.

## 2.0 SUMMARY OF HABITATS

2.1 Ward Park is located close to the centre of Bangor, Co Down (Grid reference: J 510815) and it is bounded by Hamilton Road to the north, Moira Drive/Broadway to the east, Castle Street to the south / south-east and Parkmount / Park Drive to the west. Ward Park is surrounded by urban development on three sides, with Bangor Golf Course, to the west, cut off from the park by a busy road. The park provides an important recreational facility for the people of Bangor and is used for relaxing, dog-walking, jogging, and as a through route for students going to and from their schools and colleges. Apart from formal gardens, neatly mown wooded landscapes, beds of planted shrubs and more natural areas, especially on the pond islands, the park contains bowling greens, a football pitch, a running track, tennis courts and a large expanse of amenity grassland.

2.2 Ward Park forms a crescent-shaped 'green' island, 17 hectares in size, located in the inner suburbs of Bangor, close to the town centre. A small watercourse flows from south to north through the middle of the Park and opens out into three shallow interlinked ponds, totalling less than one hectare in surface area, which are currently filled with silt. The ponds contain three islands, two of which – those in the Middle Pond - are well wooded (Photo 1), and all three contain stands of semi-natural vegetation, mostly in the form of scrub and rank grassland.



Photo 1: Wooded islands on the middle pond at Ward Park, viewed from the south.

- 2.3 The ponds and interconnecting channels have vertical edges, formed of concrete and stone, and the pond islands have been constructed using gabions and these too form vertical edges.
- 2.4 The aquatic ecosystem is almost totally lacking in aquatic vegetation; submerged macrophytes and emergent aquatics are scarce.
- 2.5 The ponds and interconnecting channels are bordered on either side by a broad belt of mostly mature parkland trees. Ground cover under these comprises improved grassland (Photo 2) and this is maintained by close mowing and, in places, grazing by flocks of feral geese and ducks. In some places a more natural ground flora exists and this comprises native grasses and plants.



Photo 2: Mown grass and parkland trees to east of Upper Pond, habitats which are typical of Ward Park.

- 2.6 The formal beds of herbaceous planting and shrubs are located mainly in the northern and western parts of Ward Park. Large expanses of ground within the park (totalling 10 hectares) are occupied by sports pitches, bowling greens and amenity grassland, in particular on the east and west sides of the park. Most of the park boundary abuts private gardens which contain shrubs and trees.

- 2.7 Supplementary feeding of waterfowl by park visitors results in artificially large populations of opportunistic species, including gulls, feral geese, Mallard and feral pigeons. This has a detrimental effect on the water quality especially in the middle and lower ponds.

### 3.0 PHASE 1 HABITAT SURVEY

3.1 An Extended Phase 1 Habitat Survey of Ward Park was carried out by Shaun Wolfe-Murphy of WM Associates on 23 June 2015. Refer to his report at Appendix B. The survey concentrated on the ponds and watercourse – including the pond islands – trees, shrubbery and an area to the east where consideration may be given to establishing a wildlife corridor at a future date. Much of the park comprises improved grassland, which is of little ecological value, therefore these areas were not surveyed in detail.

3.2 The survey area was sub-divided into compartments and plant species lists were generated for each of these areas. Aquatic and emergent vegetation of the ponds and linking channels were surveyed by wading.

3.3 Following the survey the ecological assessment concluded that in their current state the ponds are of low value as an aquatic habitat, with almost no aquatic vegetation. There are no shelving substrates for wetland marsh plants. The fact that the ponds have not been colonised by aquatic plants is possibly due to: a) a general absence of such species from the feeder ditches that supply the ponds, and therefore no propagule supply; b) the possibility that grazing wildfowl remove the seeds and nibble any tender shoots; and / or c) that the absence of fluctuating water levels mitigates against emergent vegetation due to the weirs.

3.4 The total phosphorus level of the ponds is likely to be in the region of 80 – 120 µg/l-1, signifying high eutrophic to hypertrophic conditions.

