

FLAYBRICK MEMORIAL GARDENS
CONSERVATION MANAGEMENT PLAN
VOLUME FOUR: APPENDICES
DECEMBER 2018



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FLAYBRICK MEMORIAL GARDENS: CONSERVATION MANAGEMENT PLAN: VOLUME FOUR: APPENDICES

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APPENDIX A: LISTING DESCRIPTIONS

FLAYBRICK MEMORIAL GARDENS

This garden or other land is registered under the Historic Buildings and Ancient Monuments Act 1953 within the Register of Historic Parks and Gardens by English Heritage for its special historic interest.

List entry Number: 1001564

Grade: II*

Date first registered: 03-Dec-2001

Details

A public cemetery opened in 1864 and extended in the late C19 and early C20. The layout was designed by Edward Kemp and the buildings by Lucy & Littler.

HISTORIC DEVELOPMENT

The Birkenhead Improvement Commissioners were granted powers to establish a cemetery by order of Parliament in 1843. Joseph Paxton (1803-65) was approached for a design (Wirral MBC leaflet) but a recession and subsequent decrease in the population of Birkenhead resulted in no action being taken. With the return of prosperity in the 1860s the proposal was revived and the cemetery was designed by Edward Kemp on a c.6.7ha site adjacent to a sandstone quarry at Flaybrick Hill.

Edward Kemp (1817-91) was assisted by the surveyor Edward Mills of Birkenhead (ibid). The buildings were designed by Liverpool architects Lucy & Littler and comprised three mortuary chapels, a Registrar's office, and a Sexton's lodge (Pevsner and Hubbard 1971). The cemetery at Flaybrick was the first municipal public cemetery on the Wirral.

Kemp was responsible for the laying out of Birkenhead Park (qv) to designs by Joseph Paxton, was appointed superintendent there in 1845 and, in 1847 also set up in private practice. In addition to designs for a number of public parks in the north-west of England, Kemp also designed the layout of the City of Liverpool Cemetery at Anfield (qv), opened in 1863.

Work on the Birkenhead cemetery commenced in 1862. The general contractor was William Rimmer of Bidston Hall, and John Middlehurst of St Helens was the contractor for the buildings. Kemp's formal layout for the southern area of the cemetery set the linked Anglican and Nonconformist chapels, together with their main approach and two entrances, on an east/west axis aligned with Bidston Avenue (formerly Bailey Street) leading up from Birkenhead town centre to the east (1864 plan). In the north-west area of the site, the Roman Catholic chapel was set within a formal path layout (1864 plan). Some 2ha was allocated for Anglican burials, c 2.4ha for Nonconformists, and c 2.2ha for Roman Catholics (Sanderson 1871). The cemetery, at first named Birkenhead Cemetery, and from c 1956 known as Flaybrick Hill, was opened on 30 May 1864. In 1871 it was noted that a rugged and barren piece of land had been turned into 'a place of surpassing beauty and elegance' (ibid).

To the north-east of the 1864 cemetery, the Birkenhead Improvement Commissioners had acquired c 1.7ha of land together with the adjoining Flaybrick Quarry of c 5.3ha for future expansion (ibid). The cemetery was extended into these areas in the late C19 and early C20 (OS 1899, 1912, 1927) although only a part of the former quarry site was utilised.

The Roman Catholic chapel was demolished in 1971 and a Memorial Wall erected on the site. The Anglican and Nonconformist chapels were last used in 1975. The Registrar's office and Sexton's lodge are now (2001) in private ownership. In 1994 the cemetery was renamed Flaybrick Memorial Gardens, although occasional interments continue in existing grave plots.

Flaybrick Memorial Gardens remain (2001) in the ownership of Wirral Metropolitan Borough Council.

DESCRIPTION

LOCATION, AREA, BOUNDARIES, LANDFORM, SETTING The cemetery is situated c 3.2km west-north-west of Birkenhead town centre and c 0.4km north-west of Birkenhead Park. The irregular c 10.5ha site occupies rising ground below Bidston Hill to the north-west and above the River Mersey to the east.

The southern area of the site is bounded by Tollemache Road to the east, Upper Flaybrick Road to the south, and Boundary Road to the west. These boundaries are marked by c 1m high stone walls with c 1.5m high piers with roll-top detail. The walls are stepped at

pier positions to follow the ground contour. The lower sections of wall are generally topped with c 0.4m high C20 railings with infilled sockets indicating that these are replacements. Extended stone piers mark the boundary at the junctions of Upper Flaybrick Road with Tollemache Road and Boundary Road. The north boundary of the southern section of the gardens, within the former quarry area, is marked by a c 3m high stone wall with raking coping. Stone for the boundary walls came from adjoining Flaybrick Quarry (Wirral MBC guide leaflet).

The north-west, Roman Catholic, area is bounded by housing to the west and east and by Lower Flaybrick Road (formerly part of New Road) to the north. The east boundary is marked by c 4m high C20 timber fencing and other boundaries by C20 stone walls and railings.

The site slopes generally up to the south and west with views out from the higher ground to Liverpool, across the River Mersey to the east. To the west of the site lie allotments, an urban farm, and the rising slopes of Taylor's Wood and Bidston Hill. The surrounding areas to the north, west, and south are generally residential. Immediately to the north, the site of a C19 isolation hospital has been developed in the late C20 for housing with a small wooded area retained at the south-west corner adjoining the cemetery.

ENTRANCES AND APPROACHES All main entrances and entrance buildings were designed by Liverpool architects Lucy & Littler and constructed in 1862-64. The principal entrance (listed grade II) lies on the east boundary and is aligned on the main east/west axis with Bidston Avenue. It comprises a carriage entrance flanked by two pedestrian entrances, all with C19 cast-iron gates set back from the road between polygonal stone gate piers and quadrant flanking stone walls. The south pier to the carriage entrance is inscribed 'B.I.C.' (Birkenhead Improvement Commissioners) and the north pier with the date 1864.

A niche in the south flanking wall marks the position of a former drinking fountain. Immediately north-west of the entrance stands the stone Cemetery Office and Lodge (listed grade II), a one- and two-storey building in Gothic style with a 'fanciful bell-turret' (Pevsner and Hubbard 1971). A second entrance (listed grade II), which terminates the main east/west axis on the west boundary, is in similar style to the principal entrance but without a lodge.

The north-west, Roman Catholic, area is served by two further entrances. The first (listed grade II) is set on a short right-angled return in the boundary to Boundary Road, c 160m north-north-west of the chapels; it is in similar style to the principal entrance. Immediately to the north-west of this entrance to the Roman Catholic area is a small stone lodge (listed grade II), similar in style to the Office and Lodge at the principal entrance. The second entrance (listed grade II) to the Roman Catholic area is situated on the north boundary, c 410m north-north-west of the principal entrance. It is marked by a carriage entrance below a corbelled, stilted stone arch with stepped gable and a pedestrian gate to the east below a lower arch and gable, both now (2001) without gates and with the carriage entrance infilled with a c 2m high stone wall. Between the two gateways a niche with triangular hood mould over and granite basin below marks the position of a former drinking fountain.

Some 70m and 120m north-north-east of the principal entrance on Tollemache Road there are vehicle entrances into the yard adjoining the Rangers' Office and into the lower former quarry area respectively, both with pairs of C20 metal gates.

PRINCIPAL BUILDINGS Some 150m west of the principal entrance the Anglican and Nonconformist mortuary chapels of 1862-64 by Lucy & Littler (listed grade II), to north and south respectively, are sited on a terrace with low stone retaining walls to the east, at the west end of the main axis path. From here there is a long view out along the axis to the east to Liverpool city centre

on the opposite bank of the River Mersey. The stone chapels are symmetrical, flanking a central cloister range with a tower set on the main east/west axis with the principal entrance and Bidston Avenue beyond. The main part of the spire above the tower has been removed. The chapels are now (2001) derelict and enclosed within a security fence. A granite First World War memorial cross is situated adjacent to the east elevation of the tower.

OTHER LAND In the southern area of the cemetery the Anglican and Nonconformist chapels are set axially with the principal entrance and main drive, on a terrace which is level with the Boundary Road entrance. The lower ground, to the east of the chapels, lies between low east/west embankments sited c 60m to the north and south of the main drive. The north-east area occupies the lower ground of the former quarry site. To the south of this area a 3-4m high vertical stone face runs east/west, above an irregular embanked terrace which returns north and diminishes to the west of the former quarry.

The irregularly shaped grounds comprise three contrasting areas. The main southern (Anglican and Nonconformist) area is laid out with a formal design, set symmetrically about an east/west axis. This is in contrast to the generally less formal layout of the smaller, Roman Catholic area to the north-west. Both of these areas were laid out in 1862-64 (1864 plan) to Kemp's design. In the third area, to the north-east, the formal layout is extended but is set against the irregular topography of the former quarry.

From the principal entrance the main axial drive rises gently, leading west for c 125m before dividing to encircle the Anglican and Nonconformist chapels, rejoining adjacent to the southernmost entrance from Boundary Road. To the north-east and south-east of the chapel terrace the drive is embanked and enclosed by low stone walls.

APPENDIX A: LISTING DESCRIPTIONS

Some 70m to both north and south of the main drive, a low embankment runs parallel, each embankment separating a pair of axial paths, with the outer of each pair at a higher level. These outer paths are linked to the main drive by cross-axial paths with stone steps at the embankments. Elsewhere changes of level are achieved by paths being ramped within stone balustrades. Junctions of cross-paths with the outer east/west paths are generally marked by a widening of the path to form a circular feature, some with a central tree. The main drive and outer axial paths are lined with clipped hollies which reinforce the symmetrical design and contrast with informal groups and specimen trees which include cut-leaf beech, silver pendant lime, and araucaria. The overall layout and formal planting are as indicated on the 1864 plan of the cemetery.

The formal layout is continued with grassed paths into the southern area adjoining Upper Flaybrick Road. The ground level drops by c 3-4m c 110m north of the main drive, on the irregular east/west line of the vertical cliff-like stone face of the former quarry. Some 30m north of the stone face a c 2m embankment runs east/west forming a terrace above the lower former quarry area to the north. The central formal path layout is continued in this north-east area of the site with similar features of circular path junctions, stone steps, and stone balustrades to ramped sections of paths.

From the lodge adjacent to Boundary Road a path leads north, on a serpentine route, to the site of the former Roman Catholic mortuary chapel. This lay c 200m north-north-east of the Roman Catholic lodge and is marked by a grassed area and a Memorial Wall. From the former chapel site a path curves east and then north to the entrance on the north boundary. A second path leads east from the Roman Catholic lodge for c 50m to a junction before curving south to form the cross path leading to the Anglican chapel. Some 100m east-south-east of the Roman Catholic lodge, a ramped link leads off this path to the former quarry area. The area to the west of the Roman Catholic area is generally grassed with

no apparent remains of the formal path layout to the west of the chapel shown on the 1864 plan. Both north and west boundaries of this section are planted with belts of mature trees with informal groups of trees within the site.

The cemetery contains a number of graves of architectural and historical interest. These include the family vault of the Laird family, of shipbuilding fame, and at a path junction, 120m north-west of the principal entrance, the imposing canopied stone tomb of Sir William Jackson who was instrumental in the creation of Birkenhead Park. The cemetery's designers, Edward Kemp, Charles Lucy, and Charles Littler are also all buried here.

- A complex example of a High Victorian (1862-64) public cemetery for a provincial town.
- The layout was designed by a prolific and renowned designer, Edward Kemp.
- Kemp's extensive and creative layout makes dramatic use of the elevated hillside site overlooking Birkenhead, the Mersey and Liverpool.
- It contains a notable ensemble of buildings including two conjoined chapels, four gateways and lodges and boundary wall, all by eminent Liverpool cemetery architects Lucy & Littler.
- Its local and national social interest is expressed in an artistically rich variety of 19th / early 20th century monuments including many to Liverpool worthies.
- The cemetery layout and its structures survive intact despite the dereliction of the original chapels.

CEMETERY CHAPELS AT FLAYBRICK HILL CEMETERY

List entry Number: 1218990

Grade: II

Date first listed: 28-Mar-1974

Cemetery Chapels. 1862-4. By Lucy and Littler. Coursed and squared rubble with Welsh slate roof largely missing. Symmetrically planned with two chapels flanking central cloister range with tower and spire. Each chapel has nave and aisle, with outer porch and apsidal east end. Deep moulded archway with cylindrical shafts and foliate corbels to hood moulds in each porch. Paired foiled lancet windows to aisle. Small side chapels project from inner walls. Cloister range of 3 gables each side of central archway and tower. Triple foiled windows beneath each gable, and circular window in apex of each gable. Trefoiled fretwork in parapet between gables. Central tower has blocked archway to ground floor with expressed gable over and clasping buttresses. Second stage has triple foiled windows, rose window and clock beneath expressed gable which interrupts the parapet and cuts into brooch of spire. Angle pinnacles carried on short shafts.

APPENDIX A: LISTING DESCRIPTIONS

LODGE AT FLAYBRICK HILL CEMETERY ADJACENT TO THE WESTERN, SECONDARY CEMETERY GATES

List entry Number: I2I0174

Grade: II

Date first listed: 28-Mar-1974

Date of most recent amendment: 10-Aug-1992

GV II Lodge to Flaybrick Hill Cemetery. 1864. By Lucy and Littler. Coursed and squared stonework, the roof covering now missing. One-and-a-half storeys, L-plan with entrance porch in angle under catslide extension of roof of projecting gable. Moulded arched doorway up steps. Stone oriel window carried on brackets in gable alongside, and small paired foiled windows in apex. Paired foiled windows in end wall of other gable, and quatrefoil at apex. Axial stack. For the other principal cemetery buildings see under Tollemache Road.

OFFICE AND LODGE TO FLAYBRICK HILL CEMETERY

List entry Number: I2I9000

Grade: II

Date first listed: 28-Mar-1974

Date of most recent amendment: 10-Aug-1992

Office and Lodge to cemetery. 1862-4. By Lucy and Littler. Coursed and squared rubble with Welsh slate roof. 1- and 2 storeys, asymmetrically-planned in picturesque gothic style. 3 bays to south elevation with central tower over entrance porch. Moulded archway with shafts and hood mould. Wide chamfered angles to tower above with gable in each face, with heavy foliate bases to short shafts each side of Birkenhead arms, then tall timber fleche with trefoiled niches and wrought-iron finial. Window and dormer in roof over to right. Office to left with stepped 3-light foiled window in expressed gable, and segmental bay window with half-conical roof and paired transomed lights in end gable.

