A63 Castle Street Improvements, Hull
Environmental Statement

Volume 3 Appendix 10.1

ECOLOGY AND NATURE CONSERVATION - PRELIMINARY ECOLOGICAL APPRAISAL

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6 September 2018

A63 Castle Street Improvements, Hull

Environmental Statement

Appendix 10.1 Preliminary ecological appraisal

Revision Record

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1. Executive summary

1.1.1 Mott MacDonald Sweco Joint Venture (MMSJV), formerly known as Mott MacDonald Grontmij Joint Venture (MMGJV) was commissioned by Highways England to undertake a Preliminary Ecological Appraisal in relation to the proposed A63 Castle Street Improvements Scheme in the city centre of Hull (hereafter referred to as 'the Scheme'). The proposed improvements are to be centred around Mytongate Junction and include the construction of an underpass, slip roads and lane widening to reduce congestion in the area. A new rising main will also be constructed to discharge surface water from the new road into the Humber Estuary. The Scheme is subject to Environmental Impact Assessment and the survey informs the assessment of impacts to ecological receptors.

1.1.2 The Humber Estuary is a statutory designated conservation site (SSSI, SAC, SPA and Ramsar site). The potential impacts of the Scheme on this designated site have been assessed within a separate Assessment of Implications on European Sites report, in accordance with the Habitat Regulations 2017, see document reference TR010016/APP/6.13.

1.1.3 A single non-statutory designated wildlife site, Trinity Burial Ground SNCI, is located within the Scheme footprint. This is a small area of urban parkland (0.8ha) with many mature trees. One third of the area of this site would be permanently lost to accommodate the Scheme and it will be required to temporarily remove trees from a further 0.5ha.

1.1.4 Humber Dock Marina will be directly impacted by the works and Railway Dock indirectly impacted.

1.1.5 Habitats to be affected outside of Trinity Burial Ground SNCI but within the main site are generally of lower ecological value. They include amenity trees along roadsides and within small public parks, amenity grassland verges and ornamental shrub planting.

1.1.6 Potential site compounds at Wellington Street Island Wharf, Neptune Street and south east of Livingstone Road contain post-industrial land that has become naturally vegetated with habitats including ephemeral/short perennial, tall ruderal and semi improved neutral grassland. These areas have higher biodiversity value and Industrial Land is listed on the Hull LBAP.

1.1.7 Trees and buildings within the Scheme footprint have the potential to support bats. Potential site compounds at Neptune Street, Wellington Street Island Wharf and Livingstone Road have potential to support bird species that the Humber Estuary has been designated for. No other potential protected or notable species impacts were identified. Recommendations for further survey, avoidance, mitigation, and enhancement where appropriate have been made in Chapter 6 of this report.

2. Introduction

2.1 Scope of ecology work

2.1.1 MMSJV was appointed by Highways England to complete a Preliminary Ecological Appraisal (PEA) for the proposed A63 Castle Street Improvement Scheme in Hull city centre (National Grid Reference TA 094 283). This Nationally Significant Infrastructure Scheme (NSIP) is subject to Environmental Impact Assessment (EIA) and the PEA informs the assessment of impacts to ecological receptors.

2.1.2 The purpose of the survey was to identify and map the habitats to be affected by the Scheme and assess the likelihood of the presence of protected or notable species.

2.1.3 Ecological survey reports completed at earlier stages of Scheme development and other relevant survey reports for the area are summarised in Table 2.1.1 below.

Table 2.1: Previous ecological survey reports for the Scheme

Report	Date	Author	Key Evaluation Results
Environmental Survey	2003	Smeeden Foreman	Identification of principal ecological receptors.
An Environmental Building Assessment, Bat Emergence and Dawn Swarming Survey for Castle Buildings, Quay West	2005	WSP 2005	Presence of a single common pipistrelle bat roosting behind a boarded up window in the Castle Buildings.
Phase 1 Ecological Survey, A63 Castle Street, Hull, Ecological Assessment Stage 2. Report Reference 06588242.501 Rev B0	2007	Golder Associates	Presence of non-statutory site of nature conservation importance (Trinity Burial Ground SNCI).
A63 Improvements – Hull, Environmental Assessment Report (Options Identification Stage). Report Reference W11189/VAA/03	2008	Pell Frischmann	Overall limited impact for the scheme with no significant differences in ecological impact between scheme options.
Kingston-upon-Hull Open Space Assessment. Sites of Nature Conservation Importance (SNCI).	October 2008	Penny Anderson Associates	Audit of habitats and species within Trinity Burial Ground SNCI.
Environmental Scoping Report (Options Selection Stage) W11189/T13/01	2009	Pell Frischmann	No significant differences in ecological impact between scheme options.
Initial Screening Report for Appropriate Assessment (options selection stage). W11189/T13/06	2010	Pell Frischmann	Initial scheme screening of potential impacts to European protected site. Drainage design needed before final assessment can be completed.

Report	Date	Author	Key Evaluation Results
Scheme Assessment Report (W11189/T11/05)	2010	Pell Frischmann	Overground scheme option has less impact on wildlife and biodiversity.

2.2 The existing road

2.2.1 The existing A63 Castle Street is a stretch of dual carriageway of approximately 1.5km in length, from the eastern side of Rawlings Way split level junction, in the vicinity of Ropery Street, to the Market Place and Queen Street junctions.

2.2.2 The A63 Castle Street is located within Hull city centre, close to the River Hull and the Humber Estuary. To the north of Castle Street are the major shopping areas within the city centre. To the south are the Humber Dock and Railway Dock Marinas and several recent developments providing shops, offices, tourist and recreational facilities along with some residential properties.

2.2.3 The A63 Castle Street is approached from the west along a dual, two lane, all-purpose carriageway known as A63 Clive Sullivan Way and Hessle Road. Hessle Road becomes Castle Street near the junction with Porter Street. Continuing eastwards away from Castle Street, the road becomes Garrison Road (now known as Roger Millard Way) at the junction with Market Place and Queen Street, and then crosses the River Hull via Myton Bridge.

2.2.4 The A63 Castle Street forms part of an east to west route connecting Hull city centre, the Port of Hull and the docks to the east, with the M62 and strategic road network to the west. The A63 also links to the Humber Bridge and the A15 and M180 to the south. The A63 is also part of the E20 Euroroute, which for the UK, connects Hull to Liverpool.

2.3 The Scheme

2.3.1 The Scheme footprint is shown in Volume 2: Figure 5.1.

2.3.2 The Scheme will improve a 1.5km stretch of the A63 from Ropery Street to the Market Place/Queen Street junctions.

2.3.3 From Ropery Street to St James Street/Porter Street, the central reserve area would be narrowed in places to be a consistent width of 1.8m. Where it is currently wider than 1.8m, to accommodate the existing pedestrian crossing, both the eastbound and westbound carriageways would move slightly closer to the central reserve, and this would create a wider area of grass verge between the carriageways and the existing footways and cycle ways. Both the eastbound and westbound carriageways in this section would remain as two lanes. There would be revisions to existing road markings.

2.3.4 From Spruce Road the A63 would be gradually lowered so that it would be approximately 6m lower than the existing level at the location of the current Mytongate Junction. In the area where it is lowered the A63 would be in a cutting, where ground material would have been excavated to leave an open trench for the road to pass through. Piled retaining walls would be built to support the sides of the cutting.

2.3.5 Ferensway and Commercial Road would be raised by approximately 0.5m and cross over the A63 on a new bridge to make Mytongate Junction a split level junction. This junction arrangement would allow traffic on the A63 to pass freely through the junction.

2.3.6 Eastbound traffic leaving the A63 at Mytongate Junction would use a single lane diverge (exit) slip road which would have a hard shoulder. The slip road would widen to three lanes at the top of the slip road for the junction with Ferensway. The wall between the slip road and mainline A63 would be a retaining wall with a parapet fence mounted on top, approximately 1.5m high.

2.3.7 Westbound traffic joining the A63 from Mytongate Junction would use a single lane merge (entry) slip road which would have a hard shoulder. The wall between the slip road and mainline A63 would be a retaining wall with a parapet fence mounted on top, approximately 1.5m high. From the slip road, a limited movements junction (it would only be possible to turn left into it, and to turn left out of it) into a service road would provide access for delivery vehicles for Arco and Kingston Retail Park and for all vehicles to ATS Euromaster and Armstrong Hydraulic Services. If the Arco site is selected as the bentonite compound, a link road would be constructed during Phase 0 between Spruce Road and Lister Street as a replacement and permanent access for local businesses. Spruce Road would be closed once construction had finished.

2.3.8 Westbound traffic leaving the A63 at Mytongate Junction would use a two lane slip road. The slip road would widen to three lanes at the top of the slip road for the junction with Commercial Road. The wall between the slip road and the A63 mainline would be a retaining wall with a parapet fence mounted on top, approximately 1.5m high. The wall between the slip road and the grounds of the Holiday Inn and Trinity Burial Ground would also be a retaining wall, which would also serve as a boundary wall. The retaining wall would remain visible, and would be faced in new red brick to be in keeping with the existing boundary wall.

2.3.9 The realigned A63 and the westbound exit slip road to Commercial Road would pass through the northern part of Trinity Burial Ground (Site of Nature Conservation Importance (SNCI)), resulting in the permanent loss of one third of its area. To accommodate archaeology works, further tree removal is required within Trinity Burial Ground SNCI. Currently a total of 40 mature trees within Trinity Burial Ground SNCI are to be removed. A further 4 will be reviewed nearer the start of works with a view to retaining as many as possible. Many roadside trees

across the Scheme footprint would also need to be felled to accommodate construction works.

2.3.10 Eastbound traffic joining the A63 at Mytongate Junction would use a short length of two lane slip road, with the nearside (left hand) lane of the slip road dedicated as a local access road for Myton Street, including for access to the Princes Quay Shopping Centre car park. Beyond Myton Street, the slip road reduces to one lane with a hard shoulder up to Princes Dock Street. The wall between the slip road and the A63 mainline would be a retaining wall with a parapet fence mounted on top approximately 1.5m high. For safety reasons, the slip road lane would be physically separated from the main eastbound carriageway as far as Princes Dock Street by a paved verge. Eastbound between Princes Dock Street and Market Place, the A63 mainline would become three lanes wide, with the nearside lane used for merging traffic from the slip road, and for diverging traffic weaving to exit at Market Place.

2.3.11 The westbound carriageway would remain as two lanes between Queen Street Junction and Mytongate Junction.

2.3.12 East of Mytongate Junction, the A63 level would gradually rise from being in a cutting, to be at existing ground level in the vicinity of the Earl de Grey public house.

2.3.13 The central reserve would be a minimum width of 1.8 metres, widening to accommodate sight lines as necessary. A 900mm high concrete step barrier (CSB) would be installed.

2.3.14 Temporary traffic management around Mytongate Junction will bring vehicles into close proximity to the Castle Buildings and Earl De Grey public house. To accommodate traffic, scaffolding currently on the exterior of the Castle Buildings will need to be removed. This scaffolding is providing structural support to the Castle Buildings. Once it is removed the building will no longer be structurally sound and would require demolition. The proximity of traffic to the Earl De Grey public house means that the building cannot be adequately safeguarded from structural damage. This, combined with the required diversion of utilities at this location require that the Earl De Grey public house be dismantled. The Holiday Inn Substation and the buildings at the Arco site are also required to be demolished to accommodate the works.

2.3.15 The existing 40 miles per hour (MPH) speed limit would be retained.

2.3.16 New structures include a two-span precast concrete overbridge at Mytongate Junction; retaining walls for the underpass at Mytongate Junction; a pumping station to the south east of Mytongate Junction; retaining walls at the Holiday Inn; a footbridge at Porter Street, a pedestrian, cycle and disabled user bridge over the A63 at Princes Quay and the re-siting of Spurn Lightship.

2.3.17 A rising main downstream of the pumping station would transfer flow to a receiving network or watercourse. At present, it is proposed to outfall (discharge) directly to the Humber Estuary through an existing sheet piled wall unless consent can be reached with Yorkshire Water to discharge into their sewer network. The location of this is undecided.