3.5 The recommendations (section 5 of the Habitat Survey report) provide suggestions for enhancement of the aquatic ecosystem, for soil testing and meadow planting within the wildlife corridor, for the treatment of Japanese Knotweed and the creation of ground cover under mature trees.

#### 4.0 TREE SURVEY

4.1 The tree survey of the area around the ponds was carried out by Dr Philip Blackstock (PB) during October and November 2013. An additional survey of the trees on the middle pond island was undertaken in September 2016. A total of 262 trees were surveyed and the results presented in an Excel spreadsheet, which is included within this report, together with a map of tagged trees (refer to Appendix C). PB comments that Ward Park is one of the most attractive public parks in Northern Ireland. It is dominated by a public aviary and duck ponds, all sheltered by parkland trees. These trees provide shelter and shade to the cages and ponds, and help to screen the park from surrounding buildings. As such they should be considered very significant in the local landscape.

4.2 He continues: the trees growing on the above site have been planted at three distinct periods. The oldest trees are the mature beech, oak and conifers along the main path. These trees are more than one hundred years old and form the original parkland. Many of the maturing trees growing on the western bank of the river are now about forty years old, while most of the younger trees on the eastern banks of the river are about twenty years old. There are also a few much younger trees that have been planted within the last ten years or so.

## 5.0 JAPANESE KNOTWEED

- 5.1 It was clear from the first viewing of Ward Park that the invasive alien Japanese Knotweed *Fallopia japonica* was present, at least on the middle pond islands (Photo 3). This species was probably accidentally introduced when work was being carried out on the pond islands in the 1970s and gravel spread on the islands.



Photo 3: Stand of Japanese Knotweed on middle pond island

- 5.2 Japanese Knotweed is a large herbaceous perennial plant that is native to eastern Asia. It was introduced to the UK as an ornamental plant in the 19<sup>th</sup> Century and has spread widely, particularly along watercourses. It is rhizomatous (produces underground stems) with distinctive branched hollow, bamboo-like canes and can grow to over 3m in height. Although seeds are produced they rarely survive and the principal means of spread is through deliberate or accidental movement of rhizome fragments or cut stems.
- 5.3 The distribution of Japanese Knotweed on the middle pond islands was mapped in June 2015. Also, the maximum height and stem diameter of each stand was measured. Figure 1 and Table 1 show that there are nine stands of Japanese Knotweed, all on the larger of the islands. These stands vary in extent from 15m long (stand D) to 2m (stand E). The canes vary in height from 1.5m to 3.0m and the stems measure between 27mm and 33mm in diameter.