NORTHERN GATE TO FLAYBRICK HILL CEMETERY

List entry Number: I201555

Grade: II

Date first listed: 28-Mar-1974

Date of most recent amendment: 10-Aug-1992

GV II Gate to cemetery. 1862-64. By Lucy and Littler. Coursed and squared stone with cast-iron gates. Main gate with separate side entry in length of wall with raking coping. Main gateway in stilted arch carried on corbels, beneath stepped gable with quatrefoil at apex. Gates themselves now missing and the archway partially blocked. Foot gate to left, a simpler moulded arch beneath steep coped gable. Cast-iron gates with scrollwork decoration. Between the two gates, a foliate niche for fountain with ornate triangular hood mould, and enriched corbel supporting granite basin.

APPENDIX A: LISTING DESCRIPTIONS

MAIN EASTERN ENTRANCE GATES TO FLAYBRICK HILL CEMETERY ADJACENT TO THE EASTERN LODGE

List entry Number: 1282543

Grade: II

Date first listed: 28-Mar-1974

Date of most recent amendment: 10-Aug-1992

28/03/74 GV II Entrance to cemetery. 1862-64. By Lucy and Littler. Stone flanking wall and piers, cast-iron gates. Quadrant flanking wall with plinth and raking copings incorporating in southern length a drinking fountain with cast iron bowl in gabled niche. Polygonal gate piers with stepped tapered caps and quatrefoil panels incorporating date and initials B.I.C. (Birkenhead Improvement Commission). Cast-iron gates with twisted shafts, arrow heads and quatrefoil decoration. Side gate to office with gothic stone overarch.

MAIN WESTERN GATES TO FLAYBRICK HILL CEMETERY ADJACENT TO THE CEMETERY CHAPELS

List entry Number: 1217805

Grade: II

Date first listed: 28-Mar-1974

Date of most recent amendment: 10-Aug-1992

GV II Entrance gates to Flaybrick Hill Cemetery. 1864. By Lucy and Littler. Stone gate piers and cast-iron gates. Gate piers to main and side gates in flanking wall with chamfered plinth and raking coping. Polygonal gate piers with stepped tapered caps with finials. Incised quatrefoil decoration incorporating date and initials BIC (Birkenhead Improvement Commissioners). Cast-iron gates have twisted shafts with arrow heads and scroll-work.

SECONDARY WESTERN GATES TO FLAYBRICK HILL CEMETERY ADJACENT TO THE WESTERN CEMETERY LODGE

List entry Number: 1201595

Grade: II

Date first listed: 28-Mar-1974

Date of most recent amendment: 10-Aug-1992

GV II Entrance gates to Flaybrick Hill Cemetery, 1864. By Lucy and Littler. Stone gate piers and cast-iron gates. Gate piers to main and side gates in flanking wall with chamfered plinth and raking coping. Polygonal gate piers with stepped tapered caps with finials. Incised quatrefoil decoration incorporating date and initials BIC (Birkenhead Improvement Commission). Cast-iron gates have twisted shafts with arrow heads, and quatrefoil panels. (The Buildings of England: Nikolaus Pevsner and Edward Hubbard: Cheshire: Harmondsworth: 1971).

APPENDIX B: ECOLOGY REPORT



**Flaybrick Cemetery & Memorial Gardens,
Birkenhead**

Ecology Report

Report for Purcell

July 2017

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1. INTRODUCTION

1.1 Overview

This ecology report was commissioned by Purcell on behalf of The Friends of Flaybrick Cemetery. The report relates to Flaybrick Cemetery and Memorial Gardens (hereafter referred to as Flaybrick), Birkenhead which is a historic 19th Century public cemetery dating back to the 1860's. The cemetery combines a mature landscape designed by a renowned Victorian architect, historic structures and buildings and areas of semi-natural habitats of ecological and geological interest.

Flaybrick is on Historic England's Register of Historic Parks and Gardens by English Heritage for its special historic interest and its Grade II* Listed. The site is currently on Historic England's "Heritage at Risk" Register. The cemetery is also within a Conservation Area, as designated by Wirral Borough Council.

The ecology survey has been carried out to inform a Conservation Management Plan which is being produced for the site. Separate studies have been commissioned into the historic landscape, designed landscape, buildings, archaeology, hydrology and ecology of the site.

1.2 Scope of Study

The study relates to the boundary shown in Figure 1 and includes an overview of adjoining areas. The scope of works commissioned comprises:

- an ecological desk study of the site and immediate area
- an Extended Phase 1 Habitat Survey of the site
- an ecology report bringing together knowledge of the site's ecological interest, management practices and any identified threats or constraints to site management or development. The report also proposes management policies relating to the ecological value of the site.

The field work and report are to the standards set out in current good practice guidelines including *Handbook for Phase 1 Habitat Survey¹*, *Guidelines for*

¹ *Handbook for Phase 1 Habitat Survey – A Technique for Environmental Audit*, Joint Nature Conservation Committee, 2010

Preliminary Ecological Assessment Appraisal² and Bat Surveys – Good Practice Guidelines³.

1.3 Personnel

The field surveys and report were undertaken and prepared by Claire Leather and Guy Morrison. Both are fully qualified, experienced and practising field ecologists, Chartered Environmentalists (CEnv) and a full professional members of the Chartered Institute of Ecology and Environmental Management (MCIEEM).

1.4 Survey Constraints

The field survey provides an ecological baseline reflecting the flora and fauna observed at the time of the survey. Species may change through the seasons in terms of species presence, population size and distribution. Species which may be present at other times of the year may not have been observed during the survey. However, effort to predict the potential for species to occupy throughout the seasons has been made. No specialist fauna surveys were undertaken. Specialist botanical survey, including National Vegetation Classification (NVC) surveys, were not commissioned.

Not all previous ecology studies, reports or data known for the site were available for this study.

2. BURIAL GROUNDS & BIODIVERSITY

2.1 Overview

In ecological terms, burial grounds have a distinctive identity, supporting habitats and features rarely found in combination in any other setting. Whether small village churchyards or large city cemeteries, burial grounds are increasingly recognised for their value for wildlife. Many now have official recognition, not just for their heritage value, but their ecological value. Although there are currently no

² *Guidelines for Preliminary Ecological Assessment Appraisal*, Chartered Institute of Ecology and Environmental Management, 2012

³ *Bat Surveys – Good Practice Guidelines*, Bat Conservation Trust, 2012



burial grounds have statutory protection through designation as Sites of Special Scientific Interest (SSSIs), some do have statutory protection as Local Nature Reserves (LNRs). This LNR designation requires that the sites are managed for the conservation of their natural features.

Designation of burial grounds at a local level is increasingly common, with sites considered to be of local importance for nature conservation receiving protection through planning system and protective policies in the Local Plan or Unitary Development Plan.

However, absence of a designation should not be perceived as evidence that a burial ground has insignificant value for wildlife. It is often a reflection of lack of survey of a site, which means the site's value is currently unknown.

Many burial grounds were originally created by enclosing countryside. It is known that when it was first opened in 1864, Flaybrick was surrounded by open countryside outside of Birkenhead.

Frequently burial grounds are found to support remnant habitats dating back to the time before their development as burial ground, and are sometimes referred to as "encapsulated countryside". Burial grounds are recognised for the contribution to minimising habitat fragmentation in urban environments. Together with parks, open space, trees and hedges, burial grounds form invaluable green corridors spanning city and country.

Increasingly, due to urbanisation and intensification of agricultural practices in the countryside, burial grounds are also havens for species and habitats which may not have space to grow and survive in wider environments. This, coupled with the inherent lack of disturbance in many burial grounds, means wildlife has the opportunity to thrive, with appropriate management and resources.

Often peculiar to burial grounds is the geological diversity to be found in a relatively small area. Some burial grounds, due to the geological interest they often have, may be designated as Regionally Important Geological and Geomorphological Sites (RIGs), and as such are afforded protection through the planning system.

Gravestones, memorials and funerary architecture are frequently constructed from stone not found in the local area, and can introduce different geological substrates which in turn can support a greater diversity of flora. Of particular relevance here



are the diverse lichen communities that can be found on acid and calcareous rock in burial grounds, air pollution permitting. Acid and calcareous rocks also support different wall flora, due to the pH of the rock substrate, meaning that burial ground species lists can be quite extensive and interesting too.

Burial grounds, typically grassy with mature trees from original landscaping, offer diverse habitats. The value of these habitats reflects the extent to which remnant habitats such as grasslands and woodlands have been retained and how they have been managed.

There are a number of UK wide projects which seek to promote the value of burial grounds for wildlife and people. These include *Caring for God's Acre*, a charity working to preserve wildlife, heritage and people's enjoyment of burial grounds. *Caring for God's Acre* identified the following Flagship Species for burial grounds, for particular study and promotion:

- yew trees
- waxcap fungi
- bumble bees
- slow worm
- swifts
- hedgehogs

The Wildlife Trusts churchyard and cemetery projects operate at a county level and seek to promote the wildlife value of burial grounds, and the *British Lichen Society* which runs the *Churchyard Lichens Project* which studies and raises awareness of lichens in burial grounds.

3. SITE DESCRIPTION

3.1 Site Overview

Flaybrick Cemetery extends over a 10.5ha site and is an historic 19th century Grade II* listed public cemetery. The cemetery, opened in 1864, is no longer an active cemetery and is managed by Wirral Borough Council, supported by The Friends of Flaybrick Cemetery.

Flaybrick now comprises a mature designed landscape laid out in a formal and symmetrical plan typical of traditional town cemeteries. Flaybrick supports a high density and species diversity of trees. The trees at the cemetery is not known to be protected by Tree Preservation Order. The tree stock at Flaybrick is collectively referred to as an arboretum. Several trees are described as Champion Trees, and are listed on Great Trees of the Wirral.

Flaybrick has all the features of cemetery with potential to be of valuable ecological value, with its long history and range of semi-natural habitats and geological features. It is a valuable part in the green corridor between the habitats of Bidston Hill and Birkenhead Park.

3.2 Site Location

Flaybrick Cemetery is located approximately 3.2km north-west of Birkenhead town centre, and 0.4km north-west of Birkenhead Park, on the Wirral peninsula.

The cemetery is located between Tollemache Road and Boundary Road which form the east and west boundaries of the site respectively. To the west of the site lie allotment gardens and the Tam O'Shanter urban farm, Taylor's Wood and Bidston Hill.

The areas to the north and east and south are predominantly residential.

Upper Flaybrick Road bounds the cemetery to the south, with residential streets of Lower Flaybrick Road, located at the northern end of the cemetery.

The site centre OS grid reference is SJ 2931 8953. The site boundary is illustrated in Figure 1 below.



Fig 1: Aerial photograph and site boundary

3.3 Topography & Geology

The cemetery slopes generally up to the south and west and has views out from the higher ground over towards the River Mersey.

The site is underlain by Helsby Sandstone and this rock is exposed in the upper quarry in the form of a 3m high vertical quarry face. The entire cemetery is designated as a Local Geological Site known as Flaybrick Cemetery, Bidston⁴.

⁴ <http://bit.ly/2oBp9ls>



Immediately on the northern boundary of the site the geology changes, and here Wilmslow Sandstone is found. There is an outcrop of this rock immediately beyond the northern boundary and is the Local Geological Site known as Lower Flaybrick, Bidston⁵, and referred to locally as Nanny Goat's Mountain.

3.4 Land-use & Access

The cemetery is divided into three distinct areas, reflecting the former use of the site and the cemetery's development.

The Southern Area

The southern area of the cemetery has a formal layout and is the Anglican/Nonconformist area of the cemetery. This area is laid out symmetrically on an east-west axis, with tree lined avenues and short embankments facilitating the gradual terracing of the area as the land slopes away to the north.

The North Eastern Area

The north eastern area of the cemetery is on the former quarry area of Helsby Sandstone and consists of the upper quarry and lower quarry. The upper quarry is divided from the southern area by the 3m vertical tall rock face of the upper quarry running on an east west axis, before turning sharply north to merge with a wooded embankment.

These former quarry areas also have a formal layout and were an extension to the Anglican /Nonconformist area. There are tree lined avenues, and embanked woodland and stone steps facilitate the rapid drop in land between the upper and lower quarry and between the north western area of the cemetery and the lower quarry.

The North Western Area

The north western area of the cemetery is the Roman Catholic area of the cemetery, and extends from the high ground above the quarry, south to the central chapels which are currently being restored. A Roman Catholic chapel was previously present in this area, but is now gone.

⁵ <http://bit.ly/2nymCcv>



The north western area is noted for its less formal layout, and its more naturalistic atmosphere is reinforced by the backdrop of the mature woodland to the west of Boundary Road.

The area includes and bounds an interesting quarried or natural stone outcrop of Wilmslow Sandstone, which is a Local Geological Site and is referred to locally as Nanny Goat's Mountain. The outcrop is largely overgrown with scrub and naturally regenerated trees and access is limited to this area.

3.5 Access

The cemetery is open to the public on foot only, with car parking and toilet and café facilities available at the adjacent Tom O'Shanter complex. The cemetery can be accessed from the main entrance on Tollemarche Road, with further entrances being located off Boundary Road and off the northern boundary.

3.6 Site History

Flaybrick Cemetery is on Historic England's Register of Historic Parks and Gardens by Historic England for its special historic interest. The site was added to the Register in 2001 and is referred to as Flaybrick Memorial Gardens. The site is currently on Historic England's "Heritage at Risk" Register. The cemetery is also within a Conservation Area, as designated by Wirral Borough Council.

Flaybrick is a Grade II* Listed site in the Register of Parks and Gardens of Historic Interest⁶. The list entry states:

A complex example of a High Victorian (1862-64) public cemetery for a provincial town. The layout was designed by a prolific and renowned designer, Edward Kemp. Kemp's extensive and creative layout makes dramatic use of the elevated hillside site overlooking Birkenhead, the Mersey and Liverpool. It contains a notable ensemble of buildings including two conjoined chapels, four gateways and lodges and boundary wall, all by eminent Liverpool architects Lucy and Littler. Its local and national social interest is expressed in artistically rich variety of 19th / early 20th century monuments including many to Liverpool worthies.

⁶ <http://historicengland.org.uk/listing/the-list/list-entry/1001564>

The cemetery was developed over two periods, with the southern and north west areas being opened first, and a the north east area (occupying the former quarry areas opening later).

The north east area has been subject to new tree planting programmes, and the development of an arboretum concept, together with measures to encourage wildlife.

4. SURVEY METHODOLOGY

4.1 Desk Study

An ecological desk study was carried out to gather together and digest existing information on the site’s ecological interest.

The desk study included a search for statutory sites (local, national and internationally designated sites), non-statutory sites and species which are legally protected or are of particular conservation interest.

Ecological data was requested from Wirral Borough Council and the Friends of Flaybrick Cemetery, and provided by RECORD the Biodiversity Information System for Cheshire, Halton, Warrington and Wirral.