2.3.18 Potential temporary construction site compounds, a potential area for creation of public open space and recovery options are listed below and their locations are shown on figures (Appendix A – Extended Phase 1 Habitat Maps)

1. Arco site (preferred Option A) or Staples site (alternative Option B) – bentonite compound
2. Wellington Street Island Wharf (Spencers) - main site offices
3. A63 Eastbound Recovery Base (A63 layby eastbound to the north of St Andrews Quay) - vehicle recovery
4. Livingstone Road (South Humber Properties Ltd) - materials compound
5. Land south east of Mytongate Junction - Trinity Burial Ground compound
6. Neptune Street Set Down – Princes Quay Bridge compound, vehicle recovery and traffic management
7. A63 westbound recovery base (A63 layby westbound to the west of Garrison Road roundabout) – vehicle recovery

2.3.19 There is no guarantee that any of these sites would still be available at the proposed start of works if the DCO was granted, so more sites have been identified than would actually be required.

2.3.20 The design of the Scheme is shown on Volume 2, Figure 2.5 Scheme Proposals (sheets 1 to 6) and Volume 2, Figure 2.10 Environmental Masterplan.

3. Methodology

3.1 Desk study

3.1.1 The desk study involved a search for statutory and non-statutory designated wildlife sites and historical protected and notable species records within a 2km radius of the Scheme. A search for internationally statutory designated sites was made within a 20km radius of the site. The following sources of information were used:

- Multi-Agency Geographical Information for the Countryside (MAGIC) website[1]
- North and East Yorkshire Ecological Data Centre (NEYEDC)
- Previous ecological survey reports detailed in Table 2.1: Previous ecological survey reports for the Scheme were reviewed for background information

3.1.2 Ordnance Survey maps at a scale of 1:25000 were used to search for ponds within 500m of the Scheme.

3.1.3 The records were checked against species included in the UK Post 2010 Biodiversity Framework (UKBAP) (JNCC, 2012)[2] and the Hull Local Biodiversity Action Plan (LBAP)[3].

3.2 Extended Phase 1 Habitat survey

3.2.1 In February, June and August 2013, Extended Phase 1 habitat surveys were undertaken of the main Scheme site boundary and the potential compound sites that were available at the time. Additional compound sites were surveyed in March 2014. Since then, potential compound sites have changed and the main site boundary and the current potential compound sites have been surveyed (see Appendix A: Extended Phase 1 Habitat Maps) on 24 May and 07 September 2016, 14 September 2017 and 28 March 2018. All areas of the site were investigated and areas around the site as indicated on the Extended Phase 1 habitat map (Appendix A: Extended Phase 1 Habitat Maps).

3.2.2 The vegetation and habitat types within the site were noted during the survey in accordance with the categories specified for a Phase 1 Vegetation and Habitat

[1] Multi-Agency Geographical Information for the Countryside (MAGIC) website. Available online at: (http://magic.defra.gov.uk/)

[2] Joint Nature Conservation Committee 2012. The UK Post 2010 Biodiversity Framework (UKBAP). Available online at: http://jncc.defra.gov.uk/page-6189

[3] Hull Biodiversity Partnership 2002 The Hull Biodiversity Action Plan. Available online at: http://www.hull.ac.uk/HBP/

Survey (Joint Nature Conservation Committee, 2010[4]). Dominant plant species were recorded for each habitat present.

3.2.3 The site was inspected for evidence of and its potential to support protected or notable species, especially those listed under the Conservation of Habitats and Species Regulations 2010 (as amended) or 2017 where applicable, the Wildlife & Countryside Act 1981 (as amended), including those given a higher level of legal protection under the Natural Environment and Rural Communities (NERC) Act 2006 and Countryside & Rights of Way (CRoW) Act 2000, and listed on the UK and local Biodiversity Action Plans. The following species were considered:

- Invertebrates (including white-clawed crayfish)
- Great crested newts
- Reptiles
- Birds
- Bats
- Badgers
- Otters
- Water voles
- Other notable species
- Invasive species

3.3 Limitations

3.3.1 The optimum time of year for completing Extended Phase 1 habitat surveys is between April and September, as many plant species have a seasonal expression in spring and summer only. However, it is possible outside of this season for experienced ecologists to identify habitat types to the JNCC (2010) descriptions, determine their biodiversity value and potential for protected species and recommend further surveys within the season if required. One of the three survey visits in 2013 was on 26 February and the 2014 visit was on 14 March outside of the optimum season, although the habitats recorded did not require further specialist plant survey. Given the surveys in 2016 and 2017 were both within the optimum survey season on 23 May 2016, 07 September 2016 and 14 September 2017, the timing of the 2013 and 2014 surveys is not considered to be a limitation to the assessment. The 2018 survey on 28 March was just outside of the season.

[4] Joint Nature Conservation Committee (2010). Handbook for Phase 1 Habitat Survey: A technique for environmental audit. JNCC, Peterborough, UK.

3.3.2 Buildings to the west of potential Site Compound Wellington Street Island Wharf have not been assessed as they are not to be demolished. Bat activity surveys previously found low bat activity in this area.

3.3.3 The details of this report will remain valid for a period of two years. Beyond this period, it is recommended that a new review of the ecological conditions is undertaken.

3.4 Assessment methodology: determining biodiversity value

3.4.1 The assessment method used follows that outlined in Interim Advice Note (IAN) 130/10[5], which integrates the 2016 "Guidelines for Ecological Impact Assessment in the United Kingdom" published by the Institute of Ecology and Environmental Management[6] (CIEEM) into the Design Manual for Roads and Bridges (DMRB)[7]. These guidelines formed the basis of the system used to evaluate the soft estate and nearby habitats and sites of conservation significance.

3.4.2 Ecological receptors have been evaluated based on the following criteria:

- Habitat size, shape, diversity (eg mosaics, mono-cultures) and connectivity
- Physical conditions (eg natural, semi natural, buildings/hard standing)
- Biodiversity, including species richness, range and populations of plant and animal communities
- Rarity and typicalness of plant and animal communities
- Stage/stability of ecological succession and habitat development trajectory
- Typicalness of the physical environment
- Position in an ecological or geographical unit
- Potential and intrinsic value, ease of re-creation

3.4.3 In reasonable accordance with CIEEM (2016) each site has been assessed as valuable, or potentially valuable, based on the following geographic frame of reference:

- International - a site or population warranting designation as a Special Area of Conservation (SAC) and/or of significant conservation status for Europe (very high value)

[5] Highways Agency 2010 Interim Advice Note 130/10 Ecology and Nature Conservation: Criteria for Impact Assessment

[6] Chartered Institute of Ecology and Environmental Management (CIEEM) 2016 Guidelines for Ecological Impact Assessment in the UK and Ireland

[7] Highways Agency (1993) *Design Manual for Roads and Bridges* Volume 11 Section 3 Part 4. Available online at: http://www.standardsforhighways.co.uk/DMRB/vol11/section3/11s3p04.pdf.

- National (UK) - a site or population warranting designation as a Site of Special Scientific Interest (SSSI) and/or of significant conservation status for England (high value)
- Regional - a site or population valuable at a regional level and/or of significant conservation status for the North of England; areas of habitat considered in the HEBAP (high/medium value)
- County or Unitary Area - a population warranting designation as a County Wildlife Site and/or of significant conservation status for the East Riding of Yorkshire (medium value)
- Local - a population of significant conservation status within a local context (within approximately 5 kilometres of the proposed scheme) (low value)
- Within the immediate zone of influence only - a population of little or no biodiversity for the immediate survey site only (negligible value)

3.4.4 The criteria listed above help define a feature's conservation status, which can then be used to help determine its biodiversity value. CIEEM (2016) provides further information on how the relative value and importance of a receptor can be determined and states that its biodiversity value should be measured against published selection criteria where available. It is also useful to distinguish between the biodiversity value of a receptor and its legal status. Features of high biodiversity value may not necessarily attract legal protection and vice versa. For example, a viable area of ancient woodland is likely to be considered of high biodiversity value even if it has not received any formal statutory designations.

3.4.5 In the evaluation of biodiversity value, reference is also made to UK and LBAPs, inclusion on national or County Red Data Books, and to conservation status (such as nationally notable/scarce species, etc.). However, the inclusion within a BAP reflects the fact that the population of the species/habitat concerned is in a sub-optimal state (and hence that conservation action is required) and does not necessarily imply any specific level of value. Despite this, priority BAP species/habitats may represent a significant ecological constraint if their presence triggers planning guidance implications.

4. Desk study

4.1 Statutory sites

4.1.1 The Scheme site is located adjacent to (in parts) the Humber Estuary which is a Special Area of Conservation (SAC)[8], as well as being a Special Protection Area (SPA)[9] and a Ramsar site[10] which are all international designations. The Humber Estuary is also designated as a Site of Special Scientific Interest (SSSI)[11] which is a national designation. All designations share the same boundary.

4.1.2 The estuary contains a number of habitats listed in Annex 1 of the Habitats Directive which are the primary reason for its designation as an SAC. These include: Atlantic salt meadows, shallow submerged sandbanks, partially covered mudflats and sandbanks, glasswort beds and coastal lagoons. Extensive intertidal mudflats which are not covered at low tide are also of primary importance. Significant species include river lamprey *Lampetra fluviatilis* and sea lamprey *Petromyzon marinus*. Other Annex 1 habitats which are present as a qualifying feature, but are not primary reasons for site selection include: Fixed dunes, dunes with *Hippophae rhamnoides*, dunes with *Ammophila arenaria* and embryonic shifting dunes. The presence of grey seals *Halichoerus grypus* is another qualifying feature. The SAC has been assessed as of very high biodiversity value at an international level.

4.1.3 The Humber Estuary is designated as a SPA for a range of bird species which are designated on Annex 1 of the Wild Birds directive. The site supports very significant populations of bittern *Botaurus stellaris*, golden plover *Pluvialis apricaria*, avocet *Recurvirostra avosetta*, marsh harrier *Circus aeruginosus*, bar tailed godwit *Limosa lapponica*, ruff *Philomachus pugnax* and little tern *Sternula albifrons*, which breed and overwinter on the estuary. Important migratory species include knot *Calidris canutus*, dunlin *Calidris alpina*, black tailed godwit *Limosa limosa*, redshank *Tringa tetanus* and shelduck *Tadorna tadorna*. The SPA has been assessed as of very high biodiversity value at an international level.

4.1.4 The Humber Estuary Ramsar site is designated as a representative example of a near-natural estuary with the following component habitats: dune systems and humid dune slacks, estuarine waters, intertidal mud and sand flats, saltmarshes, and coastal brackish/saline lagoons. It supports a breeding colony of grey seals and natterjack toad *Bufo calamita.* The Humber Estuary Ramsar site supports a waterfowl assemblage of international importance and twelve bird species populations occur at international importance levels. The Humber Estuary acts as

[8] This originally derived from the Habitats Directive 92/43/EC.

[9] This originally derived from the EC Council Directive on the Conservation of Wild Birds 79/409/EC.

[10] Ramsar sites are wetlands of international importance designated under the Ramsar Convention (Iran, 1971).

[11] Originally notified under the National Parks and Access to the Countryside Act 1949, SSSIs were re-notified under the Wildlife and Countryside Act 1981.

an important migration route for both river lamprey and sea lamprey between coastal waters and their spawning areas. The Ramsar site has been assessed as of very high biodiversity value at an international level.

4.1.5 The Humber Estuary is designated as a SSSI as it has a series of nationally important habitats. These are the estuary itself (with its component habitats of intertidal mudflats and sandflats and coastal saltmarsh) and the associated saline lagoons, sand dunes and standing waters. The estuary supports nationally important numbers of 22 wintering waterfowl and nine passage waders, and a nationally important assemblage of breeding birds of lowland open waters and their margins. It is also nationally important for a breeding colony of grey seals, river lamprey and sea lamprey, a vascular plant assemblage and an invertebrate assemblage. The SSSI has been assessed as of high biodiversity value at a national level.

4.2 Non-statutory sites

4.2.1 Details of non-statutory sites received from NEYEDC within or partly within a 2km radius of the site are provided in Table 4.1: Non-statutory sites received from NEYEDC. All Sites of Nature Conservation Interest (SNCIs) have been assessed as of medium biodiversity value at county level.