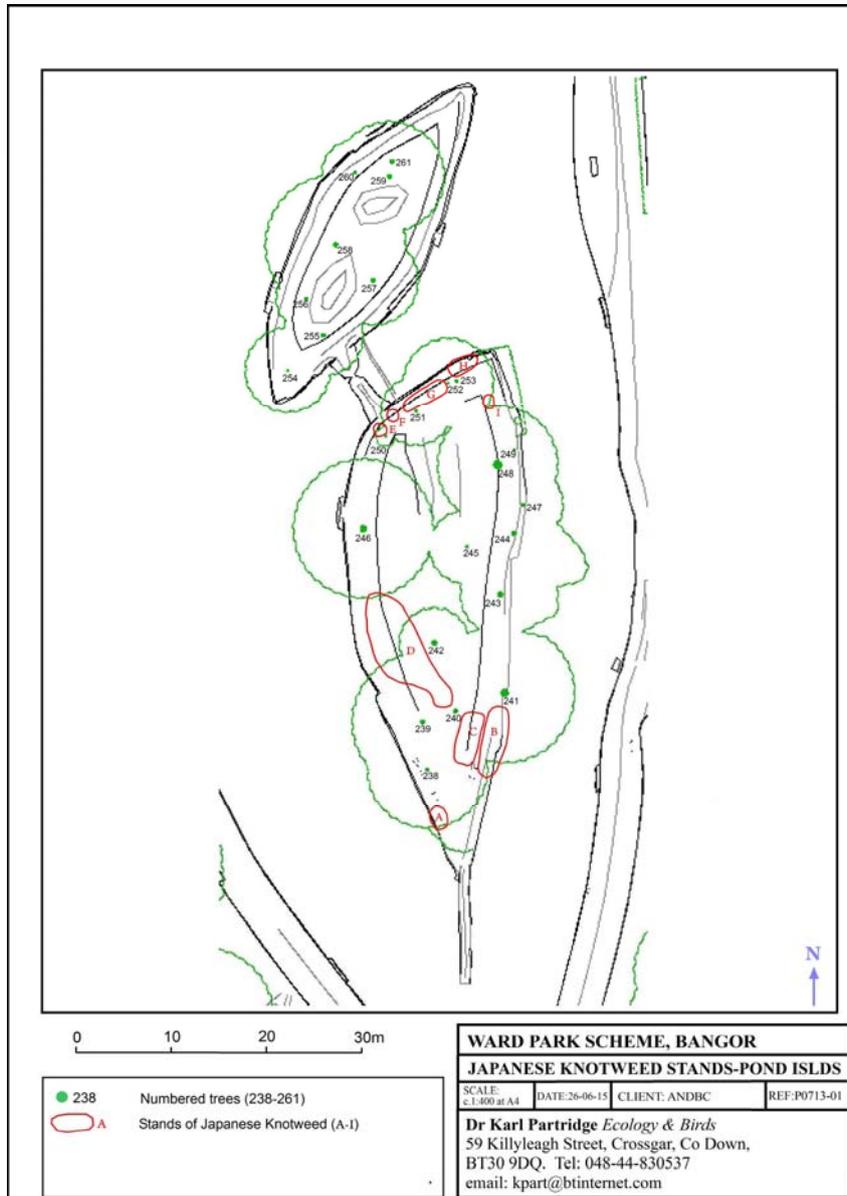


Figure 1: Distribution of Japanese Knotweed on Ward Park middle pond islands, June 2015.

| Stand | Maximum Height (m) | Stem Diameter (mm) | Notes                             |
|-------|--------------------|--------------------|-----------------------------------|
| A     | 2.0                | 30                 | Small stand                       |
| B     | 2.8                | 33                 | Large, dense stand (see photo)    |
| C     | 2.2                | 27                 | Dense stand                       |
| D     | 2.8                | 30                 | Large, scattered stand            |
| E     | 2.2                | 27                 | Single patch                      |
| F     | 2.0                | 27                 | Single patch, under tree canopy   |
| G     | 2.8                | 30                 | More extensive stand, under trees |
| H     | 3.0                | 30                 | Under lime tree                   |
| I     | 3.0                | 30                 | Single stand                      |

Table 1: Details of Japanese Knotweed stands on Ward Park middle pond islands.

5.4 Shaun Wolfe-Murphy (SWM), in his report (section 3.0 above and Appendix B) comments that eradication of Japanese Knotweed from the island is highly recommended if any landscaping works are to be carried out. He suggests that this ought to be done by the application of herbicide through stem injection only, due to the proximity of the stands to water. Consent for use of herbicide near a watercourse is required from NIEA Water Management Unit, Lisburn. SWM recommends that the best approach would be to trim areas where the plant has been mapped in winter, i.e. outside the bird breeding season and after the vegetation has died down. This will remove brambles and facilitate easier access for herbicide treatment the following summer.

5.5 The work should be done by a qualified landscape contractor and all material disposed of according to legal requirements and using best practice.

- 5.6 Further information on the control of invasive species, including Japanese Knotweed is available from the following url:

<http://invasivespeciesireland.com/toolkit/invasive-plant-management/terrestrial-plants/japanese-knotweed/>

- 5.7 It is recommended that an Invasive Species Management Plan is prepared during the detailed design stage of the Environmental Improvement Scheme. This would detail the methodology to be employed to eradicate the Japanese Knotweed on the middle pond islands prior to any works being undertaken in this area.