An internet-based assessment was also carried out using the online Multi-Agency Geographic Information for the Countryside (MAGIC) database⁷ and the National Biodiversity Network (NBN)⁸.

The results of the desk study, together with the Phase 1 ecology survey have influenced the scope and recommendations for detailed species surveys.

The desk study included a high level review of the status of species, habitats and designated site status in a legislative and planning context.

⁷ *magic.defra.gov.uk*, viewed 10 March 2017

⁸ *data.nbn.org.uk*, viewed 12 March 2017

4.2 Extended Phase 1 Habitat Survey

An Extended Phase 1 Habitat Survey was carried out during multiple site visits made in March 2017. The survey assessed and classified the ecological features of the site using the standard Extended Phase 1 Habitat Survey (hereafter referred to as Phase 1) methodology⁹.

Phase 1 Habitat Survey plans provides a rapid visual assessment of the extent and distribution of natural, semi-natural and artificial habitat types according to a standardised methodology. The plan incorporates Target Notes which describe features of note.

The context of the site was established by gaining an overview of the land immediately surrounding the site during the field survey. Further contextual information was gathered through analysis of aerial photography accessed on Google Earth¹⁰.

The potential for the site to support legally protected species¹¹ or species of particular conservation interest¹² was assessed based on the known range of the species/species group and the suitability of habitats at the site.

A search was made for invasive species such as Japanese knotweed and Himalayan balsam, and these were recorded where present.

Faunal field signs and sightings noted during the walkover survey were recorded.

⁹ *Handbook for Phase 1 Habitat Survey – a technique for environmental audit*, Joint Nature Conservation Committee, 2010

¹⁰ *Google Earth*, viewed 1 February 2017

¹¹ Notable species protected under Wildlife and Countryside Act (as amended) 1981, Conservation of Habitats and Species Regulations 2010, the EC Directive on the Conservation of Wild Birds (79/409/EEC), and the Protection of Badgers Act 1992.

¹² Notable species identified in the UK Biodiversity Action Plan (UKBAP), the Local Biodiversity Action Plan (LocalBAP) and species and habitats of Principal Importance in England under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 and Red Data Book species.

4.3 Habitat Evaluation for Bats

An assessment of the site's potential habitat value to foraging and commuting bats was carried out. Particular attention was given to the presence of features favoured by foraging and commuting bats such as the trees and waterbodies. A "wider than site" assessment was carried out to understand the site's value in context.

Trees and buildings were not assessed individually for the potential to support roosting bats.

5. DESK STUDY RESULTS

5.1 Designated Sites

There are no statutorily designated sites for nature conservation at or adjacent to Flaybrick Cemetery & Memorial Gardens.

No non-statutory sites designated for their nature conservation interest are located at the site itself.

Wirral Borough Council's interactive planning tool shows the land to the west of Flaybrick Cemetery to be an Area of Special Landscape Value, a Site of Local Biological Importance and an Urban Greenspace.

There are a number of Local Wildlife Sites, which are afforded statutory protection, close to the site and these are:

- Bidston Hill (immediately to the west of Flaybrick Cemetery, on the west side of Boundary Road)
- Wirral Ladies Golf Course, Noctorum (approx. 100m south of Flaybrick Cemetery, immediately south of Vyner Road)

Flaybrick Cemetery itself is designated as a Local Geological Site on the Local Plan. The geological outcrop immediately beyond the northern boundary of the site is also designated as a Local Geological Site on the Local Plan.

The rock outcrop and the crescent shaped piece of land bounding Flaybrick Cemetery to the north, and Naylor Road, is designated as a Regionally Important Geological Site (RIGS). This site, known as Lower Flaybrick (Naylor Road), is

afforded statutory protection. There are two further RIGS close to the site and these are:

- Bidston Hill (located immediately west of Flaybrick Cemetery) and
- Boundary Road, Bidston (located approx. 100m north of Flaybrick Cemetery)

5.2 Priority Habitats

Three areas of trees within the cemetery have been identified as the BAP UK Priority Habitat, Deciduous Woodland.

Further Deciduous Woodland Priority Habitat has been identified immediately to the west of the cemetery and on Boundary Road.

5.3 Protected Species

Desk study results for protected species have been received. One legally protected plant species has been recorded at the site and is:

- Bluebell (*Hyacinthoides non-scripta*) and

Bluebells are protected under the Wildlife and Countryside Act 1981 (as amended). This prohibits anyone digging up bluebells in the countryside, and prohibits landowners from their land for sale.

5.4 Summary of Previous Ecology Studies

Little information regarding any previous ecological surveys at the site has not come to light during the course of the desk study.

A bat emergence survey is understood to have been carried out ahead of the current chapel restoration works, and although no bats were recorded there are records of bat droppings being found in the cemetery (pers.comm. Purcell, March 2017).

5.5 Summary of Species Records

Plants

Plant records for the site are summarised below:

Ash, bluebell, bramble, cat's-ear, cherry larch, cleavers, common dog-violet, cow parsley, creeping cinquefoil, cuckooflower, cut-leaved beech, daisy, dandelion, dock, evergreen oak, field forget-me-not, field maple, garlic mustard, greater plantain, hawthorn, herb Robert, holly, hornbeam, horse chestnut, ivy, large-leaved lime, lilac, London plane, meadow buttercup, meadow vetchling, pignut, Portugal laurel, primrose, ribwort plantain, silver maple, small-leaved lime, sweet vernal-grass, thyme-leaved speedwell, wych elm and yew.

There is also record for curved wood-rush (*Luzula arcuata*) at Flaybrick, a vulnerable species, which is not known beyond high altitude mountain tops in Scotland. The source of this record is unknown, and it is advisable to resurvey for this species as its presence at Flaybrick is unlikely given the plant's very specialised ecological niche.

Birds

Bird records for the site are: blackbird, carrion crow, goldfinch, great tit, magpie and robin.

Mammals

There are no known records for mammals at the site.

Amphibians

There are no known records for amphibians at the site.

Invertebrates

Desk study records include white-tailed and large red-tailed bumble bee and speckled wood butterfly. There are records for white-letter hairstreak for Bidston Hill to the west of Flaybrick. This species is protected under the Wildlife and Countryside Act 1981 (as amended) against sale only. It is a UK BAP Priority species for conservation.

5.6 Summary of Current Management Plans

Currently there is no known management plan for Flaybrick Cemetery.

6. ECOLOGY SURVEY RESULTS

6.1 Extended Phase 1 Habitat Survey

Throughout this section, refer to Appendix A for a full plant species list and Appendix D for Phase One Habitat Plan.

The following Phase One habitat types were recorded at the site:

- Semi-improved neutral grassland (B2.2)
- Semi-improved acid grassland (B3.2)
- Scrub (A2.1) and Tall Ruderal Vegetation (C3.1)
- Natural Inland Cliff – Acidic (I1.2)
- Broad-leaved plantation woodland (A1.2)
- Mixed plantation woodland (A1.3.2)
- Scattered trees (A3.1)
- Introduced shrub (J1.4)
- Buildings (J3.6) and Boundary features (J2.4/2.5)

Grassland

Grassland forms a significant proportion of the habitat types recorded at Flaybrick. Cemetery grasslands can have, or have the potential to have, a diverse range of grassland flora, depending on the management of grasslands at the site. At Flaybrick there are distinct grassland types reflect soil conditions and management and these are described below.

The majority of the grassland in the cemetery is close mown semi-improved neutral grassland, and this intensity of management was noted particularly in the more formal, Southern Area of the cemetery.

In these tight swards rosette species survive, and include daisy, selfheal, dandelion and ribwort plantain. Occurring less frequently are ragwort, fox and cub's, autumnal hawkbit and meadow buttercup. Diversity reflecting the grassland's semi-improved nature is found in the presence of yarrow, bird's foot trefoil, common sorrel, three-cornered garlic, germander speedwell and a sward of fine grasses. Pignut, primroses, celandine and English bluebell (protected against removal under the Wildlife and Countryside Act 1981) are locally abundant in



shadier areas, and Spanish bluebell also occurs at the site. Herb Robert and scentless mayweed, scarlet pimpernel is frequent on walls, stones and along paths.

There are areas of less intensively mown semi-improved neutral grassland, notably in the North Eastern Area of the cemetery, which have greater structural diversity. In the lower quarry area, the grassland is less intensively mown and grasses are more dominant in the sward. These grasslands are characterised by coarser grasses such as cocks foot, Yorkshire fog and false oat-grass and more robust plants such as hogweed and cow parsley dominate. In damper ground lady's smock occurs, with bugle and soft rush. There is, an area of finer grasses with frequent common knapweed associated with a bank in the lower quarry area.

A further grassland type occurs at Flaybrick, although its extent is very limited. There are two north and south facing sloping banks within the Southern Area of the cemetery which are less intensely mown, probably due to the sloping banks. These slopes support an interesting, although very small in area, acid grassland community. Here fine grasses include sheep's fescue, fine bent grasses, and also heather and the diminutive sedge field wood rush. The heather, which is hanging on very sparsely, is currently being mown out at the top of the slopes.

Garden escapes are a typical feature of churchyards and cemeteries, brought in as offerings or for landscaping of graves. Garden escapes occur at Flaybrick and *Montbretia*, immediately to the north of the chapel, and wallflowers, naturalised roses, Spanish bluebell, daffodils and a lungwort garden escape. Shallon, an invasive species, was noted to be present in association with graves and encroaching onto grassland in the southern area.

Scrub & Tall Ruderals

Scrub habitats are developing in the North Eastern Area, in the upper quarry, and alongside Boundary Road within the North Eastern West of the cemetery. It is understood that the development of scrub has been allowed to occur partly due to lack of resources for management, but also to allow a greater diversity of habitats to thrive at the site. There has since been some recent management work directed at cutting back some of the scrub (including rhododendron scrub) in the North Western Area.

The scrub in the North Eastern area's upper quarry is predominantly bramble, with ivy growth being extensive on much of the quarry face. There are also some large



patches of tall ruderal vegetation, dominated by rosebay willowherb and hoary willowherb, white deadnettle and nettle, in the upper quarry area. Scrub in the North Western area includes an area of scattered gorse and developing silver birch trees close to Nanny Goat's Mountain.

The scrub and tall ruderal habitats are of value, in part because they form a mosaic of habitats with established woodland and grassland. This combination of habitats is valuable to butterflies and moths throughout their lifestages, and to foraging and breeding birds and small mammals.

Structures, Quarry & Grave Features

The chapels at Flaybrick are currently subject to restoration work and access to the structures was not possible. The chapels have been roofless for over 20 years, and this greatly reduced the potential of the structures to support roosting bats and swifts. It is unknown whether any significant gaps and crevices within the masonry occur, which may offer bat roosting and bird nesting potential.

The vegetation at the base of the walls which bound the cemetery are to a greater or lesser extent subject to control. At the time of survey, the southern boundary of the site had recently been sprayed with herbicide, and wall flora is sparse and appears to have been removed. There are a few small specimens of harts tongue fern, broad buckler fern and red valerian growing within the mortar or at the base of the walls. Where wall flora has not been controlled, eg. on the walls of the upper quarry area, wall flora is more abundant with the fern black spleenwort being recorded here. However, rank grassland and developing ivy and scrub at the base of these walls is shading out the wall flora.

Quarry workings in the cemetery, and the natural stone outcrop on the northern boundary, bring valuable additional habitats and diversity to the cemetery. Established trees are growing on the top and at the base of the cliff in the upper quarry, with two trees having recently fallen causing damage to gravestones and surrounding natural vegetation. The cliff is largely obscured through dense ivy growth, into which blackbirds and wrens were observed to be sheltering, and probably nesting and foraging.

The sandstone outcrop on the northern boundary of the site, is also overgrown with young trees and heather growing on the top and at the base of the feature.



Due to past management, or historic or current air pollution, the gravestones and memorials within the cemetery have been little colonised by lichens, mosses and other flora.

Trees & Woodland

Flaybrick's tree stock is described in a separate Tree Survey Report¹³, which should be read alongside this report.

The diversity of tree species within the cemetery is surprising, with approximately 50 species having been recorded. In the most part, the tree stock is early mature to mature, reflecting the age of its planting. In the recent past, some strategic tree planting along pathways in the lower quarry area, has been carried out. As part of the original landscape planting at Flaybrick, groups of rhododendron and cherry laurel were planted, and these are still evident today.

Several of the trees at Flaybrick were noted to have significant cracks, cavities and other features which have the potential to be used by hole-nesting birds and roosting bats.

Flaybrick supports a low level of deadwood features, perhaps due to frequent tidying which is typical of municipal cemetery management.

The woodland at Flaybrick is broad-leaved and mixed woodland of plantation origin. The woodland is located around the cemetery perimeters in the north western and north eastern corners of the cemetery, with a linear band of woodland extending along the north-south slope between the north western area of the cemetery and the north eastern area cemetery. This band of woodland also extends in a west-east direction below the upper quarry area.

These areas of woodland are dominated by sycamore, beech, Turkey oak, wych elm and Norway maple (G18 in the Tree Survey Report) and sycamore, London plane, holly, Austrian pine and wych elm (G10 in the Tree Survey Report). A further small area of woodland was recorded in the south west corner of the site and

¹³ Flaybrick Cemetery & Memorial Gardens – Tree Survey Report, Enviroscope Consulting Ltd, April 2017



species here comprise beech, Turkey oak, hawthorn and Austrian pine (G74 in the Tree Survey Report).

Ground flora comprises ivy, with hogweed and scattered bluebells and primroses. The woodlands have natural regeneration where management is not intense and includes beech, sycamore, hawthorn and silver birch.

6.2 Faunal Observations

A range of birds were seen or heard during the survey. These include: long tail tit, wren, blue tit, great tit, coal tit, blackbird, house sparrow, duncock, chaffinch, starling, kestrel, great spotted woodpecker, tree creeper, jackdaw, carrion crow, rook, wood pigeon, sparrowhawk, collared dove and buzzard.

It is likely that the site is used by a number of common and widespread mammals including small mammals, foxes and hedgehog. Signs of grey squirrels were observed within the woodland.

The site offers potential foraging for badgers, but no evidence of badgers (foraging signs, tracks, pathways or setts) were noted on the site.

6.3 Invasive Species

Three-cornered garlic, montbretia, rhododendron and shallon are steadily invasive, non-native plants, which are present at the site. These species are listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended), and as such it is illegal to allow these species to spread in the wild.

Ragwort is present infrequently within the grasslands. Ragwort is a native plant of wildlife value with recognized biodiversity value and its eradication is not sought by its inclusion as a specified weed in the Weeds Act 1959. Control is required if there is risk of the plant spreading and the plant poses a threat to livestock.

Spear thistle, broad leaved dock and creeping thistle are all present at the site. These species are also listed in the Weeds Act 1959 but are not considered a threat at the site.