Table 4.1: Non-statutory sites received from NEYEDC

Designation	Name & site code	Description	Nearest distance to Scheme
SNCI	Trinity Burial Ground (369)	An old cemetery comprising an area of urban parkland with many mature trees, shrubs and scrub in the understorey and amenity grassland.	Within Scheme footprint
SNCI	River Hull (including banks; 168)	Fresh water tributary to the Humber Estuary. The vegetation present along the river is highly representative of the changes between freshwater, brackish and estuarine environments. Supports a wide range of flora and fauna along its entire length, including protected and/or UKBAP species.	150m east of main site
SNCI	Mudflats to south of Sammy's Point (255)	No information provided.	250m south of main site
SNCI	Land to the East of Cricket Ground (86)	No information provided.	1.1km north west
SNCI	Land to the east of Hymers College grounds (373)	No information provided.	1.2km north west
SNCI	Land to the west of Northumberland	No information provided.	1.25km north

Designation	Name & site code	Description	Nearest distance to Scheme
	Avenue almhouses (364)		
SNCI	Foredyke Stream cycle track - south of Chapman Street (167)	No information provided.	1.35km north east
SNCI	West Park (84)	No information provided.	1.4km north west
SNCI	Strip of land north of Circle cricket ground (87)	No information provided.	1.4km north west
SNCI	Hymers College grounds (88)	No information provided.	1.5km north west
SNCI	Land to rear of Hymas Avenue (89)	No information provided.	1.5km north west
SNCI	Dismantled low level railway line (111)	No information provided.	1.6km north
SNCI	Foredyke stream cycle track - south of Chamberlain Road (177)	No information provided.	1.6km north east
SNCI	General Cemetery, Spring Bank West (100)	No information provided.	1.65km north west
Yorkshire Wildlife Trust Reserve and SNCI	Pearson Park Wildlife Garden (108)	Though small in size this reserve contains a wide variety of habitats including ponds, hedgerows, woodland and a meadow, as well as a horticultural display and agricultural sections. The reserve is of importance due to its urban surroundings and supports a wide variety of birds, invertebrates and amphibians.	1.9km north

4.3 Habitats

4.3.1 The MAGIC website revealed that within a 2km radius of the site there were the following UKBAP (NERC Act 2006 Section 41) Priority habitats which have been assessed as of high biodiversity value at a national level:

- There are two parcels of UKBAP Priority Habitat 'Wood-pasture and Parkland', the closest being approximately 1.97km to the north west
- 31 areas of 'Mudflats' habitat with the closest being adjacent to the development footprint (Wellington Street Island Wharf and Livingstone Road site compounds and in Humber Dock basin adjacent to Humber Dock Marina)

- Four areas of Broad habitats 'Intertidal substrate foreshore - mud' habitat with the closest being in the Humber Estuary (Wellington Street Island Wharf and Livingstone Road site compounds and in Humber Dock basin)
- Four areas of Broad habitats 'Intertidal substrate foreshore - made ground' habitat with the closest being within the development footprint at Humber Dock Marina and Princes Dock. (This habitat has been assessed separately under Section 5.3.4 Standing Water)
- One area of Broad habitats 'Intertidal substrate foreshore - sand and gravel' habitat with the closest being approximately 656m to the east at Victoria Dock
- 31 areas of 'Deciduous woodland' habitat with the closest being within the development footprint at Trinity Burial Ground
- Eight areas of 'Broad-leaved woodland' habitat with the closest being within the development footprint at Trinity Burial Ground
- One area of 'No main habitat but additional habitat exists - saltmarsh' approximately 60m to the south of the A63 eastbound recovery base

4.3.2 In terms of species, the MAGIC search revealed:

- There were two granted European Protected Species (EPS) licence applications within the search area, the most recent from 2016. Both applications allowed for damage to and destruction of resting places used by common pipistrelle *Pipistrellus pipistrellus*.

4.4 Species

4.4.1 The records received from NEYEDC within 2km of the site were checked against the species included in the UKBAP and Hull Local Biodiversity Action Plans. Records before the year 2000 were excluded. The local biodiversity records centre only holds records that have been supplied to them and so may not provide an accurate reflection of the flora and fauna present on site.

Flora

4.4.2 The following records of notable flora were returned:

- Two records of an LBAP flowering plant, bee orchid *Ophrys apifera*, the closest being approximately 89m to the west in 2000
- One record of a UKBAP flowering plant, cornflower *Centaurea cyanus* approximately 1.1km to the north in 1998

- One record of a UKBAP flowering plant, garden asparagus *Asparagus officinalis* approximately 1.1km to the north in 2000

Invertebrates

4.4.3 For invertebrates the following records were returned.

- 1 record returned of a UKBAP invertebrate, the August thorn moth *Ennomos quercinaria*, approximately 1.9km to the north west in 2014
- 4 records returned of a UKBAP invertebrate, the cinnabar moth *Tyria jacobaea* approximately 1007m to the north west between 2000 and 2008

Amphibians

4.4.4 There were no records returned of great crested newt *Triturus cristatus*. One record of the UKBAP and LBAP amphibian common toad *Bufo bufo* was returned approximately 1.9km to the north west in 2014.

Fish

4.4.5 There were no records returned of any protected fish species in the search.

Reptiles

4.4.6 One record returned of a WCA, UKBAP and LBAP reptile, the common lizard, *Zootoca vivipara* approximately 1.2km to the north west in 2012.

Birds

4.4.7 There were records returned of nine protected/notable bird species in the search. This data comprised:

Table 4.2: Bird records received from NEYEDC

Scientific name	Common name	Designation	Date recorded	Number of records	Direction & distance from site (m)
Carduelis cannabina	Common linnet	UKBAP LBAP	2008	1	1.5 km SE
Larus argentatus	Herring gull	UKBAP	2008	1	1.9 km NW
Passer domesticus	House sparrow	UKBAP LBAP	2008	8	1 km NW
Passer montanus	Tree sparrow	UKBAP LBAP	2009	Not supplied	Not supplied
Perdix perdix	Grey partridge	UKBAP	2011	Not supplied	Not supplied

Scientific name	Common name	Designation	Date recorded	Number of records	Direction & distance from site (m)
Prunella modularis	Dunnock	UKBAP	2008	4	On site
Sturnus vulgaris	Common starling	UKBAP	2014	12	929 m NE
Turdus philomelos	Song Thrush	UKBAP LBAP	2008	4	948 m NE
Turdus pilaris	Fieldfare	WCA Sch 1 UKBAP	2010	Not supplied	Not supplied

4.4.8 NEYEDC also returned old, dated records for Eurasian sparrow hawk *Accipiter nisus*, common sandpiper *Actitis hypoleucos*, northern pintail *Anas acuta*, northern shoveler *Anas clypeata*, Eurasian teal *Anas crecca*, Eurasian wigeon *Anas Penelope*, mallard *Anas platyrhynchos*, gadwall *Anas strepera*, greater white-fronted goose *Anser albifrons subsp. Albifrons*, greylag goose *Anser anser*, greater scaup *Aythya fuligula*, bohemian waxwing *Bombycilla garrulus*, brent goose *Branta bernicla subsp. Bernicla*, common goldeneye *Bucephala clangula*, purple sandpiper *Calidris maritima*, black-headed gull *Chroicocephalus ridibundus,* long-tailed duck *Clangula hyemalis*, tundra swan *Cygnus columbianus*, whooper swan *Cygnus cygnus*, peregrine falcon *Falco peregrinus*, black-tailed godwit *Limos limosa*, common scoter *Melanitta nigra*, grey wagtail *Motacilla cinerea,* Eurasian curlew *Numenius arquata*, bearded tit *Panurus biarmicus*, ruff *Philomachus pugnax*, avocet *Recurvirosira avosetta*, woodcock *Scolopax rusticola,* little tern *Sternula albifrons,* mistle thrush *Turdus viscivorus* and northern lapwing *Vanellus vanellus*.

Aquatic mammals

4.4.9 There were no records of aquatic mammals received from NEYEDC.

Bats

4.4.10 There were eight records returned of bats *Chiroptera* (order).

Table 4.3: Bat records received from NEYEDC

Scientific name	Common name	Designation	Latest date recorded	Number of records	Direction & distance from site (m)
Pipistrellus sp.	Pipistrelle bat	EPS, UKBAP, LBAP, WCA Sch 5	1994	8	775m N

Key:
EPS: European Protected Species: Species listed under the Conservation of Habitats and Species Regulations 2017
WCA: Wildlife & Countryside Act 1981 (as amended)
UKBAP: UK Biodiversity Action Plan
LBAP: Hull Biodiversity Action Plan

Badger

4.4.11 There were no records returned of badger *Meles meles.*

Otter

4.4.12 There were no records returned of otter *Lutra lutra.*

Water vole

4.4.13 There were no records of water voles *Arvicola amphibius.*

Other species

4.4.14 There were two records returned of UKBAP species West European hedgehog *Erinaceus europaeus*, the closest being approximately 1km to the north east of the site in 2014.

Invasive species

4.4.15 There were records returned of five invasive species.

- One record of Budgerigar *Melopsittacus undulates* approximately 300m north
- Eighteen records of Japanese knotweed *Fallopia japonica*, the closest being approximately 300m north
- Seven records of giant hogweed *Heracleum mantegazzianum*, the closest being approximately 979m north west
- Six records of eastern grey squirrel *Sciurus carolinensis*, the closest being approximately 1073m north west

4.4.16 It is noted within the Hull LBAP that song thrush have bred in Trinity Burial Ground SNCI in the past. Song thrush is another Species of Principal Importance and also a Hull BAP species.

4.4.17 A previous survey of buildings in the area in 2005 revealed a common pipistrelle bat roost within the Castle Buildings, which is located directly adjacent to the Scheme footprint (WSP, 2005; Table 2.1: Previous ecological survey reports for the Scheme). A single bat was found during a daytime survey roosting behind a boarded up window in this derelict building.

4.4.18 No ponds or other suitable watercourses for great crested newts were identified on OS maps or aerial imagery within 500m of the Scheme footprint.

5. Extended Phase 1 habitat survey results

5.1 Introduction

5.1.1 The results of the extended Phase 1 habitat survey are presented below. The habitats recorded are illustrated on Phase 1 habitat maps in Appendix A: Figure 10.1.1 A Figures 1 -12 of this report, with associated target notes and photographs included in Appendix C: Target Notes and Photographs of this report. The February, June and August 2013 Extended Phase 1 habitat surveys and additional compound sites that were surveyed in March 2014, were undertaken by John Daw MCIEEM and Steven Ward MCIEEM (Consultant Ecologists). The updated field survey was undertaken by Senior Ecologist Diane Wood MCIEEM on 23 May 2016 and additional surveys were completed on 07 September 2016 and 14 September 2017 to assess potential site compound locations. All surveys were undertaken in dry, clear weather conditions. The main site has been assessed first and the potential compound sites, recovery options, potential accommodation works site and potential area for creation of public open space have each been assessed separately.

5.2 Scheme site description

5.2.1 The survey area was centred on a 1.5km section of the A63 Castle Street dual carriageway extending from Ropery Street in the west to the Market Place/Queen Street junction in the east. A large traffic island known as Mytongate Junction is located near the centre of the survey area. The survey area also extends southwards from this junction along Commercial Road, terminating adjacent to Wellington Street West on the northern bank of the Humber Estuary.

5.2.2 Residential and commercial properties are located on all sides of the survey area, with frequent amenity planting and areas of hard standing. Trinity Burial Ground SNCI, an area of urban parkland, is located at the centre of the Scheme footprint and has been assessed separately.

5.3 Habitat descriptions

5.3.1 The A63 carriageway consists of hard standing with associated traffic islands, junctions, traffic lights and pedestrian crossings. Pedestrian footpaths and amenity planting of flower beds, introduced shrubs and young broadleaved trees are frequently located on either side of this road. Additional areas of hard standing are located across the survey area in the form of car parks bordered by amenity planted trees and introduced shrubs.

Scattered scrub

5.3.2 A small amount of scattered scrub was present adjacent to Waverley Street and around the substation in the Holiday Inn car park. The species it contained were

bramble *Rubus fruticosus* agg. and ivy *Hedera helix.* Although scrub habitat is included in Hull BAP 'Trees, scrub and hedgerow' plan, the scattered scrub on site is not diverse and occurs in small, isolated pockets. It is not considered a good example of scrub and as such this habitat has been assessed as of negligible biodiversity value within the survey area only. This habitat has potential supporting value for protected species including invertebrates and nesting birds.