## 6.0 BADGERS AND OTHER MAMMALS

- 6.1 A survey of mammals using Ward Park was carried out by ATEC in March 2015 and is included at Appendix D. This survey focused on the European Badger *Meles meles* which is protected under Northern Ireland Wildlife legislation. No signs of badger activity were found within the application site on the day of survey.
- 6.2 Two old, disused mammal burrows were noted along the western boundary of the site (refer to Photos 3 & 4 and Figure 1 within the report at Appendix D). The internal tunnelling of both burrows was found to be completely collapsed and they were assessed as being inaccessible / unusable by mammals. It was noted that the Park is probably visited by urban foxes *Vulpes vulpes* but as this species is not protected and, in any case, no fox dens were found no action is required to protect this species.
- 6.3 No signs of either American Mink *Neovison vison* or Common Otter *Lutra lutra* was found. The Park does contain a resident population of Grey Squirrels *Sciurus carolinensis* but, again, this species is not legally protected here and it is not native to Ireland.

- 7.0 BATS
- 7.1 Three bat survey visits to Ward Park were made by staff at Blackstaff Ecology during July and August 2015, two of these at dusk and one at dawn. Refer to Appendix E. A high level of bat activity was recorded, with more activity during dusk visits than at dawn. Three bat species were detected, the Common Pipistrelle *Pipistrellus pipistrellus*, Soprano Pipistrelle *Pipistrellus pygmaeus* and Leisler's Bat *Nyctalus leisleri*. A total of 654 passes were detected during the three surveys. Common Pipistrelle was the most common species recorded, with 426 passes in total, accounting for approximately 65% of all passes detected during the three surveys.
- 7.2 Both Common and Soprano Pipistrelles are common in Northern Ireland, whereas Leisler's Bat is rarer.
- 7.3 A common theme of all three surveys is that the greatest concentration of bat activity is generally at or in close proximity to waterbodies (see heat map), illustrating how such features are important for bats as water attracts high levels of flying insects. It is also thought that the darker areas in and around trees provide important foraging habitat for bats.
- 7.4 Blackstaff Ecology recommend that, as part of the renovation of Ward Park, bat-friendly lighting should be installed in areas of the park deemed to be of high ecological value for bats such as around the periphery of the lake and along secondary pathways. This would provide darker conditions for bats and may encourage Daubenton's bats to start using the park for foraging. This species is absent at present. Installation of bat boxes is also recommended, together with measures to develop more 'wild' areas within the park to attract bat insect prey.
- 7.5 Consideration will be given during the detailed design stage of the Environmental Improvement Scheme to the use of bat friendly lighting which is designed to confine the spread of light to pathways and to minimize overspill on to the water of the ponds and upwards into the air.

## 8.0 BIRDS

8.1 A survey of breeding birds was carried out by Dr Karl Partridge during the period April to June 2015, with three survey visits made to the whole of Ward Park and all species identified, counted and mapped. Refer to Appendix F.

8.2 Thirty five bird species were recorded during the survey, of which 22 are believed to be breeding within the park. The thirteen other species comprised three which are probably breeding in the park, five species breeding nearby, and five species visiting the park to feed.