7. EVALUATION

This section comprises an assessment of the desk study and field survey described above. It provides an evaluation of key features of the site, encapsulating what is important about the site from a nature conservation perspective.

Where specialist ecological surveys are considered likely to yield valuable information on flora and fauna, these surveys are recommended.

Site Designation

- Flaybrick does not have any statutory or non-statutory designations reflecting its nature conservation value.
- Flaybrick Cemetery, and the outcrop immediately to the north of the site, are designated as Local Geological Sites on the Local Plan.
- Flaybrick (Naylor Road) located on the north boundary of the site is designated as a Regionally Important Geological Site.
- Three areas of trees within the cemetery have been identified as the BAP UK Priority Habitat, Deciduous Woodland.

Strategic Value

- Flaybrick forms part of a green link between Bidston Hill and Birkenhead Park and is a green corridor spanning countryside and town.

Habitat & Species

- Flaybrick has a distinctive identity, supporting a combination of semi-natural and man-made habitats that are peculiar to burial grounds;
- Flaybrick supports remnant habitats from before the cemetery was created, and when the land was part of the wider countryside;
- Flaybrick has an interesting range of naturally occurring and introduced geology in the form of natural stone outcrops, quarry features and grave memorials of different stone types;
- Wall flora, including mosses and lichens, does not appear to be particularly abundant at the site, possibly reflecting management of stonework and historic/current pollution levels.

Lower plant surveys are recommended to determine which species are present at the site on saxicolous (stonework and natural outcrops) and corticolous (trees and deadwood) habitats, and to inform site management.

- The semi-improved grasslands at Flaybrick were found to be moderately species rich, botanically, and support a mixture of established neutral and acid grassland including small areas of heather;

The ecology survey was undertaken at a sub-optimal time of year. A botanical survey, undertaken (ideally more than once) between April and September, is recommended to obtain a fuller picture of the flora present at the site through the year, and to inform site management.

- A range of invertebrate habitats is provided by established semi-improved grasslands and their juxta-position with established woodland, sunny glades and scrub features;
- The tree stock at Flaybrick includes significant mature trees and small areas of plantation woodland and associated habitats;
- Deadwood habitats are infrequent at Flaybrick;
- The cemetery offers high quality foraging and commuting habitats for bats, and is part of a wider wildlife corridor facilitating movement of bats in the wider landscape;
- Potential bat roosting habitats at Flaybrick exist in some mature trees, and in the buildings surrounding the cemetery;
- Flaybrick is known to support yew trees which are one of several *Caring for God's Acre Flagship Species*. Due to the presence of established, and relatively undisturbed grassland and woodland habitats, Flaybrick may support the other Flagship Species and these are waxcap fungi, slow worm, bumblebees and hedgehogs. Further survey is required to determine this.

The following surveys would be useful in further understanding the site's ecological interesting and to inform site management: a fungus foray, reptile survey, breeding bird survey and observation of the use of the grasslands by bumblebees.

8. MANAGEMENT RECOMMENDATIONS

The following management recommendations reflect the importance of the site in nature conservation terms and any identified threats and opportunities. Management recommendations take into account the desk study information available and the findings of recent fieldwork.

Future specialist species and habitats surveys at the site may prompt review of management recommendations to reflect any new nature conservation priorities or interests.

8.1 Grassland

The following mowing regimes can be applied as the managers of Flaybrick consider most appropriate, but recommendations are provided below on which regime would suit which area.

Where a range of new mowing regimes are introduced at the site it may be useful to communicate the reasons to visitors through informal signs and interpretation boards. Also, stakes and ropes can be used to demonstrate that active management is underway and to guide people away from areas which are best left undisturbed.

Close-Mown Grass

Close-mown grass regime entails a two weekly cut through the growing season.

This mowing regime is intended for areas where it is essential to maintain a short sward of around 3 inches height eg. alongside paths, around visited graves or to create grassy paths through areas of longer grass. This regime will not encourage high species diversity, as plants are repeatedly not allowed to set seed. Therefore from an ecological perspective, the less intensive mowing regimes are preferable.

Short Grass

Less frequent cutting of the sward every 3-4 weeks, at a greater height (4-5 inches) will allow some low growing, rosette-type plants to set seed. This mowing regime is intended for areas where a short sward is required, but intense mowing is not necessary. Although species tolerant of mowing will survive, this regime is unlikely

to encourage high species diversity. Therefore from an ecological perspective, the less intensive mowing regimes are preferable.

Spring Meadow

Areas of cemetery grassland can be left to grow on through the spring, allowing species such as bird's foot trefoil, cat's ear, lady's smock and bugle to set seed. The spring meadow can then be cut in early June, and the cuttings removed. The removal of cuttings removes nutrients and this encourages species diversity. After this spring cut, the meadow can be cut once a month to a height of 3 inches until the end of the growing season. Ideally cuttings will be removed in order to reduce soil fertility, reduce coarse grass dominance and to allow a greater diversity of species to seed in.

Due to the range of plant species present in the Southern Area of the cemetery, this Spring Meadow regime is recommended for implementation in some of the Southern Area.

The area supporting bluebell should be subject to no mowing until the bluebells have set seed.

Summer Meadow

An alternative to the spring meadow is the summer meadow. Here the grassland can be cut once a month to 3-4 inches through spring and until the end of May. At this point, the grassland should be allowed to grow on. And left unmown until autumn, with a cut being taken in late September. The arisings should be removed in order to reduce soil fertility, reduce coarse grass dominance and to allow a greater diversity of species to seed in.

This regime is considered suitable for the North Western and North Eastern areas of the cemetery because of the species already present. Common knapweed, yarrow and meadow buttercup occur in these areas and as they flower later in the summer they are well suited to this regime.

8.2 Scrub & Tall Ruderals

Tall ruderal patches, particularly of nettles and areas of scrub such as bramble and ivy are all valuable nectar and fruit sources and shelter points for birds, small mammals and invertebrate, including butterflies.

To prevent scrub encroaching on other habitats, cut the scrub back on a rotational basis every 3 – 5 years depending on its rate of growth.

8.3 Structures, Quarry & Grave Features

If further works are proposed to buildings then an assessment of the buildings potential to support roosting bats should be made.

Where bat roosts are identified which are likely to be affected by any works, consult an Ecologist to identify if a European Protected species licence / bat mitigation plan may be required in advance of works.

Any works to the buildings should be carried out outside of the bird nesting season where there is a risk of nesting birds being present.

The ecological value of gravestones can be maintained by not shifting them from their original position. Lichens are very sensitive to changes in aspect and microclimate. Around the base of the gravestone or memorial there often develops a thicket of grass. This should be retained as a micro-habitat for invertebrates, small mammals and amphibians. If it must be tidied, then this could be done on a 3 – 5 yearly rotation rather than more regularly

Seek to avoid removal of wall flora from boundary walls, quarry faces and grave features, unless woody species pose a threat to the integrity of the structure. Favour use of lime mortar, rather than cement mortar, to favour a diverse wall flora.

The north-facing quarry face has a dense cover of ivy on part of it. This provides a habitat for nesting birds such as wrens and it is recommended that the ivy is retained with the current cover.

8.4 Trees & Woodland

The following management recommendations are made for maintaining and enhancing the nature conservation interest of trees and woodlands at Flaybrick.

- a. Retain all fallen and felled deadwood, unless a risk assessment suggests removal is advisable;
- b. Tree management and woodland works to be carried out between September and February inclusive to avoid disturbance to nesting birds;

- c. Carry out woodland work in autumn / early winter during dry weather to avoid damage to vegetation, particularly vernal species such as bluebells;
- d. Assess early mature / mature trees for potential to support roosting bats in advance of tree works. Undertake bat activity surveys is advised by initial scoping survey. Where bat roosts are identified in trees proposed for felling, first consider tree retention and if this is not possible apply for a European Protected species licence / prepare a bat mitigation plan as advised by an ecologist;

8.5 Invasive Species

With the exception of Shallon, all the identified invasive species at the site appear to be restricted in extent and no work is considered necessary at this point. However, ongoing monitoring of the spread of these species is recommended with control measures taken if necessary. The Shallon encroaching on the acid grassland and heather banks in the Southern Area should be removed. This should be removed manually and arising disposed of appropriately.

APPENDIX A – PLANT SPECIES LIST

Species	Common Name
<i>Acer campestre</i>	Field Maple
<i>Acer pseudoplatanus</i>	Sycamore
<i>Achillea millefolium</i>	Yarrow
<i>Aesculus hippocastanum</i>	Horse chestnut
<i>Agrostis capillaris</i>	Common Bent
<i>Agrostis stolonifera</i>	Creeping Bent
<i>Ajuga reptans</i>	Bugle
<i>Allium triquetrum</i>	Three-cornered garlic
<i>Alnus glutinosa</i>	Alder
<i>Anagallis arvensis</i>	Scarlet pimpernel
<i>Arrhenatherum elatius</i>	False Oat-grass
<i>Arum maculatum</i>	Lords-and-Ladies
<i>Asplenium adiantum-nigrum</i>	Black spleenwort
<i>Asplenium ruta-muraria</i>	Wall-rue
<i>Asplenium scolopendrium</i>	Hart's-tongue fern
<i>Bellis perennis</i>	Daisy
<i>Betula pendula</i>	Silver Birch
<i>Betula pubescens</i>	Downy Birch
<i>Brachypodium sylvaticum</i>	False brome
<i>Calluna vulgaris</i>	Heather
<i>Carpinus betulus</i>	Hornbeam
<i>Centaurea nigra</i>	Common Knapweed
<i>Cerastium arvense</i>	Field Mouse-ear
<i>Cerastium fontanum</i>	Common Mouse-ear
<i>Chamaerion angustifolium</i>	Rosebay Willowherb
<i>Chenopodium album</i>	Fat-hen
<i>Cirsium arvense</i>	Creeping Thistle
<i>Cirsium vulgare</i>	Spear Thistle

Species	Common Name
<i>Betula pendula</i>	Silver birch
<i>Carpinus betulus</i>	Hornbeam
<i>Conopodium majus</i>	Pignut
<i>Corylus avellana</i>	Hazel
<i>Crataegus monogyna</i>	Hawthorn
<i>Crocoshia crocosmiiflora</i>	Montbretia
<i>Dactylis glomerata</i>	Cock's-foot
<i>Deschampsia cespitosa subsp. cespitosa</i>	Tufted Hair-grass
<i>Dryopteris dilatata</i>	Broad Buckler-fern
<i>Epilobium parviflorum</i>	Hoary willowherb
<i>Fagus sylvatica</i>	Beech
<i>Festuca rubra</i>	Red Fescue
<i>Filipendula ulmaria</i>	Meadowsweet
<i>Fraxinus excelsior</i>	Ash
<i>Galium aparine</i>	Cleavers
<i>Gaultheria shallon</i>	Shallon
<i>Geranium robertianum</i>	Herb-Robert
<i>Geum urbanum</i>	Wood Avens
<i>Glechoma hederacea</i>	Ground-ivy
<i>Heracleum sphondylium</i>	Hogweed
<i>Holcus lanatus</i>	Yorkshire-fog
<i>Hyacinthoides non-scripta</i>	Bluebell
<i>Hypericum perforatum</i>	Perforate St John's-wort
<i>Hypochaeris radicata</i>	Cat's-ear
<i>Ilex aquifolium</i>	Holly
<i>Juncus effusus</i>	Soft-rush
<i>Lamium album</i>	White deadnettle
<i>Leontodon autumnalis</i>	Autumn Hawkbit

Species	Common Name
<i>Lolium perenne</i>	Perennial Rye-grass
<i>Lonicera periclymenum</i>	Honeysuckle
<i>Lotus corniculatus</i>	Bird's foot trefoil
<i>Matricaria discoidea</i>	Pineappleweed
<i>Mercurialis perennis</i>	Dog's Mercury
<i>Mycelis muralis</i>	Wall Lettuce
<i>Petasites albus</i>	White Butterbur
<i>Phyllitis scolopendrium</i>	Hart's-tongue
<i>Pilosella officinarum</i>	Mouse-ear-hawkweed
<i>Pinus nigra</i>	Austrian pine
<i>Pinus sylvestris</i>	Scots Pine
<i>Plantago lanceolata</i>	Ribwort Plantain
<i>Primula vulgaris</i>	Primrose
<i>Prunella vulgaris</i>	Selfheal
<i>Prunus avium</i>	Wild Cherry
<i>Prunus laurocerasus</i>	Cherry Laurel
<i>Prunus lusitanica</i>	Portugal Laurel
<i>Prunus spinosa</i>	Blackthorn
<i>Pteridium aquilinum</i>	Bracken
<i>Quercus cerris</i>	Turkey oak
<i>Quercus illex</i>	Holm oak
<i>Quercus robur</i>	Pedunculate Oak
<i>Quercus rubra</i>	Red oak
<i>Ranunculus acris</i>	Meadow Buttercup
<i>Ranunculus ficaria</i>	Lesser Celandine
<i>Ranunculus repens</i>	Creeping Buttercup
<i>Rosa canina</i>	Dog-rose
<i>Rubus fruticosus agg.</i>	Bramble

Species	Common Name
<i>Rumex acetosa</i>	Common sorrel
<i>Rumex obtusifolius</i>	Broad-leaved Dock
<i>Sambucus nigra</i>	Elder
<i>Senecio jacobaea</i>	Common Ragwort
<i>Sorbus aria</i>	Common Whitebeam
<i>Sorbus aucuparia</i>	Rowan
<i>Stellaria media</i>	Common Chickweed
<i>Symphoricarpos albus</i>	Snowberry
<i>Taraxacum officinale</i>	Dandelion
<i>Taxus baccata</i>	Yew
<i>Tilia cordata</i>	Small-leaved Lime
<i>Trifolium pratense</i>	Red Clover
<i>Trifolium repens</i>	White Clover
<i>Tripleurospermum inodorum</i>	Scentless mayweed
<i>Ulmus glabra</i>	Wych Elm
<i>Urtica dioica</i>	Common Nettle
<i>Veronica chamaedrys</i>	Germander Speedwell
<i>Viola riviniana</i>	Common Dog-violet

APPENDIX B – PHOTOGRAPHS



Photo 1. View of less formally tended areas of Flaybrick Cemetery in the north eastern corner of the site.



Photo 2. View of juxta position of mature trees and gravestones in southern area of Flaybrick Cemetery.



Photo 3. View illustrating the significant historic treescape evident at Flaybrick.



Photo 4. Areas of the less formal northern part of the cemetery, have been allowed to scrub up in places.



Photo 5. View of formal southern portion of Flaybrick, with formal grassland management between gravestones.