Scattered trees

5.3.3 Scattered trees occur frequently across the survey area in association with amenity planted areas and include sycamore *Acer pseudoplatanus*, hybrid poplar *Populus* sp. and silver birch *Betula pendula* with occasional specimens of Norway maple *Acer platanoides*, snake-bark maple *Acer rufinerve*, false acacia *Robinia pseudoacacia* and common lime *Tilia* x *europaea*. Several semi mature or mature specimens of cherry *Prunus* sp. and sycamore are located in the west and centre of the survey area respectively. These trees stand between 5m and 8m in height and are in good condition. Trees are a Hull BAP habitat and this habitat has been assessed as of medium biodiversity value within the county area. This habitat has potential supporting value for protected species including invertebrates, common nesting birds and bats.

Standing water

5.3.4 Humber Dock Marina contains standing water habitat. The marina is connected to the Humber Estuary SAC, SPA, Ramsar and SSSI by two sets of gates (lock) crossing Wellington Street. Railway Dock is connected to Humber Dock Marina by a lock on the eastern side of Railway Dock. As both of these docks are man-made they will not contain habitats (sandbanks, mudflats, dunes) that the Humber Estuary is designated for. They may support some species that are designated, in particular grey seals, birds and sea and river lamprey. These two docks, because of their likely importance to these species and connectivity to the Humber Estuary have been assessed as of high/medium biodiversity value within the regional area (IAN 130/10: Table 1. Resource valuation states "*regularly occurring populations of species which may be considered at an International, European, UK or National level*"). In addition, they may support common fish species and aquatic invertebrates. Humber Dock Marina and Princes Dock are UKBAP (NERC Act 2006 S41) Broad habitat 'Intertidal substrate foreshore - man made' habitats. To the north of the A63, Princes Dock is man-made, contains fountains that re-circulate the water and has no vegetation visible. It has a hydraulic connection to Humber Dock Marina but the condition is unknown. It is suspected to be a closed connection because of the difference in water colour to Humber Dock Marina. Princes Dock is unlikely to support species that are designated as part of the Humber Estuary. Princes Dock has been assessed as of negligible biodiversity value within the survey area.

Amenity grassland

5.3.5 This habitat occurs adjacent to the road verges and consists of regularly mown grass species including perennial ryegrass *Lolium perenne* and few common herbs dandelion *Taraxacum* spp and white clover *Trifolium repens*. Although this habitat is listed in the Hull BAP, the amenity grassland on site is of low biodiversity and is a poor, intensively managed example of the habitat. It has been assessed as of negligible biodiversity value within the survey area only.

Introduced shrub

5.3.6 Areas of introduced shrub contain horticultural varieties including rose *Rosa* sp., cotoneaster *Cotoneaster* sp., Oregon grape *Mahonia aquifolium*, garden privet *Ligustrum ovalifolium*, burberry *Berberis* sp., lavender *Lavandula angustifolia*, dogwood *Cornus sanguinea*, cherry laurel *Prunus laurocerasus*, dwarf reed *Phragmites* sp. and tufted grass *Deschampsia* sp. It has been assessed as of negligible biodiversity value within the survey area only. This habitat has potential supporting value for protected species including invertebrates and nesting birds.

Buildings

5.3.7 Nine buildings were assessed within the main Scheme survey area and additional potential compound sites during surveys in 2013. They comprised the Earl de Grey Free House, the Castle Buildings, the Myton Centre, the Arco Ltd Garage, the Holiday Inn Hotel, the ARC Building and three electric/gas substations. The Arc Building had been demolished by the time the update survey was undertaken in 2016. Two additional buildings, substations within Tower Street Wharf - North and South were identified after the addition of this potential site compound in 2016 (now removed from the Scheme). The buildings being considered have been described in detail below and assessed for bat roost potential in accordance with Collins, J. (2016)[12]. The results of which are provided in the MMSJV bat survey report (Volume 3: Appendix 10.2). Buildings to the west of potential Site Compound Wellington Street Island Wharf have not been assessed they are not to be demolished and the smaller buildings on the Arco site were assessed for bat roost potential in April 2018 and were found to have negligible potential.

5.3.8 All buildings have been assessed as of negligible biodiversity value within the survey area only. Buildings have potential supporting value for protected species including wall ferns, lichens, invertebrates, common nesting birds and bats.

5.3.9 The Earl de Grey public house (Appendix C: Photograph 5) is located near the centre of the survey area and will be dismantled. As a result, this assessment has assumed worst case scenario i.e. that the building will be removed. This building consists of a three-storey building of brick construction with a tiled pitched roof. Several additions/extensions are located to the rear (north) of the original building, resulting in a complex roof structure. At the time of the survey, the ground floor and all windows of the building had been sealed with wooden boarding and the

[12] Collins, J. (2016) *Bat Surveys: Good Practice Guidelines,* 3rd Edition, Bat Conservation Trust.

building was unoccupied. This building contains numerous features that offer potential refuge for wildlife (particularly bats) including slipped or missing roofing tiles, raised ridge tiles, gaps under fascia boarding and damage to the external walls.

5.3.10 The Castle Buildings (Appendix C: Photograph 6) is located approximately 25m to the west of the Earl de Grey public house. The building was unoccupied and derelict and the newer east wing has since been demolished as part of another development. This building was of brick construction with three-storey high sections and extensions. This building was in a poor condition at the time of the survey. Scaffolding was present on all sides of the building, which also contained a corrugated roof above. Tiles had been removed from the eastern section of the roof exposing the wooden rafters and roofing felt. The building contained a wide variety of features that could be used by local wildlife (particularly bats) for shelter including slipped or missing tiles, raised ridge tiles, cracks in external walls and access into the internal loft space.

5.3.11 The Myton Centre is located in the west of the survey area (Appendix C: Photograph 7) and will need to be demolished. This building is constructed from a combination of brick and concrete, with flat roofing containing wooden fascia and soffit boarding. The majority of the building is single-storey with a flat felted roof. A two-storey section, containing a shallow pitched roof, is located in the centre of the building. This building is in reasonably good condition, but has gaps under the roof felt that could be used by bats.

5.3.12 The Arco Ltd garage (Appendix C: Photograph 8) consists of a small single-storey building located in the west of the survey area. This building is constructed from brick and contains a flat parapet felted roof. Four large garage doors are located on the building's western elevation. This building was in good condition at the time of the survey and had negligible bat roost potential. Two smaller buildings on the Arco site were inspected for potential roost features with an endoscope and they were found to have no bat roost potential.

5.3.13 The Holiday Inn is located to the east of Mytongate Junction adjacent to the westbound carriageway (Appendix C: Photograph 9). The building is of modern design and contains a series of different sections/wings constructed from brick. The main section of the building is four storeys high with numerous windows. The roofing of the building comprises a tiled, pitched roof in good condition. A single storey annex of the same design and construction is located adjacent to the main building complex. This building was in good condition at the time of the survey.

5.3.14 Five power substations are located within the survey area. These are small brick/concrete structures, four of which have flat roofs. Holiday Inn substation, to be demolished within the development, has a tiled hipped roof (Appendix C: Photograph 10) and was in good condition. The other substations have now been removed from the Scheme.

Trinity Burial Ground SNCI

5.3.15 Trinity Burial Ground SNCI (Appendix C: Target Note and Photograph 3) is located near the centre of the survey area. This local wildlife site comprises short, well maintained amenity grassland with noted emerging spring bulbs snowdrop *Galanthus* sp. and daffodil *Narcissus* sp. Frequent stands of wild privet *Ligustrum vulgare*, cherry laurel and bramble occur across the park which contains many headstones and graves. Numerous semi mature and mature broadleaved trees occur in the burial ground including poplar, ash *Fraxinus excelsior*, weeping ash *Fraxinus excelsior* subsp. *pendula*, oak *Quercus robur*, sycamore, London plane *Platanus x hispanica,* wych elm *Ulmus glabra* and common lime. These trees ranged between approximately 8m and 20m in height and varied in condition with woodpecker holes, peeling bark, scars and natural cavities frequently recorded. Dense ivy growth was recorded on the trunks and major limbs of several individual trees. A brick wall, approximately 2m in height, is located on the northern, eastern and western boundary of the burial ground. A large crack and several holes were recorded in this wall which has also been colonised by dense ivy. As an SNCI this site has been assessed as of medium biodiversity value at county level.

Site compounds

Arco site (preferred Option A)

5.3.16 The site is located adjacent to the south of the A63 and the majority of the site is currently used as industrial buildings and car parking. Amenity trees and grassland occur along the A63 verge and a small area to the east of the site. The site has been assessed as of negligible biodiversity value within the survey area only.

Staples site (alternative Option B)

5.3.17 The site is located adjacent to the Mytongate Junction on the northern aspect bounded by and accessed off Myton Street to the east. The site is used as a retail park for Maplins, American Golf and Monster and is the former site of Staples. The site consists of a retail park containing three buildings in the north and west and a car park in the south. Scattered trees are present along the southern and eastern boundary of the car park including beech, sycamore and rowan. Areas of introduced shrub are present in the south west of the site, adjacent to the Maplins building, and in areas in the car park consisting of the non-native invasive cotoneaster sp. (Appendix C: Target Note and Photograph 4), dog-rose *Rosa canina,* senecio, *Mahonia* sp. and ornamental cultivar species. A species-poor hedgerow and trees comprising introduced cultivars with planted beech and sycamore is present along the southern boundary adjacent to the A63. The scattered trees and hedgerow on site have the potential to support breeding birds and provide foraging habitat for bats. The trees and buildings were assessed as not having bat roost potential. This site has been assessed as of negligible biodiversity value within the survey area only.

Wellington Street Island Wharf

5.3.18 Wellington Street Island Wharf (Appendix C: Photograph 11) is located adjacent to the Humber Estuary SAC, SPA, Ramsar and SSSI site. The habitats adjacent to the site include intertidal mud and sand (UKBAP (NERC Act 2006 Section 41) Priority habitat 'intertidal mudflats' and Hull BAP 'Estuary') and intertidal boulders and rocks associated with the rock armour of the sea defences. This site is a disused, unmanaged site that was previously industrial developed dockland. This habitat has a Hull LBAP habitat plan 'Industrial'. The site was largely ephemeral/short perennial habitat over gravel containing red fescue, ribwort plantain *Plantago lanceolata*, white clover *Trifolium repens*, scarlet pimpernel *Anagallis arvensis,* evening primrose *Oenothera biennis,* perforate St.John's wort *Hypericum perforatum,* curled dock *Rumex crispus,* black medick *Medicago lupulina* and smooth hawk's-beard. This habitat was succeeding to tall ruderal species common nettle, broad-leaved willowherb *Epilobium montanum,* hairy willowherb, rosebay willowherb *Chamerion angustifolium* and mugwort *Artemisia vulgaris*. Around the perimeters of the site the vegetation succeeded into scrub which consisted of buddleia, bramble and field bindweed *Convolvulus arvensis*. Immature scattered broad-leaved silver birch *Betula pendula* trees were present on the north and east boundaries. The site could potentially support invertebrates, breeding birds and small mammals. Although the site contains LBAP habitat (county value), it is small in size and isolated from other areas of this habitat. These reasons have been taken into consideration and the ephemeral/short perennial habitat on site has been assessed as being of low value for biodiversity in the local area.

A63 Eastbound Recovery Base (A63 layby eastbound to the north of St Andrew's Quay)

5.3.19 The A63 eastbound recovery base is located adjacent to the existing layby in the eastbound carriageway of the A63 approximately 3.7km west of Mytongate roundabout (Appendix C: Photograph 14). To the north of the hardstanding of the layby was an unmanaged hedgerow of blackthorn *Prunus spinosa* and hawthorn *Crataegus monogyna*. Behind this, the habitat was dense scrub as far as the rail line and contained dogwood, hazel *Corylus avellana,* occasional field maple *Acer campestre* and hawthorn. The dry ditch was also covered in these species and appeared permanently dry. A thin strip of tall ruderal species was present between the hardstanding and the hedgerow that had false oat-grass, rosebay willowherb, mugwort, scentless mayweed *Tripleurospermum inodorum,* broad-leaved dock *Rumex obtusifolius* and common toadflax *Linaria vulgaris.* The site has potential for breeding birds, reptiles, small mammals, foraging bats and invertebrates. Hedgerows are UKBAP (NERC Act 2006 Section 41) habitat and also Hull BAP along with scrub. As such, the hedgerow on site has been assessed as of low biodiversity value in the local area.