8.3 For a park of only seventeen hectares, bird diversity is quite rich and the total number of nesting pairs is estimated at 130. Passerines are well-represented. Blue Tit (12 pairs), Blackbird (11 pairs), Robin (9 pairs), Dunnock (8 pairs), Chaffinch (7 pairs), Great Tit (6 pairs), Goldcrest (5 pairs) and Goldfinch (5 pairs) are the commonest species. There is also a small rookery which is estimated to contain 20 nests

8.4 Waterbirds are unusually abundant in and around the three ponds, reflecting the fact that park users feed birds with bread and this attracts large numbers of Mallard, Greylag Geese and gulls. A pair of Tufted Duck was present from late May to mid June but they are not thought to have bred. The creation of a woodland shrub layer within some of the wooded areas would provide habitat for additional passerines such as Chiffchaff, Blackcap and Spotted Flycatcher

- 9.0 FISH
- 9.1 An electrofishing survey of the three ponds and interconnecting channels was carried out by Dr Paul Johnston (Paul Johnston Associates), assisted by Dr Karl Partridge, in March 2015, in order to determine what fish species are present in the ponds. The survey report is included at Appendix G.
- 9.2 Three-spined sticklebacks *Gasterosteus aculeatus* were observed at four of the five sampling locations and were present in large numbers in the connecting watercourse, notably just downstream of the weir structures.
- 9.3 The European Freshwater Eel *Anguilla anguilla* was also observed at all sampling locations except one, with abundance appearing to be greater towards the downstream (northerly) end of the site. A total of 10 eels were captured and another four were observed but not caught.
- 9.4 The size range of nine eels captured was 26-54 cm, with another unmeasured individual estimated at 15-18 cm. This range of sizes is indicative of a population structure consisting of several age groups and indicating recruitment of young eels from the sea.
- 9.5 Where eels are present in a watercourse it is an offence to remove material from a river bed under Section 48 of the Fisheries Act, without prior approval from the Department of Agriculture, Environment and Rural Affairs (DAERA), Inland Fisheries section. The removal of watercourse substrate can degrade fisheries habitat, cause mortalities to the spawn of fry of salmon, trout or eels and disturb the natural behaviour of adult fish with resulting negative impacts. In the case of Ward Park a Section 48 permit will be required from DAERA to authorise the carrying out of activities which would normally be illegal (i.e. the removal of river bed substrate) with operations restricted by such conditions as DAERA considers appropriate.
- 9.6 Mitigation measures will be required in order to protect eels during the Ward Park de-silting operation and pond restoration.

10.0 AQUATIC FAUNA AND WATER QUALITY

10.1 Sampling of the aquatic macroinvertebrate fauna of the Ward Park watercourse was carried out by Dr Karl Partridge in June 2015 in order to ascertain the water quality status of the Ward Park aquatic system. His report is included at Appendix H. Established methodology was used to sample the bed of the interconnecting channels where running water conditions prevail.

10.2 Aquatic macroinvertebrates - such as mayfly, caddisfly, and stonefly larvae - are sensitive to different kinds of water pollution and can be used to determine the degree of pollution within a watercourse. Because of their relative lack of mobility in rivers, these organisms are exposed to the full effects of pollution and therefore act as an in-line monitoring system for pollution events. The assemblage of aquatic organisms present at any particular location within a stream or rivers reflects the degree to which the watercourse has been affected by pollution over a period of time. Biological monitoring is, therefore, in some ways more useful as a measure of water quality than chemical water analysis.

10.3 Water quality conditions at the three locations were a) above the top pond = poor, b) below the top pond = fair and, c) just above the lowermost pond = poor. This corroborates results obtained during the fish survey and observations made during the habitat survey. However, the presence of eels of different age classes within the system indicates that water quality conditions, while poor, are not subject to catastrophic or toxic pollution events.



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Director  
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September 2016  
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**APPENDIX A**  
Site Location Plan

**APPENDIX B**

Habitat Inventory by Shaun Wolfe-Murphy of WM Associates

**APPENDIX C**

Tree Survey and Report by Dr Philip Blackstock

**APPENDIX D**

An Assessment of Badger Activity by ATEC

**APPENDIX E**

Bat Survey Report by Blackstaff Ecology

**APPENDIX F**

Breeding Birds Survey by Dr Karl Partridge

**APPENDIX G**

Electrofishing Survey by Paul Johnston Associates

**APPENDIX H**

Biological Assessment of Water Quality by Dr Karl Partridge