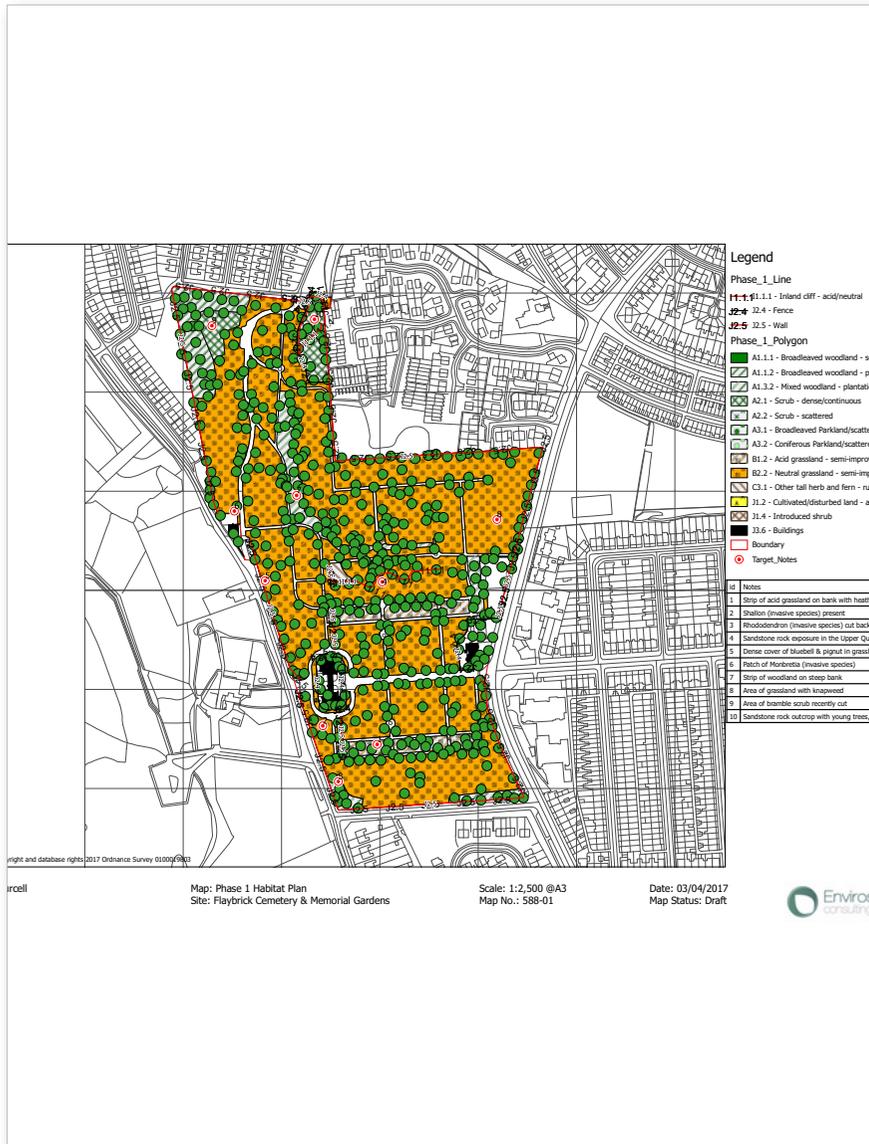


Photo 6. View of Regionally Important Geological Sites at northern boundary of Flaybrick.

APPENDIX C – PLANS

- *Extended Phase 1 Habitat Plan*

APPENDIX B: ECOLOGY REPORT



APPENDIX C: TREE SURVEY



**Flaybrick Cemetery & Memorial Gardens,
Birkenhead**

Tree Survey Report

Report for Purcell

July 2017

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1. INTRODUCTION

1.1 Scope & Brief

This tree report was commissioned by Purcell on behalf of The Friends of Flaybrick Cemetery. The report relates to Flaybrick Cemetery and Memorial Gardens (hereafter referred to as Flaybrick Cemetery), Birkenhead which is a historic landscape dating back to the 1860's. The cemetery combines a mature landscape designed by a renowned Victorian architect, historic structures and buildings and areas of semi-natural habitats of ecological and geological interest.

Flaybrick is on Historic England's Register of Historic Parks and Gardens by Historic England for its special historic interest and is Grade II* Listed. The site is currently on Historic England's 'Heritage at Risk' Register. The cemetery is also within a Conservation Area, as designated by Widnes Borough Council.

The tree survey has been carried out to inform a Conservation Management Plan which is being produced for the site. Separate studies have been commissioned into the historic landscape, designed landscape, buildings, archaeology, hydrology and ecology of the site.

1.2 Scope of Study

The study relates to the boundary shown in Figure 1 and includes an overview of adjoining areas.

The scope of the survey was to develop an inventory of significant trees and groups of trees, consider the condition of the trees and make recommendations for their management within the context of the Conservation Management Plan which aims to conserve and enhance the heritage, ecological and landscape value of the site.

The report estimates the age of individually surveyed trees on the site in order to inform the analysis of the site's history. A tree hazard survey was not undertaken, although obvious hazards were noted and appropriate recommendations have been made in the report.

Trees were assessed visually from ground level. No climbed inspection, detailed investigation of decay or sub-soil investigations were made. These may be recommended in the report where required.



1.3 Report Author

The report was prepared by Guy Morrison, Principal Arboriculturist and Director of Enviroscope Consulting Ltd. I am a Chartered Forester and Registered Consultant with the Institute of Chartered Foresters. I am also a professional member of the Arboricultural Association and hold the Royal Forestry Society Professional Diploma in Arboriculture.

1.4 Survey Limitations

Due to the scope of the study, which required the survey of more groups of trees than individual trees, many mature trees have not been subject to individual survey. These mature trees within groups merit individual tree survey, should resources become available for this in the future.

Tree condition can change significantly over a relatively short period of time, and therefore the results and recommendations of this survey can only be held to be valid for a period of 12 months following the survey date. The trees should be re-inspected at this time by a competent person.

2. SITE DESCRIPTION

2.1 Site Overview

Flaybrick Cemetery extends over a 10.5ha site and is an historic 19th century Grade II* listed public cemetery. The cemetery, opened in 1864, is no longer an active cemetery and is managed by Wirral Borough Council, supported by The Friends of Flaybrick Cemetery.

Flaybrick now comprises a mature designed landscape laid out in a formal and symmetrical plan typical of traditional town cemeteries. Flaybrick supports a high density and species diversity of trees. The trees at the cemetery are not protected by Tree Preservation Order, however there is a group TPO immediately bounding the north eastern corner of the site as described below.

2.2 Site Location

Flaybrick Cemetery is located approximately 3.2km west-north-west of Birkenhead town centre, and 0.4km north-west of Birkenhead Park. The cemetery is located off Tollemache Road, which forms the eastern boundary of the site. Boundary Road forms the cemetery's western boundary and Upper Flaybrick Road bounds the cemetery to the south. The site centre OS grid reference is SJ 2931 8953. The site boundary is illustrated in Figure 1 below.



Fig 1: Aerial photograph and site boundary

2.3 Land-use & Access

The cemetery is divided into three distinct areas, reflecting the former use of the site and the cemetery's development.

The Southern Area

The southern area of the cemetery has a formal layout and is the Anglican/Nonconformist area of the cemetery. This area is laid out symmetrically on an east-west axis, with tree lined avenues and short embankments facilitating the gradual terracing of the area as the land slopes away to the north.

The North Eastern Area

The north eastern area of the cemetery is on the former quarry area of Helsby Sandstone and consists of the upper quarry and lower quarry. The upper quarry is divided from the southern area by the 3m vertical tall rock face of the upper quarry running on an east west axis, before turning sharply north to merge with a wooded embankment.

These former quarry areas also have a formal layout and were an extension to the Anglican /Nonconformist area. There are tree lined avenues, and embanked woodland and stone steps facilitate the rapid drop in land between the upper and lower quarry and between the north western area of the cemetery and the lower quarry.

The North Western Area

The north western area of the cemetery is the Roman Catholic area of the cemetery, and extends from the high ground above the quarry, south to the central chapels which are currently being restored. A Roman Catholic chapel was previously present in this area, but is now gone.

The north western area is noted for its less formal layout, and its more naturalistic atmosphere is reinforced by the backdrop of the mature woodland to the west of Boundary Road.

The area includes and bounds an interesting quarried or natural stone outcrop of Wilmslow Sandstone, which is a Local Geological Site and is referred to locally as

Nanny Goat's Mountain. The outcrop is largely overgrown with scrub and naturally regenerated trees and access is limited to this area.

2.4 Topography, Geology & Soils

The cemetery slopes generally up to the south and west and has views out from the higher ground over towards the River Mersey.

The site is underlain by Helsby Sandstone and this rock is exposed in the upper quarry in the form of a 3m high vertical quarry face. The entire cemetery is designated as a Local Geological Site known as Flaybrick Cemetery, Bidston¹.

Immediately on the northern boundary of the site the geology changes, and here Wilmslow Sandstone is found. There is an outcrop of this rock immediately beyond the northern boundary and is the Local Geological Site known as Lower Flaybrick, Bidston², and referred to locally as Nanny Goat's Mountain.

2.5 Site History

Flaybrick Cemetery is on Historic England's Register of Historic Parks and Gardens by Historic England for its special historic interest. The site was added to the Register in 2001 and is referred to as Flaybrick Memorial Gardens. The site is currently on Historic England's "Heritage at Risk" Register. The cemetery is also within a Conservation Area, as designated by Widnes Borough Council.

Grade II* Listed site in the Register of Parks and Gardens of Historic Interest³. The list entry states:

A complex example of a High Victorian (1862-64) public cemetery for a provincial town. The layout was designed by a prolific and renowned designer, Edward Kemp. Kemp's extensive and creative layout makes dramatic use of the elevated hillside site overlooking Birkenhead, the Mersey and Liverpool. It contains a notable ensemble of buildings including two conjoined chapels, four gateways and lodges and boundary wall, all by

¹ <http://bit.ly/2oBp9ls>

² <http://bit.ly/2nymCcv>

³ <http://historicengland.org.uk/listing/the-list/list-entry/1001564>

eminent Liverpool architects Lucy and Littler. Its local and national social interest is expressed in artistically rich variety of 19th / early 20th century monuments including many to Liverpool worthies.

3. TREE PROTECTION & DESIGNATION

3.1 Tree Preservation Orders & Conservation Areas

The Wirral Borough Council's online planning map⁴ shows that there is a group Tree Preservation Order (TPO) (WR0097A001) located beyond the northern boundary of the site, within the grounds of the former St James' Hospital, Tollemarche Road. The precise extent of the TPO has been confirmed by Wirral Borough Council (2 February 2017, pers. comm.), and is illustrated in green below:



⁴ www.wirral.gov.uk/planning-and-building/built-conservation/tree-preservation/tree-preservation-orders



Although no trees on the site are covered by TPO, any works to trees within the TPO area shown above, will require permission from the Local Planning Authority. This includes the pruning of branches overhanging the cemetery site.

Flaybrick Cemetery is in a Conservation Area. Within Conservation Areas there is a requirement to serve six weeks prior notice on the local planning authority (LPA) of all proposed felling and pruning works to trees with a stem diameter greater than 7.5cm at 1.5m height, subject to various exemptions⁵. The LPA may choose to place a TPO on trees in order to prevent or control the proposed works if it is deemed in the interest of public amenity. It is not necessary to serve notice for works in a Conservation Area for felling trees in accordance with a Felling Licence or a plan of operations approved by the Forestry Commission under one of their grant schemes.

3.2 Felling Licences

Tree felling on non-residential land is controlled by the need to obtain a Felling Licence from the Forestry Commission before felling more than five cubic metres of timber (or two cubic metres if the timber is sold) per three month period, subject to various exemptions⁶.

3.3 Protected Species

Trees and scrub provide habitat for a wide range of species, some of which are protected. Most nesting birds and their nests are protected by the Wildlife and Countryside Act 1981 (as amended). All bats and their roosts are protected by the Wildlife and Countryside Act 1981 (as amended) and gain additional protection as under the Conservation of Habitats and Species Regulations 2010. Birds listed under Schedule 1 of the Wildlife and Countryside Act 1981 and all bat species are also protected from disturbance when using nesting or roosting sites.

The implications of other protected species legislation are discussed in more detail in the Enviroscope Ecology Report⁷.

⁵ <http://planningguidance.communities.gov.uk/blog/guidance/tree-preservation-orders/>

⁶ www.forestry.gov.uk/england-fellinglicences

⁷ *Flaybrick Cemetery and Memorial Gardens Ecology Report*, Enviroscope Consulting Ltd, April 2017



3.4 Champion Trees

There are nine trees within Flaybrick Cemetery defined as Champion Trees on the Tree Register of the British Isles⁸. A Champion Tree is defined as a tree which is either:

- the tallest tree at a national or county level; or
- has the largest girth at a national or county level; or
- is otherwise considered remarkable.

Tree No.	Species	Status	TROBI ID No.
T1	Weeping silver lime	County Champion: girth	159703
T15	Exeter elm 'Exoniensis'	County Champion: girth & height	159704
T51	Tibetan cherry	County Champion: height	236165
T64	American basswood	County Champion: remarkable	159707
T65	American basswood	National Champion: girth	236164
T79	Cut-leaved beech	County Champion: remarkable	159713
T85	Cut-leaved beech	County Champion: remarkable	159708
T87	Weeping silver lime	County Champion: girth	159710
T89	Cut-leaved beech	County Champion: remarkable	159709

There is a single tree considered to be a *Great Tree of the Wirral*⁹ and this is T85, the cut-leaved beech listed above.

⁸ www.treeregister.org/champion-trees

⁹ www.gavinrymill.com/flaybrick/greattrees/about

4. METHODOLOGY

4.1 Tree Survey

The site was visited during February and March 2017 to carry out survey of woodlands and trees on the site.

Trees at the cemetery were surveyed individually or as groups. Groups were identified using Blue Sky National Tree Maps and were based on stand composition, structure, or topography. Trees identified for individual survey were prominent trees.

The following information was collected for each tree group or individual tree:

- a) Reference number
- b) Species
- c) Age class (see below)
- d) Stem diameter (at 1.3m height)
- e) Height
- f) Maximum crown-spread (excluding leaning stems)
- g) Condition class (good, fair, poor, very poor and dead)
- h) Comments
- i) Work recommendations
- j) Work priority (urgent, high, medium and low)
- k) Life expectancy (see below)
- l) Reinspection period

Where trees were surveyed as groups, measurements were taken from a representative number of trees in the main canopy layer and averaged for the stand.