Livingstone Road

5.3.20 This is located approximately 5.6km to the west of the Scheme, adjacent to Livingstone Road which is adjacent to the WB carriageway of the A63. To the west of the site is the outfall of Fleet Drain which is part of the Humber Estuary SAC, SPA, Ramsar and SSSI site. The Humber Estuary lies adjacent to the southern boundary of the site and the habitats present in this area are UKBAP Priority habitat 'intertidal substrate foreshore - mud' and 'mudflats' and Hull BAP 'Estuary' and intertidal boulders and rocks associated with the rock armour of the sea defences. The section of the site to the west and north is hardstanding and currently in use as a car/lorry park and for container storage. A thin strip of amenity grassland is located on the northern boundary and is frequently mown. The section of the site to the south and east has a raised area of bare ground and gravel of which the bank sides of the raised area are vegetated (Appendix C: Photograph 12). The vegetated habitat present on the banks is ephemeral/short perennial which is scattered on the bare ground on top of the raised area and on intertidal boulders and rocks on the southern boundary. Species present were groundsel *Senecio vulgaris,* red valerian *Centranthus ruber,* common ragwort, hawkweed *Hieracium* spp. oxford ragwort *Senecio squalidus* and poppy *Papaver* spp. Tall ruderal species teasel *Dipsacus fullonum* and scattered scrub species bramble, gorse *Ulex europaeus* and buddleia were also present on the banks of the raised area. A species-poor hedgerow consisting of mainly buddleia and elder *Sambucus nigra* was located on the eastern boundary of the site. The site has potential to support invertebrates, breeding birds and small mammals. The section of the site to the north and west has been assessed as of negligible biodiversity value in the survey area only and although the site contains LBAP habitat (county value), it is small in size and isolated from other areas of this habitat. These reasons have been taken into consideration and the section containing ephemeral/short perennial and hedgerow habitats to the south and east of the site is of low value for biodiversity in the local area.

Land south east of Mytongate Junction (Holiday Inn)

5.3.21 The Holiday Inn is located to the south east of Mytongate roundabout. The habitats in the grounds of the hotel were mainly the hardstanding of the car parking facilities. Around the main hotel building and separating car park spaces were areas of intensely managed amenity grassland and introduced shrub planting. The shrubs included cultivars of box *Buxus* spp., cherry laurel, senecio *Brachyglottis greyi,* weigela *Weigela* spp., rose *Rosa* spp. and *Cotoneaster* spp. (Appendix C: Target Note 4) (Schedule 9 of the Wildlife and Countryside Act 1981 (as amended). To the west of the site, the introduced shrubs had been planted to form hedgerows and were spaced with semi mature broad-leaved trees sycamore, rowan *Sorbus aucuparia,* hornbeam *Carpinus betulus,* silver birch and willow *Salix* spp.. Behind the substation, were a mature ivy-covered lime *Tilia* x *europaea* and a wild cherry *Prunus avium* tree that bordered the SNCI (Appendix C: Photograph 9). The trees and introduced shrub on site have potential to support breeding birds and small mammals and the two mature trees have low bat roost potential. The

site has been assessed as of negligible biodiversity value in the survey area only, with the scattered trees assessed as of low value in the local area.

Neptune Street Set Down

5.3.22 The Neptune Street potential compound site is located between Albert Dock and the A63. Approximately 18 months ago the site was bare ground but has now been colonised by vegetation. Semi-improved neutral grassland covered most of the site at the time of the survey. Species present were false oat-grass *Arrhenatherum elatius*, cocksfoot *Dactylis glomerata*, crested dog's-tail *Cynocurus cristatus*, red clover *Trifolium pratense* and melilot *Melilotus* spp.. The northern and south eastern perimeters of the site contained tall ruderal species and a strip of scrub habitat. Species present were bramble, hedge bindweed *Calystegia sepium*, mugwort, buddleia, rosebay willowherb and field rose *Rosa arvensis*. There were scattered immature silver birch trees within the scrub habitat. An area of ephemeral/short perennial habitat occurred on and around a track to the east of the site with coltsfoot *Tussilago farfara*, scentless mayweed, teasel and black knapweed *Centaurea nigra*. These habitats can support invertebrates, birds, small mammals and provide forage for bats and is listed on the UKBAP (NERC Act 2006 S41) Priority Habitat descriptions as 'Open Mosaic habitats on Previously Developed Land'' and on the Hull LBAP as industrial land. Although the site contains LBAP habitat (county value), it is small in size and isolated from other areas of this habitat. These reasons have been taken into consideration and as such, the ephemeral/short perennial habitat in Neptune Street is assessed as being of low value for biodiversity in the local area.

A63 Westbound Recovery Base (A63 layby westbound to the west of Garrison Road roundabout)

5.3.23 This site consists of a hard standing layby and footpath and a strip of amenity grassland. The site has been assessed as of negligible biodiversity value within the survey area only.

Myton Centre – Temporary car park

5.3.24 The site is located to the north west of Mytongate Junction. The habitats around the Myton Centre buildings are regularly mown amenity grassland containing daisy *Bellis perennis*, greater plantain *Plantago major* and white clover with scattered semi mature trees of hornbeam and sycamore. Bare ground under the trees was being succeeded by occasional ruderal species common nettle, creeping thistle *Cirsium arvense* and rosebay willowherb (Appendix C: Photograph 13). To the west of the Myton Centre buildings is an area that is currently used as public open space and contained an arboretum of scattered mixed trees that were non-native. A species-poor intact hedgerow containing mainly elder was present adjacent to the A63 footpath. To the east of the Myton Centre buildings is a children's play area and public seating area. This contained amenity grassland, scattered Lombardy poplar *Populus nigra* 'italica', sycamore trees, and introduced shrubs. A

managed cherry laurel hedgerow was present adjacent to William Street. The hedgerows within the compound site are isolated and do not provide a habitat connectivity function within the local landscape. They do not meet the criteria to be classed as important under the Hedgerow Regulations 1997. They have little wildlife value, other than providing some potential bird nesting habitat, although all hedgerows over 20m long consisting of at least 80% cover of one native woody species are UKBAP (NERC Act 2006 S41) Priority Habitats. The site has potential for breeding birds, foraging bats, small mammals and invertebrates. Public open spaces and parks are listed on the Hull BAP, however Myton Centre is intensively managed and contains many non-native species. The site has been assessed as of negligible biodiversity value in the survey area only, with the scattered trees and elder hedgerow assessed as of low value in the local area.

5.4 Protected and notable species

5.4.1 Although many species are afforded protection under the Wildlife and Countryside Act 1981 (as amended) and/or the Conservation of Habitats and Species Regulations 2017, only those considered relevant to the habitats identified within the field surveys are assessed below. A summary of relevant legislation is provided in Appendix B.

5.4.2 There is no suitable habitat within the survey area or potential site compounds for water vole or white-clawed crayfish. In addition, no potential great crested newt breeding ponds or other suitable water bodies were identified within 500m of the Scheme and no suitable habitat was found during the field surveys. Therefore, there is a negligible risk of impacting on these species and they are not considered further in the assessment.

Terrestrial invertebrates

5.4.3 The habitats within the main site boundary were all common nationally with the exception of Trinity Burial Ground SNCI. They are likely to support common or widespread species of terrestrial invertebrates. Similarly, the majority of the potential site compounds are likely to support common or widespread terrestrial invertebrates with the exception of Wellington Street Island Wharf, Neptune Street and south east of Livingstone Road. These areas were all assessed as being LBAP 'Industrial Land' habitat and contained diverse ephemeral/short perennial habitats that are suitable to support less common species of invertebrates. The south of Livingstone Road also contains black medick which is an LBAP invertebrate species common blue *Polyommatus icarus* larval food plant. Invertebrate species assemblages on the main site and potential site compounds north west of Livingstone Road, land south east of Mytongate Junction, A63 Westbound Recovery base, Arco site and Staples site have been assessed as of negligible biodiversity value in the survey area only. Potential site compounds Wellington Street West Island Wharf, south east of Livingstone Road, Myton Centre and A63 eastbound Layby along with Trinity Burial Ground SNCI have

potential to support LBAP invertebrate species and have been assessed as of low value for biodiversity in the local area.

Aquatic Invertebrates

5.4.4 The mudflats and water of the Humber Estuary which is adjacent to potential compound sites Wellington Street Island Wharf, Neptune Street and Livingstone Road, although lacking in vegetation at these points, have potential to support aquatic invertebrate assemblages as notified in the Humber Estuary SSSI citation which include water beetles *Agabus conspersus* and *Helophorus fulgidicollis*. These have been assessed as of high value for biodiversity at the national level. Humber Dock Marina, Railway Dock and Princes Dock are unlikely to have important aquatic invertebrate assemblages present due to the man-made structure of the docks and regular disturbance from boat traffic. These have been assessed as of negligible biodiversity value in the survey area only. The River Hull SNCI is likely to have UKBAP aquatic invertebrates present which would be assessed as of low value for biodiversity in the local area.

Fish

5.4.5 Common fish species known to be present in the lower River Hull are bream *Abramis brama*, pike *Esox lucius*, roach *Rutilus rutilus*, dace *Leuciscus leuciscus*, chub *Squalius cephalus* (East Yorkshire Rivers Trust, 2017)[13]. Common fish species present in the Humber Estuary are flounder *Paralichthys dentatus,* cod *Gadus morhua*, whiting *Merlangius merlangus* and mullet *Mugilidae* spp. (British Sea Fishing, (nd)[14]. UKBAP (NERC Act 2006 S41) species European eel *Anguilla Anguilla,* salmon *Salmo salar,* sea trout *Salmo trutta* and river lamprey *Lampetra fluviatilis* are also known to be present in both the Rivers Humber and Hull and river lamprey are a species that the Humber Estuary SAC/Ramsar and SSSI is designated for. In addition the Humber Estuary SAC/Ramsar/SSSI is designated for sea lamprey *Petromyzon marinus.* Lamprey populations in the River Hull and the Humber Estuary (adjacent to Humber Dock Marina and the connecting Railway Dock) have been assessed as of very high value for biodiversity at an international level. European eel, salmon and sea trout populations in the River Hull and the Humber Estuary (adjacent to Humber Dock Marina and the connecting Railway Dock) have been assessed as of low biodiversity value at a local level.

Reptiles

5.4.6 One record of common lizard was received from NEYEDC, but it is considered unlikely that any reptile species would be present within the main Scheme site boundary or potential site compounds land south east of Mytongate Junction, A63

[13] East Yorkshire Rivers Trust. (2017). *River Hull.* Available online at: http://www.eastyorkshireriverstrust.org.uk/derwent-catchment-partnership.html

[14] British Sea Fishing. (nd). *Yorkshire and Humberside.* Available online at: http://britishseafishing.co.uk/yorkshire-and-humberside/

westbound recovery base, Arco site, Staples site or Myton Centre due to the unsuitable habitats present within them and their highly urban locations. Some of the potential site compounds at Wellington Street Island Wharf, Neptune Street and Livingstone Road provide some suitable grassland basking habitats. These areas were recently developed and due to the urban location there are no connecting semi natural habitats from which reptiles could have re-populated the sites. Reptiles are not considered a constraint in these sites. The A63 eastbound recovery base site compound has suitable habitat for reptiles and connectivity to the wider countryside via the rail line that is adjacent to the site, although it is small and there is not considered to be enough habitat to sustain a significant population of reptiles. Should reptiles be found present in the A63 eastbound recovery base they would be assessed as of low biodiversity value at a local level.

Birds

5.4.7 Buildings, scattered broad-leaved trees, areas of introduced shrub, scrub and hedgerows located within the main site and potential compound sites land south east of Mytongate Junction, Myton Centre, A63 eastbound recovery base, Arco site and Staples site offer a variety of nesting opportunities and foraging habitat for common, UKBAP and LBAP birds. During the field survey several old bird nests were identified within the canopies of broad-leaved trees. Of these sites, Trinity Burial Ground SNCI in the main Scheme area offers the highest potential for use by nesting and foraging birds. Breeding birds in these sites have been assessed as of low biodiversity value in the local area. Sites at Neptune Street, Wellington Street Island Wharf and Livingstone Road are located adjacent to the Humber Estuary SAC/SPA/Ramsar and SSSI and all have suitable habitats for bird species that the Humber Estuary has been designated for to breed, roost or forage in. Breeding bird and wintering bird surveys have been undertaken and results are provided in Environmental Statement: Volume 3. Appendices 10.3. and 10.4. Birds within these sites have been assessed as of potential likely very high biodiversity value within the international/national level.