Tree age class was determined based on the estimated age of the tree in relation to its likely life expectancy:

- Young - <1/3 of life expectancy
- Semi-mature - 1/3 - 1/2 of life expectancy
- Early-mature - 1/2 - 2/3 of life expectancy
- Mature - >2/3 of life expectancy
- Late-mature - >2/3 of life expectancy, and crown retracting due to age

Management works are proposed in order to either remove/reduce hazards or promote good future growth and development of the tree within the context of the site. The recommended works are assigned to the following priority categories:

- Urgent – Carry out as soon as possible)
- High – Carry out works within 3 months
- Medium - Carry out works within 1 year
- Low – Consider carrying out works within 3 years

4.2 Tree Plotting

A topographical survey plan was not provided for the site. Blue Sky National Tree Maps were used to position the majority of individually surveyed and groups of trees.

The locations of individually surveyed and groups of trees are shown on the Tree Survey Plan (Appendix C).

5. RESULTS

5.1 Treescape Character & Condition

The survey covered 105 individual trees and 69 groups of trees and shrubs. The full survey results are shown in the survey schedule in Appendix A and the location of the trees is shown in the plan in Appendix C.

The diversity of tree species within the cemetery is surprising, with approximately 50 species having been recorded. In the most part, the tree stock is early mature to mature, reflecting the age of its planting. In the recent past, some strategic tree planting along pathways in the lower quarry area, has been carried out. As part of the original landscape planting at Flaybrick, groups of rhododendron and cherry laurel were planted, and these are still evident today.

Several of the trees at Flaybrick were noted to have significant cracks, cavities and other features which have the potential to be used by hole-nesting birds and roosting bats.

5.2 Trees Surveyed Individually

The survey of individual trees considered 105 individual trees.

The majority of the trees surveyed individually were the larger, mature trees at the site which are of a size and age which suggest they are likely to have formed part of the original tree planting scheme in the 1860's.

Several species of lime trees occur at Flaybrick including less common species such as weeping silver lime (*Tilia tomentosa* 'Petiolaris') (T1, T6, T69, T82 and T87) and American basswood (*T.americana*) (T64 and T65), in addition to the more commonly seen lime species: common lime (*T.x europaea*) (T8, T12, T32, T35, T57, T67, T94 and T101), large-leaved lime (*T.platyphyllos*) (T73) and small-leaved lime (*T.cordata*) (T44 and T46).

The lime collection includes several Champion Trees including an American basswood (T65) which is a National Champion Tree. The mature limes form an integral part of the site's landscape design and some have been planted at the rondpoint where axial pathways intersect.

The majority of the lime trees are in good health, although some of the rondpoint (T46, T47, T57, T64 and T65) trees appear to be suffering from root damage due to soil compaction. There are several lime trees which require further arboricultural assessment to determine the extent and significance of decay, including the weeping silver lime (T6) which has a large cavity at 3m where a limb has torn out.

Flaybrick also supports several notable beech trees, comprising several cut-leaved beech (*Fagus sylvatica* 'Asplenifolia') trees as well as common and copper beech (*F.sylvatica* 'Purpurea') trees. Several of the cut-leaved beech trees (T79, T85 and T89) are Champion Trees, noted as being remarkable. These all appear to be in good health.

There are two mature beech trees (T38 and T68) which have large cavities in the stem and base.

A variety of conifer trees have been planted at Flaybrick, with the most common species being Austrian pine (*Pinus nigra* subsp. *nigra*) which occur frequently as mature trees scattered across the site (T17, T18, T20-T26, T30, T31, T33, T36, T37, T75, T76, T81). All of the pines appear to be in good health, although some

in the north western have been affected by fire damage at the base (T36 and T37) and these trees should be monitored for negative consequences on the trees' survival.

There are a variety of other conifers at Flaybrick including monkey puzzle (*Araucaria araucana*) (T16, T28 and T95) and deodor cedar (*Cedrus deodara*) (T29 and T60), blue Atlas cedar (*C.atlantica* 'Glauca') (T62), cedar of Lebanon (*C.libanii*) (T80), Bhutan pine (*P.wallichiana*) (T92), swamp cypress (*Taxodium distichum*) (T52), dawn redwood (*Metasequoia glyptostroboides*) (T61) and coast redwood (*Sequoia sempervirens*) (T96). The majority of these conifers are semi or early mature and appear to have been planted in the second half of the 20th century.

There are several yew (*Taxus baccata*) trees on the site and the majority of these have been surveyed as part of groups, apart from a large mature yew tree (T83) with a girth exceeding 1m. This tree is likely to date back to the original tree planting in the 1860's.

Other mature trees at Flaybrick include Turkey oak (T5 and T34), and Norway maple (T9), sycamore (T10), wild cherry (T41), walnut (T42), London plane (T47), horse chestnut (T55 and T70), manna ash (T71), sweet chestnut (T77) and holm oak (T97). One of the horse chestnut trees (T55) is badly affected by horse chestnut bleeding canker with associated bark death and is in significant decline.

Other individually surveyed trees include hornbeam, false acacia, rowan, crab apple, wych elm, Leyland cypress, orange-berried service tree, tulip tree, red maple, Tibetan cherry, sweet gum, ornamental pear, purple cherry plum and red oak. These include some young and semi-mature trees which have been planted individually or as memorial trees in the recent past.

5.3 Tree Surveyed As Groups

The survey of groups of trees considered 69 groups, which includes groups of trees, woodland, shrubs and avenues of trees. Some of the groups of trees include mature trees of quality comparable to some of the mature trees surveyed individually. These would merit individual survey, however due to the scope of the survey these were incorporated into groups.

Tree Avenues

Avenues of mature trees define the axial paths and are an integral part of the original tree planting design. The original avenue planting was all of holly (*Ilex aquifolium*) (G5, G10, G25, G34, G39, G40, G41, G42, G50, G60, G62 and G63), including various holly cultivars. The holly trees forming the avenues were originally conical in shape, but this pruning regime has been discontinued and lower branches have been removed to create a 'lollipop' shape. It is not now possible to reverse the crown-lifting of the holly trees which formerly had a conical shape.

Overall the health of the holly trees is good and most have a life expectancy of at least several decades. However in places hollies have been removed, entailing the removal of alternate holly trees or occasional trees which have perhaps failed. Where hollies have been removed, they have been replaced by flowering cherry (*Prunus* sp.) trees of various cultivars, which are now early-mature and mature. Some of these cherry trees have not established well, and some appear to have been removed, perhaps due to failure.

A more recent avenue of rowan trees has been planted along a path in the north eastern area, and is now early-mature.

Woodland

The woodland at Flaybrick is broad-leaved and mixed woodland of plantation origin. The woodland is located around the cemetery perimeters in the north western and north eastern corners of the cemetery, with a linear band of woodland extending along the north-south slope between the north western area of the cemetery and the north eastern area cemetery. This band of woodland also extends in a west-east direction below the upper quarry area.

These areas of woodland are dominated by sycamore, beech, Turkey oak, wych elm and Norway maple (group G18) and sycamore, London plane, holly, Austrian pine and wych elm (group G10). A further small area of woodland was recorded in the south west corner of the site and species here comprise beech, Turkey oak, hawthorn and Austrian pine (group G74).

The woodlands have natural regeneration where management is not intense and includes beech, sycamore, hawthorn and silver birch.

Shrubs

There are shrubs present at the site, both as groups of shrubs only and also within woodland. Species include native and ornamental species, of various planting ages. The latter includes cherry laurel (*Prunus laurocerasus*), Portuguese laurel (*P.lusitanica*), rhododendron (*R.ponticum*) and laurotinus (*Viburnum tinus*), species which are all typical of cemetery planting. There is evidence of some recent rhododendron control.

Although much of the shrubbery does not appear to be old enough to have been part of the original planting, there are some older areas of ornamental shrub planting which is likely to be the original strategic planting eg. to define the edge of steps and branch points in axial pathways.

6. MANAGEMENT RECOMMENDATIONS

6.1 Tree Management Strategy

The overall aim of the tree management recommendations is to maintain a healthy tree collection on the site, maximising the benefits that the trees bring to the site, minimising any associated negative impacts, and conserving the historical character of Flaybrick in relation to trees.

Management actions include proposals for tree works, and will identify replacement and new planting which is appropriate for the historic character of the site.

Arboricultural works will need to balance the safety of visitors and staff, with the ecological, landscape and heritage value of the site, and its statutory protection.

The strategy for the management of individual trees is to maintain the current tree species diversity and retention and protection of mature and notable trees, unless there is an over-riding reason (health and safety or heritage issues) requiring their removal.

The strategy for the management of formal tree features including tree avenues, rondpoint trees and strategic shrub planting, is to maintain, reinstate, restore and protect these features in accordance with the original design.



The strategy for the management of woodland areas are subject to less intense management than the rest of the site, with an aim of maintaining a diversity of tree species, with trees of different ages to provide habitat diversity and opportunities for species diversity. There are opportunities to maintain natural regeneration and a shrub layer, and more fallen deadwood, including limited standing deadwood where assessment of public safety allows.

6.2 Arboricultural Management

The survey schedule (Appendix A) contains recommendations for management of trees and woodland on the site. It is recommended that they are adopted within the Conservation Management Plan which is being prepared for the site.

It is recommended that the woodland areas (G15, G16, G10 and G74) are thinned by 25% to open up views and to allow space for tree crowns to develop. Trees to be felled should be selected by an arboriculturalist, ensuring that all healthy mature trees that form part of the original planting scheme should be retained.

There are a small number of trees which appear to have significant decay in the stem base or major branches and require further assessment. These trees are the weeping silver lime (T6), the common lime (T57) and the two mature beech trees (T38 and T68), which have large cavities in the stem and base. It is recommended that these two trees are subject to more detailed arboricultural assessment to determine the extent and implications of this decay.

One avenue of holly trees in the quarry area has been severely pruned, with the removal of all branches. This management is not appropriate for trees of this age and it is recommended that any future pruning of the hollies is limited to that which is necessary to them causing obstruction of paths or sightlines.

All arboricultural works should be carried out by experienced arboricultural contractors and should comply with BS3998:2010 'British Standard Recommendations for Tree Work'¹⁰.

Flaybrick Cemetery is within a Conservation Area and the Local Planning Authority should be consulted to determine the procedures for obtaining consent for the

¹⁰ BS 3998:2010 Tree Work – Recommendations, British Standards Institute, 2010



pruning and felling of trees at the site. Any works to trees covered by the adjoining group TPO, including pruning of overhanging branches, will require permission from the Local Planning Authority.

6.3 Grounds Maintenance and Trees

There is an identified problem in places at Flaybrick where younger, more recently planted trees have been damaged by strimmers or mowers. It is recommended that a weed free circle (achieved by herbicide treatment, hand weeding and/or mulching) is maintained around the stems of all young and semi-mature, in order to avoid the need to cut around the base of the tree.

All grounds staff undertaking mowing and strimming work at Flaybrick should be briefed on the need to ensure no trees of any age are damaged by strimming or mowing practices.

To protect vulnerable trees, eg those trees at roundpoints or close to paths, it is proposed that any path resurfacing works is undertaken carefully to avoid damaging tree roots and to ensure the survival of trees in these positions. Specialist advice from an arboriculturalist is recommended and an arboricultural method statement is advisable to set out an approach which will have least impact on trees.

6.4 Arboricultural Inspection

It is recommended that the trees on the site are inspected annually. All areas within the site should be broken down into 'usage zones' and these zones dictate the regularity of surveying. Inspection findings should be recorded and proportionate recommendations for tree management should be made in relation to the individual risk posed by trees in their individual context. The annual inspection should be carried out by an arboriculturalist, with more regular inspections following severe weather events. Interim inspections could be undertaken by volunteers who have received training in basic tree inspection such as that provided by the organisation LANTRA.

Due to the scope of the study, which required the survey of more groups of trees than individual trees, many mature trees have not been subject to individual survey. These mature trees within groups merit recording and mapping as individual trees, should resources become available for this in the future.

6.5 Tree Planting & Maintenance

The tree planting priority is the replanting of the holly avenues where gaps now exist due to tree removal without replacement. It is recommended that a holly variety is selected which best matches the character of the original variety planted.

Consideration should be given to the restoration of the main avenues of holly (G5, G10, G25, G34, G39, G40, G41, G42, G50, G60, G62 and G63). Here, there is a need to decide whether restoration of the avenue back to holly trees is preferable to retention of the more recently introduced flowering cherries.

The flowering cherry trees within the main avenue to the east of the temple (G50) are very variable in form and condition and numerous gaps are present. If it is decided to retain the cherry trees within the avenues then it is recommended that the cherry trees are all felled and then replanted with a single variety to provide visual uniformity, appropriate to the setting.

Other tree planting is likely to be small scale and limited to the replacement of trees which die or are removed. It is recommended that replacement trees are limited to those already present on the site, or known to have formed part of the original landscape design in order to provide the historical character of the site.

All new tree planting should be subject to maintenance and is likely to require additional intervention, including the felling of adjoining trees, to prevent it being overgrown and suppressed by surrounding vegetation.

It is recommended that all trees and shrubs used in tree planting are of local provenance stock (Forestry Commission Local Seed Zone 302)¹¹ where they are locally native species. Where species which are not locally native (such as beech) are planted, it is recommended that UK provenance stock is used.

The stakes on some recently planted trees now require removal in order to avoid damaging the trees, so that they grow healthily.

¹¹ Using Local Stock for Planting Native Trees and Shrubs, Forestry Commission Practice Note 8, Herbert, R, Samuel, S. & Patterson, G., 1999

6.6 Pests & Diseases

Ash dieback disease (*Chalara fraxinea*)¹² is present in the locality and is likely to become established in the local area within the next few years, if it is not already present. The disease has the potential to damage and kill large numbers of ash trees, although the exact impact of the disease in the UK cannot yet be accurately predicted.

As ash does not form a major part of the Flaybrick treestock, then this disease is unlikely to have a significant impact on the overall landscape character of Flaybrick's treescape.

No ash trees should be planted at the site until disease resistant strains are available and the current legal restrictions on ash are changed.

Horse chestnut bleeding canker¹³ (*Pseudomonas syringae* pv *aesculi*) is present on a number of mature horse chestnut trees at Flaybrick. This disease has damaged one tree to such an extent that its felling is advisable. There is no treatment for this disease and it is recommended that the horse chestnut trees at Flaybrick are subject to annual monitoring to determine the progress and impact of the disease. It is recommended that no further common horse chestnut trees are planted at the site, until disease resistant varieties are available. Indian horse chestnut (*Aesculus indica*) appears to have greater resistance to the disease and could be planted in limited numbers as an alternative tree of similar character.

Grey squirrels are present at Flaybrick and have caused damage to trees, especially sycamore and beech trees. The level of damage is not currently significant but this should be monitored. Successful control of squirrels would be very difficult to achieve in this urban public site which is directly connected to other woodland and greenspaces under different ownership.