Aquatic marine mammals

5.4.8 The Humber Estuary SAC/Ramsar and SSSI adjacent to Humber Dock Marina and potential site compounds Wellington Street Island Wharf, Neptune Street and Livingstone Road is designated for grey seals. This species is a land-breeding, marine mammal. The nearest breeding colony of this species is at Donna Nook in Lincolnshire approximately 40km from the site. Grey seals do spend time between foraging at sea lying on rocks or sandy beaches. It is considered unlikely that they will be present within the proposed site compounds, but potentially they may be present adjacent to them and in the Humber Dock Marina and connected Railway Dock. This species has been assessed as of very high value for biodiversity at an international level.

Bats

5.4.9 The majority of the site and the potential compound sites have been assessed as of low value to foraging and commuting bats due to the lack of semi natural habitats and lack of habitat connectivity. Trinity Burial Ground SNCI contains mature trees and has moderate value for bat activity.

5.4.10 Bat roost potential occurs in some of the derelict buildings and mature trees in Trinity Burial Ground SNCI. A bat roost potential survey was undertaken of these in 2013 and updated in 2016 and results are provided in Volume 3, Appendix 10.2. Bat Survey Report.

5.4.11 All species of British bats and their roosts are fully protected under the *Wildlife & Countryside Act 1981* (as amended) and the *Conservation of Habitats and Species Regulations 2017*; seven species are UKBAP and *Pipistrellus* spp. bats are LBAP species. In the unlikely event that a roosting bat is found during the works, the site would be considered to be of low biodiversity value for bats within the local area.

Badgers

5.4.12 The survey area is largely unsuitable for badgers due to the highly urbanised location, level of human disturbance, lack of connectivity and lack of adequate foraging resources. As such they are considered to be likely absent. No further surveys for this species are recommended. Badger and their setts are protected under the *Protection of Badgers Act 1992*. In the unlikely event that badgers move into any of the potential compound sites via the rail line (Site A63 Eastbound Layby) and are found present, they would be assessed as of negligible biodiversity value in the survey area only.

Otter

5.4.13 The habitat in the River Hull is canalised with a steep vertical wooden retaining bank wall. The mudflats in the river are suitable to provide resting places for otters and this species use the River Hull as part of their home range for foraging. The Humber Estuary adjacent to Humber Dock Marina and the connected Railway Dock and site compounds at Wellington Street Island Wharf and Neptune Street has man-made defences in the form of rock armour or vertical wooden bank walls. Adjacent to the site compound at Livingstone Road, the defences are more natural intertidal rocks and boulders, with some vertical wooden retaining defence on the bank of Fleet Drain. Mudflats are present at low tide outside of the defences. Otters are likely to use the Humber as a foraging resource, with the mudflats and natural rocks and boulders at Livingstone Road being more suitable for use as a resting place. Otter presence in any of the sites would be assessed as of low biodiversity value within the local area.

Other Notable Species

5.4.14 Trinity Burial Ground SNCI and other public park areas within the main site (Appendix C: Target Note 2); potential compound sites at Wellington Street Island Wharf; Livingstone Road, land south east of Mytongate Junction, Myton Centre, Neptune Street and A63 eastbound recovery base contain habitat cover that is suitable to support UKBAP and LBAP species European hedgehog. If present on site, this species is assessed as being of low biodiversity value within the local area.

Invasive Species

5.4.15 The invasive shrub cotoneaster was identified during the field survey within areas of introduced shrub as indicated on Appendix A: Target Note 4. Three scattered false acacia trees were identified within the main site on the verge outside of Trinity Burial Ground SNCI.

6. Conclusions and recommendations

6.1 Statutory designated sites

6.1.1 The Scheme has the potential to impact on a single statutory designated site, the Humber Estuary SAC, SPA, Ramsar and SSSI. Potential sources of impact include the discharge of surface water from the new road into the estuary, changes in air quality due to emissions from the new road; noise, dust and vibration from piling operations and groundwater contamination during construction of the road and the Princes Quay pedestrian, cycle and disabled user bridge. The potential impacts on the Humber Estuary are being fully assessed within a separate Assessment of Implications on European Sites (AIES)[15], document reference TR010016/APP/6.13. The locations of statutory designated sites are shown at Volume 2, Figure 10.1.

6.2 Non-statutory designated sites

6.2.1 The Scheme would directly impact on one non-statutory designated wildlife site, Trinity Burial Ground SNCI. One third of the area of this urban parkland, the north west corner, would need to be permanently removed to accommodate the Scheme. A further area of the SNCI is required temporarily to accommodate the archaeology works and new entrance, but will result in the loss of at least 40 mature trees.

6.2.2 An assessment of the impact on Trinity Burial Ground SNCI, consultation with Jennifer Woollin (Open Spaces Development Officer, Hull City Council) and proposals for mitigation are detailed within the Environmental Statement.

6.2.3 No other local wildlife sites would be directly impacted by the Scheme. The River Hull SNCI is located approximately 150m to the east of the Scheme footprint, but no discharges to the river or other works directly affecting it are proposed. Indirect impacts from noise, dust and contaminants created during construction may occur. It is important that mitigation measures follow the procedures in the Gov.UK Pollution Prevention Guidance[16] during any works near water and contractor's documents detailing mitigation will be produced. Mudflats to south of Sammy's Point SNCI is approximately 250m to the south of the main site. The SNCI falls within the Humber Estuary SAC, SPA, Ramsar and SSSI and mitigation to avoid impacts to the Humber Estuary will also prevent impacts to the SNCI. All other SNCIs are over 1.1km from the site and are considered too distant to be affected, directly or indirectly, by the Scheme.

[15] MMSJV (2018). A63 Castle Street Improvements: Assessment of Implications on European Sites, Document Reference TR010016/APP/6.13

[16] Gov.UK (2016). *Pollution Prevention Guidance*. Available online at: https://www.gov.uk/government/collections/pollution-prevention-guidance-ppg.

6.2.4 The locations of non statutory designated sites are shown at Volume 2, Figure 10.2.

6.3 Habitats

6.3.1 Humber Dock Marina and Railway Dock have potential value to support protected wildlife. Whilst Railway Dock is not to be directly impacted by the Scheme, works close to the dock may cause indirect impacts by noise, dust and contaminants created during construction. It is important that mitigation measures following the procedures in the Gov.UK Pollution Prevention Guidance[16] are implemented during any works near water and contractors' documents detailing mitigation will be produced. Humber Dock Marina is to be directly impacted by piling to create supports for the deck that will carry the proposed new Princes Quay Bridge. Prior to piling commencing, a trained marine fauna ecologist and ornithologist will act as observers to check that the dock area and up to 500m beyond the dock gates is clear of marine mammals, fish and birds. It is proposed that the contractor will close the dock gates during piling to control and contain silt and sediment and absorb noise and vibration from entering the Humber Estuary and implement a soft start-up of machinery to disperse any potential fish, birds or mammals present in the dock. The Humber Dock Marina will take the impacts of disturbed sediments and noise and vibration during piling and buffer impacts further away in the Humber Estuary. Cumulative impacts from the transport of materials by boat through the dock during construction may exceed current levels of boat use in the area. Further details of mitigation are provided in the Environmental Statement and the AIES. A marine fauna mitigation plan will be produced and implemented.

6.3.2 With the exceptions of Trinity Burial Ground SNCI and the docks, the other habitats within the main site which include semi mature to mature roadside scattered amenity trees, amenity grassland and ornamental shrub planting are common and widespread throughout the city and are of limited value to wildlife. Trees are Hull BAP and ones to be lost should be replanted post construction and it is recommended that they are local and native species.

6.3.3 Potential site compounds at the Arco site, Staples site and the temporary car park site at the Myton Centre contain common and widespread habitats with negligible value for wildlife, but do contain scattered native trees and hedgerows which should be replaced if they are to be removed.

6.3.4 Potential site compounds at the A63 westbound recovery base and the north west part of Livingstone Road contain common or widespread habitats and are of negligible biodiversity value.

6.3.5 Potential site Compounds Wellington Street Island Wharf, Neptune Street and south east of Livingstone Road contain post-industrial land that has become naturally vegetated with habitats including ephemeral/short perennial, tall ruderal and semi improved neutral grassland. These areas have higher biodiversity value

and Industrial Land is listed on the Hull LBAP. Should any of these sites be chosen as a preferred compound site, it may be necessary to keep a corner of the site undeveloped for wildlife.

6.3.6 Hedgerows are UKBAP (NERC Act 2006 S41) habitats and there are five within the area surveyed. Two are in potential Site Compound Myton Centre, one in the Staples site and one in Site Compound Livingstone Road. These four hedgerows are all species-poor, short in length and are not connected to the wider surrounds. The fifth hedgerow in A63 eastbound recovery base site compound connects to the hedgerow that runs along the A63. If the hedgerows are to be removed, it is recommended that replacements are species-rich and of local native species. Any retained hedgerows should be cut less often.

6.4 Protected species

Invertebrates

6.4.1 Potential site compounds at Wellington Street Island Wharf, south east of Livingstone Road, Neptune Street, A63 eastbound recovery base, the temporary car park site at Myton Centre along with Trinity Burial Ground SNCI have potential to support LBAP invertebrate species. Should any of these sites be preferred as a site compound, the recommendations in 6.3.5 should maintain some habitat for these species. No further recommendations for invertebrates have been made for the main site or any of the other potential site compounds. Impacts to invertebrate assemblages in the Humber Estuary from the construction of Princes Quay Bridge have been assessed in the AIES.

Fish

6.4.2 Direct impacts to fish species from the construction of the Princes Quay Bridge have been further assessed in AIES. Fish are unlikely to be directly impacted by the rest of the Scheme, but indirect impacts from pollution events should be mitigated by the pollution prevention measures recommended in Section 6.2.3.

Reptiles

6.4.3 Reptile habitat is present in the A63 eastbound recovery base site compound and small numbers of reptiles may be present. It is advised that a precautionary approach is adopted if either of these sites are preferred compound sites with an Ecological Clerk of Works (ECoW) being present prior to vegetation clearance searching the area where vegetation is to be removed first. The ECoW would give a tool box talk to onsite contractors in order to relate applicable legislation, what signs to look for, and what to do should reptiles be encountered on site. If a reptile is found during site clearance, the ecologist would move it to a place of safety. No further recommendations for reptiles have been made for the main site or any of the other potential site compounds.

Birds

6.4.4 The main site and all potential compound sites have some vegetation that could be used by common, UKBAP and LBAP bird species. It is recommended that vegetation clearance should be carried out outside the main breeding season (typically March to August inclusive). If this is not possible, it should be undertaken under the supervision of an ECoW who should check vegetation for active nests prior to clearance works commencing and identify any areas that should be avoided. Any active nests found must remain in situ, with a buffer of undisturbed vegetation, until all the young have fledged.

6.4.5 Site compounds at Wellington Street Island Wharf, Neptune Street and Livingstone Road are located adjacent to the Humber Estuary SAC, SPA, Ramsar and SSSI. These sites contain habitats potentially suitable to support foraging, roosting and ground-nesting waterfowl that the Humber Estuary is designated for. Breeding and wintering bird surveys were recommended on these sites to establish the birds' presence/likely absence and use of the site compounds and the adjacent designated sites. The survey results will also inform the AIES. Four breeding bird surveys have been undertaken between March and June 2016 inclusive in accordance with Bibby *et al.,* (2000[17]). Four wintering bird surveys have been undertaken between November 2016 and February 2017 inclusive and also refer to Bibby *et al.,* (2000).

6.4.6 A breeding bird survey report has been produced with results from breeding bird surveys undertaken so far in March-June 2016 is provided as Volume 3: Appendix 10.3 to the Environmental Statement. A wintering bird survey report is provided detailing the results from the winter 2016/17 surveys as Volume 3: Appendix 10.4 to the Environmental Statement.

Aquatic mammals

6.4.7 Grey seals may be present in the Humber Estuary and Fleet Drain which are located adjacent to Humber Dock Marina, Railway Dock and potential site compounds at Wellington Street Island Wharf, Neptune Street and Livingstone Road. Direct impacts are considered unlikely, but in the event that a grey seal ventures onto the site, mitigation should include that trenches should be covered at night to prevent grey seals from falling in, or trenches should include an earth ramp to allow them to climb out. Should night working be required in potential site compounds Wellington Street Island Wharf, Neptune Street or Livingstone Road, lighting should be directed away from the water. Impacts to this species from the construction of the Princes Quay Bridge have been further assessed in Chapter 10: Ecology and nature conservation and in the AIES.

Bats

[17] Bibby, C.J., Burgess, N.D., Hill, D.A. & Mustoe, S.H. (2000). *Bird Census Techniques*. 2nd Ed. Academic Press.

6.4.8 The Castle Buildings, the Earl de Grey public house, trees within Trinity Burial Ground within the main site and the Myton Centre have had bat roost surveys undertaken to establish the presence/likely absence of roosting bats. Bat activity surveys have been undertaken around the main site.

6.4.9 A bat survey report has been produced with results from bat surveys undertaken to date between 2013-2017 and is provided as Volume 3, Appendix 10.2.

Badgers

6.4.10 No evidence of badgers was found during the Extended Phase 1 habitat surveys and they are considered unlikely to be present within the site or the potential compound sites. In the unlikely event that badgers have moved into the A63 eastbound recovery base and are found to be present within 30m of the proposed works, it may be necessary to apply to Natural England for a licence in order for works to continue.

Otters

6.4.11 Otters are likely to use the Humber Estuary, River Hull and Fleet Drain as part of their home range. Direct impacts are considered unlikely, but in the event that an otter ventures onto the site, mitigation should include that trenches should be covered at night to prevent otter from falling in, or trenches should include an earth ramp to allow otter to climb out. Should night working be required in potential site compounds at Neptune Street, Wellington Street Island Wharf or Livingstone Road, lighting should be directed away from the water.

Other notable species

6.4.12 Trinity Burial Ground SNCI and other public park areas within the main site (Appendix A: Target Note 2); potential compound sites at Wellington Street Island Wharf, land south east of Mytongate Junction, south of Livingstone Road, Neptune Street, A63 eastbound recovery base and the temporary car park site at the Myton Centre all have potential to support UKBAP and LBAP species European hedgehog. Site clearance workers should be made aware of the risk of finding hedgehogs during site clearance, and if any are found they should be placed in an area of safety, away from the works area.

Invasive species

6.4.13 The invasive shrub cotoneaster was identified during the field survey within areas of introduced shrub and amenity planting. However, there is a negligible risk that construction works would result in an offence relating to invasive species by causing the spread of the plant in the wild.

6.4.14 The Environmental Protection Act 1990 classifies soil and other waste containing viable propagules of invasive non-native plant species as controlled waste. Any

material containing such waste must be transported by a licensed specialist waste contractor and disposed of properly at permitted landfill sites.

Appendix A: Extended Phase 1 Habitat Maps

N

ARCO LTD GARAGE

3

1:1000 0 50m 100m

Notes

Key to symbols

- PERMANENT LAND TAKE BOUNDARY
- PERMANENT RIGHTS BOUNDARY
- TEMPORARY LAND TAKE BOUNDARY
- SPECIES-POOR HEDGEROW
- SPECIES-POOR HEDGEROW AND TREES
- WALL
- FENCE
- BUILDING
- HARDSTANDING
- INTRODUCED SHRUB
- AMENITY GRASSLAND
- TALL RUDERAL
- SCATTERED INTRODUCED SHRUB
- DENSE SCRUB
- SCATTERED SCRUB
- STANDING WATER
- TREE
- TARGET NOTE
- SPECIES POOR GRASSLAND
- SWAMP
- BARE GROUND
- INTERTIDAL BOULDERS / ROCKS

Rev	Date	Amendment Details	Drw'n	Chk'd	App'd
P03	14/09/18	SCHEME BOUNDARY EXTENTS AMENDED	VM	DW	LC
P02	16/08/18	ISSUED FOR HE APPROVAL	VM	DW	LC
P01	31/01/18	ISSUED FOR REVIEW & COMMENT	RE	DW	LC

Mott MacDonald Sweco

Client: highways england

Drawing Status: SHARED

Suitability: S4

Project Title: A63 CASTLE STREET IMPROVEMENTS, HULL

Drawing Title: PHASE 1 HABITAT MAP SHEET 1 OF 3

Scale	Designed	Drawn	Checked	Approved
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Original Size	**Date**	**Date**	**Date**	**Date**
A1	31/01/18	31/01/18	31/01/18	31/01/18

Drawing Number: HE PIN | Originator | Volume | Location | Type | Role | Number

514508 - MMSJV - VES - S0 - DR - LE - 100001

Project Ref. No.: 514508

Revision: P03

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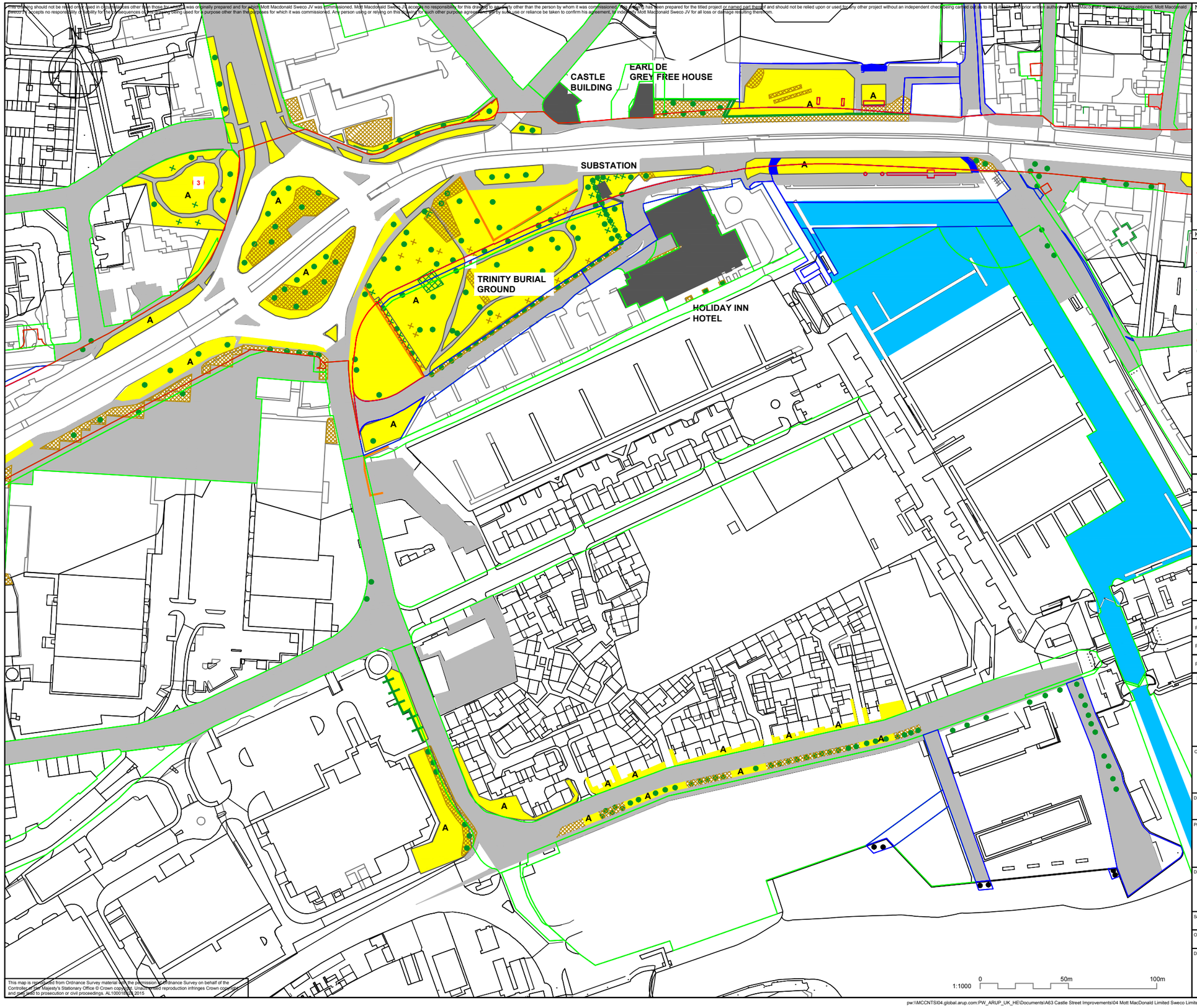

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- PERMANENT RIGHTS BOUNDARY
- TEMPORARY LAND TAKE BOUNDARY
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- SPECIES-POOR HEDGEROW AND TREES
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- AMENITY GRASSLAND
- TALL RUDERAL
- SCATTERED INTRODUCED SHRUB
- DENSE SCRUB
- SCATTERED SCRUB
- STANDING WATER
- TREE
- TARGET NOTE
- SPECIES POOR GRASSLAND
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- BARE GROUND
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P03	14/09/18	SCHEME BOUNDARY EXTENTS AMENDED	VM	DW	LC
P02	16/08/18	ISSUED FOR HE APPROVAL	VM	DW	LC
P01	31/01/18	ISSUED FOR REVIEW & COMMENT	RE	DW	LC

Mott MacDonald Sweco

Client: highways england

Drawing Status: SHARED

Suitability: S4

Project Title: A63 CASTLE STREET IMPROVEMENTS, HULL

Drawing Title: PHASE 1 HABITAT MAP SHEET 2 OF 3

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Revision: P03

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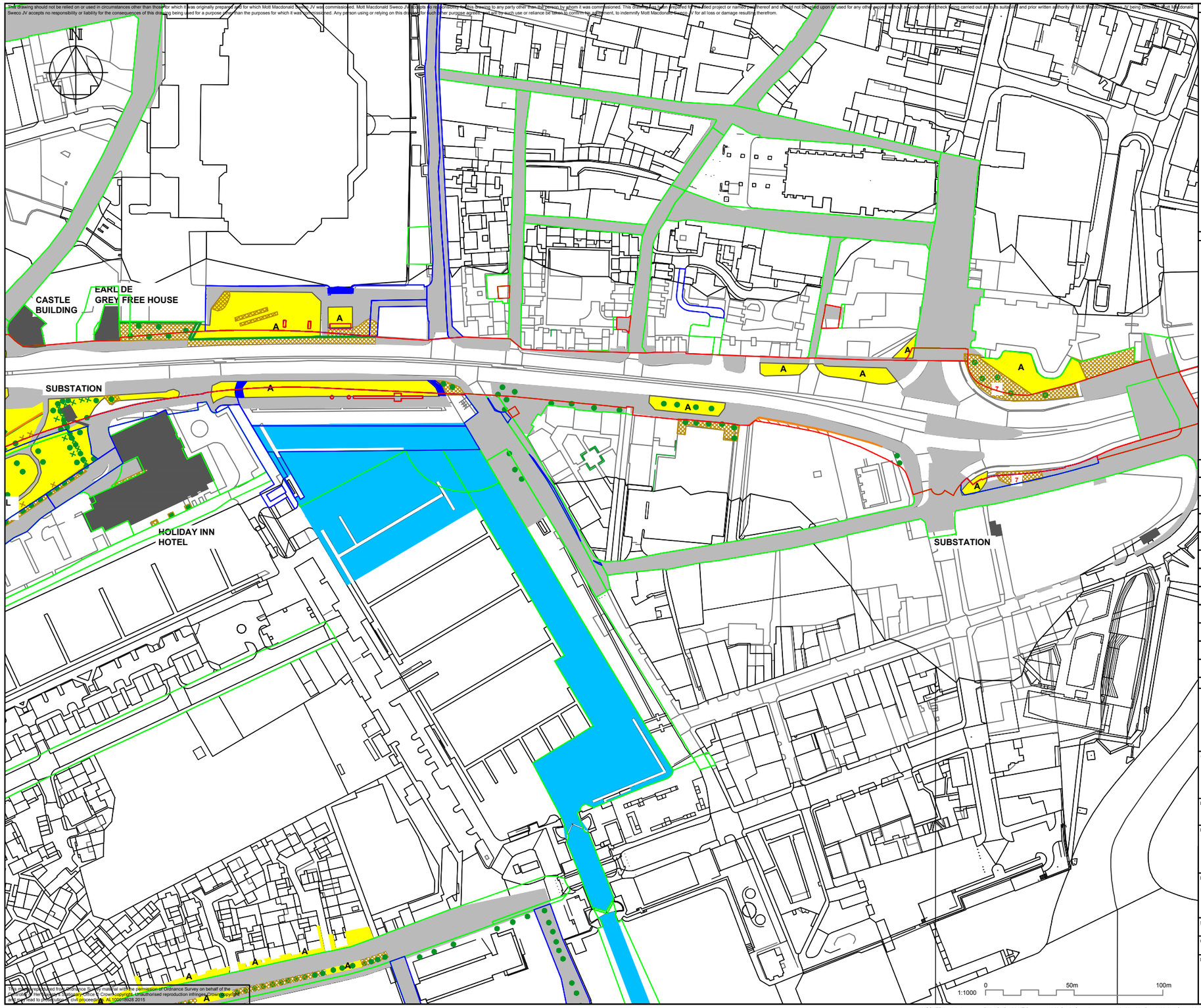