Rhododendron, which is an invasive species, has been recently subject to quite extensive control at Flaybrick. The shrubs will regrow if untreated and so herbicide treatment of the regrowth is necessary if no regrowth is desired.

¹² www.forestry.gov.uk/fr/chalara

¹³ www.forestry.gov.uk/fr/bleedingcanker

6.7 Protected Species

Trees and shrubs on the site may be used for nesting by birds during the spring and summer. All tree management works should be carried out between September and February in order to avoid disturbance to nesting birds. Advice should be sought from an ecologist if it is proposed to fell trees in the standard nesting season from March to August.

Flaybrick contains some large trees containing features that are commonly associated with bat roosting, such as cracks, cavities, loose bark and dense ivy cover. It is recommended that any future felling or pruning of mature trees, or trees with these features, are assessed before felling by an ecologist who will advise on requirements for additional survey and precautions that may be required to avoid impacting on bats.

APPENDIX A – TREE & WOODLAND SURVEY SCHEDULE

APPENDIX C: TREE SURVEY



APPENDIX A – TREE & WOODLAND SURVEY SCHEDULE

Table 1. Individual Trees

No.	Species	Age Class	Stem Diam. (cm)	Height (m)	Crown Rad.	Condition	Comments	Work Recommendations <i>NB: Serve conservation area notice where necessary</i>	Priority
T1	Weeping silver lime	Mature	129	20	21	Fair	Graft line at approx. 1.3m.		
T2	Hornbeam	Early-mature	20	10	7	Good			
T3	Copper beech	Mature	87	17	20	Fair			
T4	Turkey oak	Early-mature	41;38;35;34	15	13	Fair	Multi stemmed from 0.5m.		
T5	Turkey oak	Mature	96	9	8	Very Poor	Stem has failed at 5m causing the top to snap off.	Prune to remove the stub formed by the snapped stem.	Low
T6	Weeping silver lime	Mature	118	20	15	Poor	Major limb torn out leaving large cavity to 3m.	Carry out detailed arboricultural assessment of the remaining integrity of this tree.	High
T7	False acacia	Semi-mature	17	6	7	Poor	Severe stem damage up to 3m. Low quality tree with little future.	Fell tree.	Medium
T8	Common lime	Mature	127	22	20	Fair	Grafted at approx. 1.5m. Spreading in form. Ivy clad.	Cut ivy at base to allow future inspection.	Medium
T9	Norway maple	Mature	101	16	15	Good	Tagged.		
T10	Sycamore	Mature	92	18	14	Good	Tagged.		

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No.	Species	Age Class	Stem Diam. (cm)	Height (m)	Crown Rad.	Condition	Comments	Work Recommendations <i>NB: Serve conservation area notice where necessary</i>	Priority
T11	Manna ash	Semi-mature	16	8	7	Fair	Strimmer damage at the base.	Remove stake and tie. Implement appropriate strimming method.	Medium
T12	Common lime	Mature	#80	20	16	Fair	Extensive epicormic growth at the base.		
T13	Rowan	Semi-mature	14	6	4	Fair	Strimmer damage at the base.	Remove stake and tie. Implement appropriate strimming method.	Medium
T14	Ornamental crab apple	Semi-mature	11	7	2	Fair	Strimmer damage at the base.	Remove stake and tie. Implement appropriate strimming method.	Medium
T15	Exeter elm 'Exoniensis'	Early-mature	81	17	11	Fair	Notable tree.		
T16	Monkey puzzle	Early-mature	52	11	10	Good			
T17	Austrian pine	Mature	93	20	13	Good			
T18	Austrian pine	Mature	79	18	13	Good	Has a crown bias to the S/E		
T19	Beech	Early-mature	69	18	10	Good			
T20	Austrian pine	Early-mature	85	19	16	Good			
T21	Austrian pine	Early-mature	80	12	12	Fair	Ivy clad. Two stems from 1m.	Cut ivy at base to allow future inspection.	Medium

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APPENDIX C: TREE SURVEY



No.	Species	Age Class	Stem Diam. (cm)	Height (m)	Crown Rad.	Condition	Comments	Work Recommendations <i>NB: Serve conservation area notice where necessary</i>	Priority
T22	Austrian pine	Mature	96	18	15	Good			
T23	Austrian pine	Mature	55	16	10	Good			
T24	Austrian pine	Mature	72	19	16	Good	Crown bias to the east.		
T25	Austrian pine	Mature	71	16	14	Good			
T26	Austrian pine	Mature	72	17	15	Fair	Wound at the base.		
T27	Holly	Mature	38	9	6	Fair			
T28	Monkey puzzle	Mature	59	15	11	Fair			
T29	Deodor cedar	Mature	79; 72; 52	19	21	Good	Three stems from 1m.		
T30	Austrian pine	Mature	76	12	15	Good			
T31	Austrian pine	Mature	79	14	11	Good			
T32	Common lime	Mature	#80	14	11	Fair	Extensive epicormic growth at base. Neighbouring pine tree growing within 1m.		
T33	Austrian pine	Mature	79	19	11	Good	Growing within 1m of neighbouring lime tree.		
T34	Turkey oak	Mature	84	20	17	Good			
T35	Common lime	Mature	80	19	15	Fair	Extensive epicormic growth at base.		
T36	Austrian pine	Mature	73	20	17	Fair	Evidence of fire around the base of this tree. No visible structural damage. Monitor condition.		

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No.	Species	Age Class	Stem Diam. (cm)	Height (m)	Crown Rad.	Condition	Comments	Work Recommendations <i>NB: Serve conservation area notice where necessary</i>	Priority
T37	Austrian pine	Mature	98	21	16	Fair	Evidence of fire around the base of this tree - No visible structural damage. Crown has a strong bias to the west. Monitor condition.		
T38	Beech	Mature	135	21	23	Poor	Large and extensive decay cavity in the stem.	Carry out detailed arboricultural assessment of the remaining integrity of this tree.	High
T39	Leyland cypress	Early-mature	#60	10	7	Fair	Growing very close to boundary wall and neighbouring property.	Fell tree.	Medium
T40	London plane	Early-mature	67	20	10	Fair	Path side London plane. Not the best form. Cavity at 3m. Monitor condition.		
T41	Wild cherry	Mature	62	10	14	Fair	Very strong lean to the south. Wound with early decay at 3m. Monitor condition.		
T42	Common walnut	Mature	70	18	17	Good			
T43	Orange berried service tree	Early-mature	46	11	13	Good	Tagged.		
T44	Small leaved lime	Mature	121	20	20	Fair	Ivy clad.	Cut ivy at base to allow future inspection.	Medium
T45	Tulip tree	Semi-mature	26	10	8	Good			
T46	Small leaved lime	Mature	122	19	20	Fair	Tagged.		
T47	London plane	Mature	99	20	21	Good			

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APPENDIX C: TREE SURVEY



No.	Species	Age Class	Stem Diam. (cm)	Height (m)	Crown Rad.	Condition	Comments	Work Recommendations <small>NB: Serve conservation area notice where necessary</small>	Priority
T48	Red maple	Semi-mature	34	13	10	Good			
T49	Holm oak	Early-mature	56	9	15	Good			
T50	Austrian pine	Semi-mature	34	9	8	Good			
T51	Tibetan cherry	Semi-mature	45	9	8	Fair			
T52	Swamp cypress	Semi-mature	18	5	7	Fair			
T53	Beech	Mature	129	23	16	Fair	Large wound at base. No decay evident. Monitor condition.		
T54	Beech	Mature	105	22	18	Good			
T55	Horse chestnut	Mature	99	13	21	Very Poor	Badly affected by horse chestnut bleeding canker. Very little future for this tree. Prominent position. Tree at risk of branch loss as decay establishes.	Fell tree.	High
T56	Liquidamber	Early-mature	#35	6	8	Good	Multi stemmed from 0.5m. Diameter is an estimated amalgamation.		

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No.	Species	Age Class	Stem Diam. (cm)	Height (m)	Crown Rad.	Condition	Comments	Work Recommendations <small>NB: Serve conservation area notice where necessary</small>	Priority
T57	Common lime	Mature	94	19	16	Poor	Early decay in base of stem up to 3m.	Carry out detailed arboricultural assessment of the remaining integrity of this tree.	High
T58	Walnut	Semi-mature	21	9	7	Good			
T59	Norway maple	Semi-mature	26	9	7	Good			
T60	Deodor cedar	Semi-mature	20	8	5	Good			
T61	Dawn redwood	Semi-mature	35	10	4	Good			
T62	Blue atlas cedar	Semi-mature	26	8	6	Good			
T63	Cypress	Semi-mature	#25	9	6	Good			
T64	American Basswood	Mature	88	18	18	Good	Graft line at approx. 1.3m.		
T65	American Basswood	Mature	92	17	16	Good	Graft line at approx. 1.3m.		
T66	Copper beech	Mature	84	21	18	Fair	Wound at 3m. No decay evident. Monitor condition.		
T67	Common lime	Mature	68	21	16	Fair	Wound at 3m. Only minimal decay evident. Monitor condition.		

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No.	Species	Age Class	Stem Diam. (cm)	Height (m)	Crown Rad.	Condition	Comments	Work Recommendations <i>NB: Serve conservation area notice where necessary</i>	Priority
T68	Beech	Mature	121	22	20	Poor	Large decay cavity in base.	Carry out detailed arboricultural assessment of the remaining integrity of this tree.	High
T69	Weeping silver lime	Mature	105	20	18	Fair			
T70	Horse chestnut	Mature	45	16	11	Fair			
T71	Manna ash	Mature	39	8	7	Fair			
T72	Ornamental pear	Semi-mature	17	9	4	Good			
T73	Weeping large leaved lime	Mature	108	20	20	Good	Growing next to retaining wall. Twin stemmed from 2m.		
T74	Horse chestnut	Early-mature	87	18.5	16	Good	Growing next to retaining wall.		
T75	Austrian pine	Mature	77	22.5	10	Good	Growing next to retaining wall.		
T76	Austrian pine	Early-mature	64	15	12	Fair	Growing next to retaining wall. Ivy cover on stem. Cracked branch.	Remove cracked branch. Cut ivy.	High
T77	Sweet chestnut	Mature	105	17.5	14	Good	Growing next to retaining wall. Ivy clad.	Cut ivy at base to allow future inspection.	Medium
T78	Silver birch	Mature	14-29 *6	15	9.5	Good	Multi stemmed self set tree. Growing close to graves.	Fell tree.	Medium
T79	Cut leaved beech	Mature	115	17	24	Good	Small wound on East side. Monitor condition.		

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No.	Species	Age Class	Stem Diam. (cm)	Height (m)	Crown Rad.	Condition	Comments	Work Recommendations <i>NB: Serve conservation area notice where necessary</i>	Priority
T80	Cedar of Lebanon	Semi-mature	34	17.5	7	Fair			
T81	Austrian pine	Mature	95	18	16	Good			
T82	Weeping silver lime	Mature	111	18	19	Good	Graft at 1.3m.		
T83	Yew	Early-mature	101	12	12.5	Good			
T84	Copper beech	Mature	94	16	16	Good			
T85	Cut leaved beech	Mature	124	17	19.5	Fair	Several small bleeding canker N side Lower stem.		
T86	Ornamental pear	Semi-mature	25	9.5	5	Good			
T87	Weeping silver lime	Mature	115	19.5	17	Good	Graft at 1.5m.		
T88	Holly	Mature	44	11	8	Fair	Stem decay at 1m. Monitor condition.		
T89	Cut leaved beech	Mature	112	15	23	Good			
T90	Lime sp.	Semi-mature	31	10	10	Fair	Mower damage. Monitor condition.		
T91	Cedar of Lebanon	Semi-mature	48	14	11	Good			

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APPENDIX C: TREE SURVEY



No.	Species	Age Class	Stem Diam. (cm)	Height (m)	Crown Rad.	Condition	Comments	Work Recommendations <i>NB: Serve conservation area notice where necessary</i>	Priority
T92	Bhutan pine	Early-mature	96	17	10	Poor	Very large stem removed at base. Following collapse of large limb. Monitor condition.		
T93	Purple cherry plum	Semi-mature	7	6.5	2.5	Poor	Memorial tree planted 2003.	Remove stake and review strimming.	Medium
T94	Common Lime	Mature	88	23	16	Good			
T95	Monkey puzzle	Early-mature	65	15	8	Good			
T96	Coast redwood	Semi-mature	53	13.5	5.5	Good			
T97	Holm oak	Mature	128	13	17	Fair			
T98	Holly	Mature	43/28	9.5	9	Good			
T99	Ornamental pear	Early-mature	25	9.5	5	Good			
T100	Red oak	Semi-mature	25	9	7.5	Good			
T101	Common lime	Mature	125	19	17	Good	Ivy clad.	Cut ivy at base to allow future inspection.	Medium
T102	Red oak	Semi-mature	19	6	7	Good	memorial tree.		



No.	Species	Age Class	Stem Diam. (cm)	Height (m)	Crown Rad.	Condition	Comments	Work Recommendations <i>NB: Serve conservation area notice where necessary</i>	Priority
T103	Beech	Mature	94	18	15	Fair	Located at end of wood. Larger than other trees in group. Overhangs road. Large stub on cut branch on East side. Monitor condition.		
T104	Beech	Early-mature	74	20.5	15	Good	On boundary	Remove fence attached to trees.	Medium
T105	Beech	Early-mature	75	20	18	Good	On boundary. Stem diameter estimated.	Remove fence attached to trees	Medium

Table 2. Groups of Trees & Shrubs

No.	Species	Age Class	Stem Diam. (cm)	Height (m)	Crown Rad.	Condition	Comments	Work Recommendations <i>NB: Serve conservation area notice where necessary</i>	Priority	Life expectancy
G1	Holly, Ornamental pear	Mature	20-40	12	6	Good	Group of 2 holly, 1 variegated holly and 1 ornamental pear.			>40
G2	Holly	Mature	25-40	10	9	Good	Group of 2 multi stemmed holly. Both sides of the footpath.			>40
G3	Holly, Yew, Manna ash	Early-mature	15-45	11	7	Fair	Group of 4 holly, 1 fastigiate yew, 1 manna ash.			>40



No.	Species	Age Class	Stem Diam. (cm)	Height (m)	Crown Rad.	Condition	Comments	Work Recommendations <small>NB: Serve conservation area notice where necessary</small>	Priority	Life expectancy
G4	Holly, Sycamore, Lime, English oak, Yew, Ash, Pine, Walnut, Silver birch	Mature	40	11	10	Fair	A mature thicket containing Holly, sycamore, Lime, English oak, yew, ash, pine, walnut and silver birch.			>40
G5	Holly	Mature	20 - 50	11	10	Good	Six mature holly (one variegated) forming attractive footpath junction feature.			>40
G6	Holly, Yew	Mature	15 - 40	10	6	Good	Holly and yew group straddling the footpath (includes variegated holly).			>40
G7	Holly, Sycamore, Holm oak, Laurel	Mature	80	19	15	Fair	A woodland group containing 9 M holly (including variegated), 2 x EM sycamore, 1 EM holm oak, and laurel.			>40
G8	Holly, Holm oak, Pine	Mature	60	16	11	Fair	A woodland group containing 4 holly, 2 EM holm oak, 1 EM pine.			>40
G9	Holly, Holm oak, Pine, Yew	Early-mature	60	16	10	Fair	A woodland group containing 10 M holly, 2 EM yew, 1 EM holm oak.			>40
G10	Holly	Mature	50	13	6	Fair	Group of 9 holly.			>40
G11	Holly, pine, Sycamore, London plane, Wych elm, Pear	Mature	80	17	11	Fair	Large woodland group on N-S sloping bank, including holly, pine, sycamore, London plane, wych elm. Some trees recorded as individuals.			>40

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No.	Species	Age Class	Stem Diam. (cm)	Height (m)	Crown Rad.	Condition	Comments	Work Recommendations <small>NB: Serve conservation area notice where necessary</small>	Priority	Life expectancy
G12	Holly, Holm oak, Yew, Pine, Lime	Mature	80	18	12	Fair	A mature path side woodland group containing Holly, holm oak, yew, pine and lime. Some trees recorded as individuals.			>40
G13	Holly	Early-mature	42	10	6	Fair	Group of 6 holly including one variegated.			>40
G14	Yew, Hornbeam, Pine, Sycamore, Lime	Mature	85	20	13	Fair	Five mature trees in a row close to the boundary wall. Further trees beyond including a Lombardy poplar.			>40
G15	Holly, Lime, Horse chestnut	Mature	65	16	9	Poor/Fair	One lime and one horse chestnut that have been topped, then 6 holly.			20-40
G16	Sycamore, Yew, Holly, Pine, Holm oak, Turkey oak	Early-mature	55	19	13	Fair	A woodland area including regeneration and a linear feature of sycamore with a north-south orientation, likely to be a grown on hedge.			>40
G17	Holly, Sycamore	Early-mature	50	15	8	Fair	Group of 4 holly, 1 sycamore.			>40
G18	Turkey oak, Holly, Holm oak, Sycamore, Yew	Early-mature	40	17	7	Fair	Group of 5 Turkey oak, 4 holly, 2 holm oak, 2 sycamore stumps that are growing on, and one yew.			>40

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APPENDIX C: TREE SURVEY



No.	Species	Age Class	Stem Diam. (cm)	Height (m)	Crown Rad.	Condition	Comments	Work Recommendations <small>NB: Serve conservation area notice where necessary</small>	Priority	Life expectancy
G19	Beech, Sycamore, Turkey oak, Holly, Norway maple, Wych elm	Mature	100	22	17	Fair	A woodland group containing some large and mature trees on the northern boundary of the cemetery.	One dead wych elm close to the northern boundary wall should be removed. One early-mature beech with damage that overhangs the footpath and is a poor quality tree should also be removed.	Medium	>40
G20	Holly, Hornbeam, Lime	Early-mature	50	11	9	Fair	Group of 6 hornbeam, 5 holly, 1 lime. The hornbeam in this group are particularly attractive, and the lime is recorded as an individual.			>40
G21	Holly, Pine, Silver birch, Wild cherry	Semi-mature	40	9	8		Group of 6 holly, 1 pine (top has snapped off), 1 silver birch, 1 young wild cherry.			20-40
G22										
G23	Turkey oak, Sycamore, Holly, Laurel, Yew, Pine	Mature	75	19	15	Fair	A woodland area on the extremity of the cemetery. Fires have previously been lit in this area. Some trees recorded as individuals.			>40
G24	Sycamore, Yew, Holly	Early-mature	75	18	11	Fair	An area of early mature trees that is partly separated from the cemetery.			>40
G25	Holly	Mature	35	9	7	Good	Group of 6 holly forming an attractive path junction feature.			>40

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No.	Species	Age Class	Stem Diam. (cm)	Height (m)	Crown Rad.	Condition	Comments	Work Recommendations <small>NB: Serve conservation area notice where necessary</small>	Priority	Life expectancy
G26	Holly, Wild cherry	Mature	40	9	8	Good	An attractive path side avenue of holly with the occasional cherry tree.			>40
G27	Sycamore	Mature	80	20	15	Good	The front row of a sycamore woodland on the cemetery boundary.			>40
G28	Norway maple, Manna ash, Pine, Holly.	Early-mature	40	10	9	Fair	Scattered group.			>40
G29	Sycamore, Horse chestnut, Ash, Beech	Mature	75	19	11	Fair	A row of mature trees along the boundary of the cemetery.			>40
G30	Holly, Yew, Laurel	Early-mature	25	7	6	Fair	Scrubby area on bank.			>40
G31	Holm oak, Holly, Deodor cedar	Early-mature	30	11	7	Good	Tight group of trees.			>40
G32	Rowan	Semi-mature	32	9	6	Fair	Rowan avenue.			>40
G33	Sycamore, lime, Horse chestnut, Hawthorn, Holly	Mature	85	19	15	Fair	A row of mature trees along the boundary of the cemetery.			>40
G34	Holly	Mature	35	11	7	Fair	Avenue of holly. Pruned.			>40

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No.	Species	Age Class	Stem Diam. (cm)	Height (m)	Crown Rad.	Condition	Comments	Work Recommendations <small>NB: Serve conservation area notice where necessary</small>	Priority	Life expectancy
G35	Holm oak	Mature	45	11	10	Good	Area of holm oak.			>40
G36	Holly, Norway maple, Lime	Mature	70	16	10	Fair	Group of mature trees			>40
G37	Sycamore, Beech, Lime, Holly, Yew.	Mature	70	18	15	Fair	Group of mature trees on top of ridge.			>40
G38	Holly	Mature	35	10	7	Fair	Holly group.			>40
G39	Holly and Variegated holly	Mature	15-30 MS	6-8.5	4-7.5	Good/Fair	Avenue extends East from holly rondpoint at West end of junction. Some missing hollies and variegated hollies.			20-40
G40	Holly	Mature	14-31 MS	8-8.5	7	Good	Two hollies either side of path.			20-40
G41	Holly	Mature	8-43 MS	5-7.5	3-6	Good/Fair	Avenue of 6 trees besides steps / paths			20-40
G42	Holly	Mature	8-29 MS	6-7	4-6	Good/Fair	Group of 3 trees beside steps / path.			20-40
G43	Holly, Yew, Wych elm	Mature / Early-mature	29-45 MS	6-12	6-14	Good/Poor	Group of 3 holly, 2 yew and 1 wych elm of spreading form. Holly at south end decayed at base and crown dieback.	Fell wych elm and decayed holly.	High	>40
G44	Holly, Sawarea cypress	Mature	25-52	8-11.5	5-9	Good	Group of 4 holly and 1 sawara cypress			20-40

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No.	Species	Age Class	Stem Diam. (cm)	Height (m)	Crown Rad.	Condition	Comments	Work Recommendations <small>NB: Serve conservation area notice where necessary</small>	Priority	Life expectancy
G45	Holly, Yew	Semi-mature	5-44 MS	5-9.5	10	Good	Group of 2 holly, 2 Irish yew, scattered Irish yew growing in tomb and pushing this apart. Pruned badly.	Remove trees affecting tomb.	High	20-40
G46	Holly, Lawson's cypress	Mature	20-44	8-9.5	4-6	Good	Scattered group. 2 holly 2 Lawson's cypress			20-40
G47	Holly, Yew, Irish yew, Variegated holly	Mature	15-43	6-11.5	4-6	Good/Fair	Group of holly 1 yew 1 Irish yew 2 variegated holly. Growing on boundary			>40
G48	Sycamore, Holly	Early-mature	20-27MS	11-16.5	6-11	Fair	Group of 2 sycamore and 1 holly on yard. Elm regeneration. Group of SM wych elm to N with history of torn out branch.	Fell wych elm with torn out branches.	High	>40
G49	Sycamore, Silver birch, Norway maple	Semi-mature	15-20	10-12	4	Good/Fair	Group of semi mature stems in yard. Some trees ingrown in fence.	Fell trees ingrown in fence.	High	>40
G50	Holly, Ornamental cherry	Mature	7-8.5	7-8.5	6-10	Good/Poor	Avenue of 16 holly and 2 variegated holly and ornamental cherries. Cherry at East end with large bark wound - Monitor tree condition.			20-40
G51	Sycamore, Beech, Holly, Yew, Holly	Mature	15-102	6-19	12	Good	Group of 43 sycamore/beech. 8 holly. 1 yew. Turkey oak occasional.			>40

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APPENDIX C: TREE SURVEY



No.	Species	Age Class	Stem Diam. (cm)	Height (m)	Crown Rad.	Condition	Comments	Work Recommendations <small>NB: Serve conservation area notice where necessary</small>	Priority	Life expectancy
G52	Holly, Irish Yew	Mature	10-77 MS	6-13	5-12	Good	Group of 3 holly, 1 variegated holly, 3 Irish yew, 1 yew			20-40
G53	Holly	Mature	15-40	8-11	4-8	Good	Avenue of 3 holly, 2 yew and variegated holly.			20-40
G54	Holly	Mature	15-28 MS	7-11	4-6	Good	Group opposite consists of 34 holly and 1 variegated holly.			20-40
G55	Holly	Mature	24-48	7-9	6-7	Good	Group of 3 holly.			20-40
G56	Yew, Irish yew, Holly, Silver birch	Mature	20-68	8-15	4-10	Good	Group of 1 yew, 1 Irish yew, 2 holly and 1 MS birch.			>40
G57	Holly	Mature	20-41	8-13	5-7	Good	Group of 6 holly.			20-40
G58	Holly Yew	Mature	19-50	8-14	6-10.5	Good	Group of 9 holly and 2 yew.			20-40
G59	Turkey oak, Holly, Yew, Silver birch	Mature	8-50	6-13		Good	Group of 1 Turkey oak, 2 holly, 10 birch, 1 yew.			20-40
G60	Holly	Mature	15-45	9	9	Good	Group of 2 holly either side of path.			20-40
G61	Holly, Yew, Irish Yew	Mature	15-45	8	4-7	Good	Group of 1 holly, group of Irish yew and yew.			>40
G62	Holly ,Yew	Mature	20-43	7-9	7	Good	Group of 5 holly, 6 yew,			>40

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No.	Species	Age Class	Stem Diam. (cm)	Height (m)	Crown Rad.	Condition	Comments	Work Recommendations <small>NB: Serve conservation area notice where necessary</small>	Priority	Life expectancy
G63	Holly	Mature	20-43	7-9	5-7	Good	Group of 25 holly forming avenue plus holly rondpoint.			20-40
G64	Sycamore Holly, Oak, Silver birch, Rowan	Mature	20-105	12-18	7-14	Good	Woodland strip on boundary.			>40
G65	Whitebeam	Semi-mature	17-34	5-6	4-5	Good	Row of 3 whitebeam.			>40
G66	Holly	Mature	10-30	9-10	6-8	Good	Group of 3 holly			20-40
G67	Holly	Semi-mature	10-15	2-7	5	Good	Group of 2 holly.			20-40
G68	Austrian pine, Holly, Turkey oak, Beech, Hawthorn	Mature	68	10-17	4-14	Good	Austrian pine, holly, Turkey oak, Beech (including leaning beech with cavity), Hawthorn. One Turkey oak with bleeding canker.	Fell Turkey oak with bleeding canker. Fell leaning beech with cavity.	High	>40
G69	Holly	Mature					Trees around temple. Hoarding for restoration works prevents inspection.			

Key

General: * - Dominant species # - Provisional NA - Not applicable Age class: Y - Young SM - Semi-mature EM - Early-mature M - Mature LM - late-mature

Condition: G - Good F - Fair P - Poor VP - Very poor D - Dead Priority: U - Urgent H - High M - Medium L - Low

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APPENDIX B – PHOTOGRAPHS



Photo 1. View of fallen trees in lower quarry area.



Photo 2. View showing juxta position of mature trees and memorial stones.



Photo 3 showing holly avenue and cut leaved beech



Photo 4. View of the holly avenue leading up to the chapel.



Photo 5. View of the main holly avenue



Photo 6. View of compaction to substrate close to trees



Photo 5. View of fire damage to tree in the northern portion of the cemetery.



Photo 6. View of tree planted at rondpoint position, with compaction of substrate within the tree's canopy area.



Photo 5. View of inappropriate pruning of some of the hollies in the lower quarry area.



Photo 6. View of mature tree growing very close to wall of neighbouring property.

APPENDIX C – PLANS

- Tree Survey Plan



APPENDIX D: QUESTIONNAIRE

FLAYBRICK CEMETERY

What is your link to Flaybrick Cemetery? Eg. Live locally, interest in history, Friends of Flaybrick etc

For what reasons have you/do you visit Flaybrick Cemetery?

Do you agree with the following statements (please tick):

The Cemetery is welcoming and easy to navigate

Strongly Agree	Agree	Neither agree nor Disagree	Disagree	Strongly Disagree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The Cemetery seems well maintained and cared for

Strongly Agree	Agree	Neither agree nor Disagree	Disagree	Strongly Disagree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The Cemetery has an interesting history that is well presented

Strongly Agree	Agree	Neither agree nor Disagree	Disagree	Strongly Disagree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Has anything put you off visiting Flaybrick Cemetery in the past?

Is there anything that would make you more likely to visit Flaybrick Cemetery in future?

In your opinion, how important is Flaybrick, on a scale of 1 (not important) to 5 (very important), please circle:

As a green space?

1 2 3 4 5

As a community site?

1 2 3 4 5

As a heritage site?

1 2 3 4 5

What is important to you about Flaybrick Cemetery?

Is there anything that you think is important about the history of Flaybrick Cemetery that should be celebrated more?

If you have any further comments, please email Eileen Willshaw at eileenwillshaw@wirral.gov.uk

Questionnaire Results

The following figures were collected in the Questionnaire at the Wirral History and Heritage Day. There were no written comments for the other questions.

Do you agree with the following statements (please tick):

The Cemetery is welcoming and easy to navigate

Strongly Agree	Agree	Neither agree nor Disagree	Disagree	Strongly Disagree
1	7	4	1	2

The Cemetery seems well maintained and cared for

Strongly Agree	Agree	Neither agree nor Disagree	Disagree	Strongly Disagree
	12	5	1	2

The Cemetery has an interesting history that is well presented

Strongly Agree	Agree	Neither agree nor Disagree	Disagree	Strongly Disagree
6	6	6	1	1

APPENDIX E: BIBLIOGRAPHY

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