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- PERMANENT RIGHTS BOUNDARY
- TEMPORARY LAND TAKE BOUNDARY
- SPECIES-POOR HEDGEROW
- SPECIES-POOR HEDGEROW AND TREES
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- DENSE SCRUB
- SCATTERED SCRUB
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P03	14/09/18	SCHEME BOUNDARY EXTENTS AMENDED	VM	DW	LC
P02	16/08/18	ISSUED FOR HE APPROVAL	VM	DW	LC
P01	31/01/18	ISSUED FOR REVIEW & COMMENT	RE	DW	LC

Mott MacDonald Sweco

Client: highways england

Drawing Status: SHARED

Suitability: S4

Project Title: A63 CASTLE STREET IMPROVEMENTS, HULL

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Drawing Number: 514508 - MMSJV - VES - S0 - DR - LE - 100003
(HE PIN | Originator | Volume | Location | Type | Role | Number)

Project Ref. No.: 514508

Revision: P03

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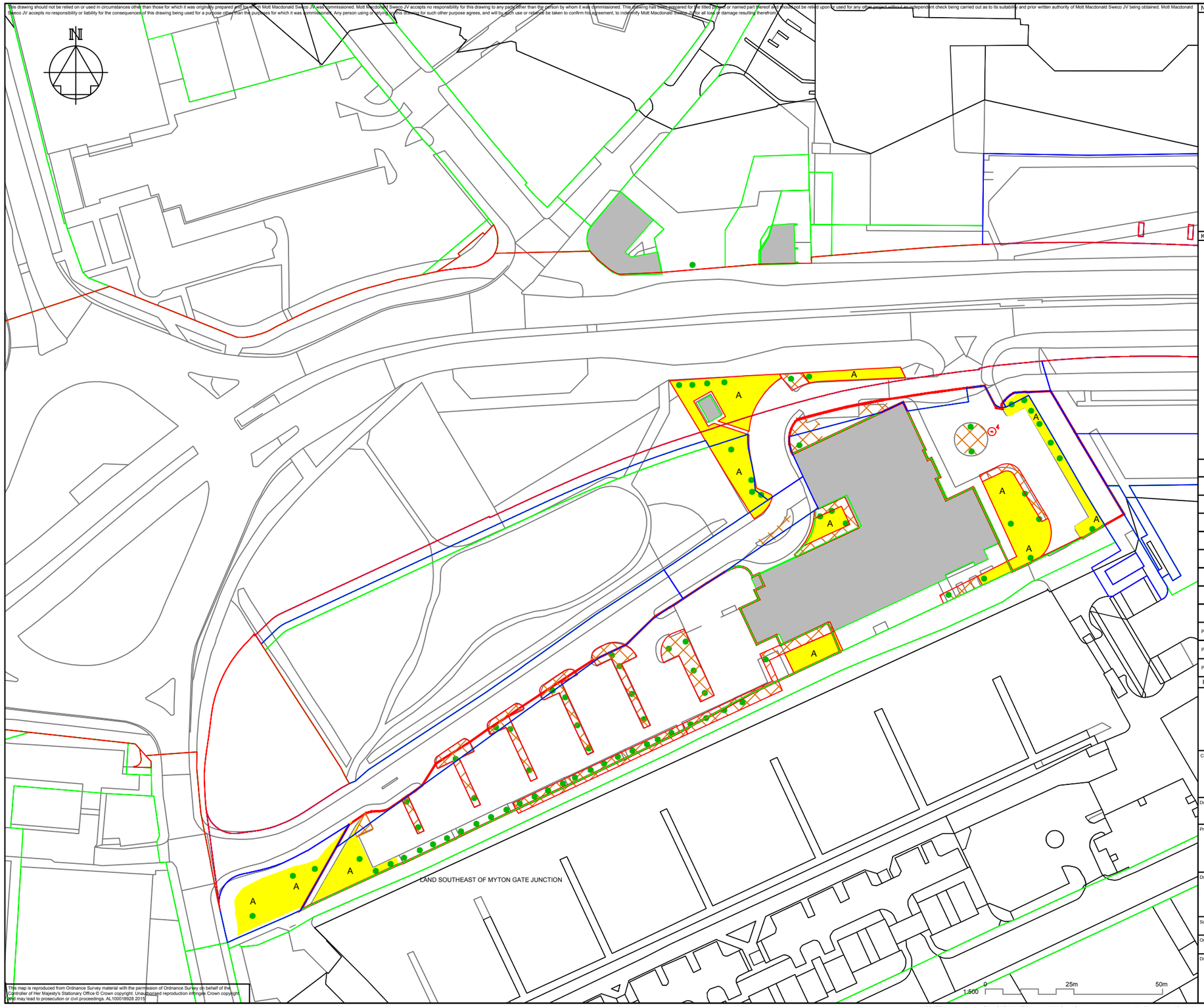

Notes

Key to symbols

LEGEND - 'N' COMPOUND

- POTENTIAL COMPOUND SITE BOUNDARY
- A3.1 SCATTERED BROADLEAVED TREES
- A J1.2 AMENITY GRASSLAND
- J1.4 INTRODUCED SHRUB
- J3.6 BUILDINGS
- TARGET NOTE

LEGEND - 'A1' COMPOUND

- POTENTIAL COMPOUND SITE BOUNDARY
- A3.1 SCATTERED BROADLEAVED TREES
- J3.6 BUILDINGS

- PERMANENT LAND TAKE BOUNDARY
- PERMANENT RIGHTS BOUNDARY
- TEMPORARY LAND TAKE BOUNDARY

Rev	Date	Amendment Details	Drw'n	Chk'd	App'd
P03	14/09/18	SCHEME BOUNDARY EXTENTS AMENDED	VM	DW	LC
P02	16/08/18	ISSUED FOR HE APPROVAL	VM	DW	LC
P01	31/01/18	ISSUED FOR REVIEW & COMMENT	RE	DW	LC

Mott MacDonald Sweco

Client: highways england

Drawing Status: SHARED

Suitability: S4

Project Title: A63 CASTLE STREET IMPROVEMENTS, HULL

Drawing Title: PHASE 1 HABITAT MAP LAND SOUTH EAST OF MYTONGATE JUNCTION

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Original Size A1	Date 31/01/18	Date 31/01/18	Date 31/01/18	Date 31/01/18

Drawing Number: HE PIN 514508 - Originator MMSJV - Volume VES - Location S0 - Type DR - Role LE - Number 100004

Project Ref. No. 514508

Revision P03

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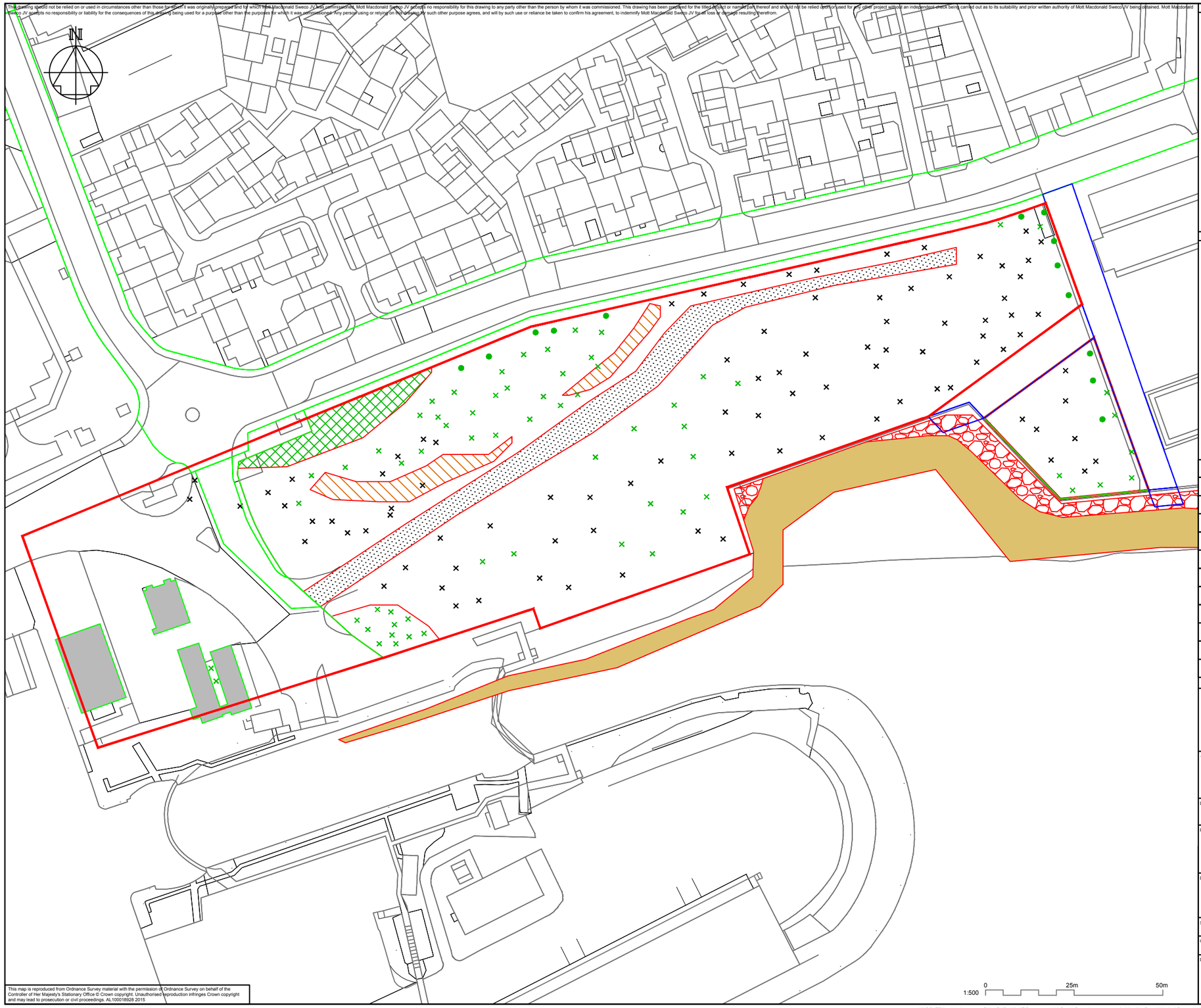

Notes

Key to symbols

LEGEND - 'D' COMPOUND

- POTENTIAL COMPOUND SITE BOUNDARY
- A2.1 SCRUB DENSE/CONTINUOUS
- A2.2 SCRUB SCATTERED
- A3.1 SCATTERED BROADLEAVED TREES
- C3.1 TALL RUDERAL
- J3.6 BUILDINGS
- H1.1 MUD (INTERTIDAL COASTLAND)
- H1.3 INTERTIDAL BOULDERS / ROCKS
- J1.3 EPHEMERAL/SHORT PERENNIAL
- J4 BARE GROUND
- PERMANENT LAND TAKE BOUNDARY
- PERMANENT RIGHTS BOUNDARY
- TEMPORARY LAND TAKE BOUNDARY

Rev	Date	Amendment Details	Drw'n	Chk'd	App'd
P03	14/09/18	SCHEME BOUNDARY EXTENTS AMENDED	VM	DW	LC
P02	16/08/18	ISSUED FOR HE APPROVAL	VM	DW	LC
P01	31/01/18	ISSUED FOR REVIEW & COMMENT	RE	DW	LC

Mott MacDonald Sweco

Client: highways england

Drawing Status: SHARED

Suitability: S4

Project Title: A63 CASTLE STREET IMPROVEMENTS, HULL

Drawing Title: PHASE 1 HABITAT MAP WELLINGTON STREET ISLAND WHARF

Scale	Designed	Drawn	Checked	Approved
1:500	West, Adam	Ebbs, Ray	Wood, Diane	Cottrell, Linsey
Original Size: A1	Date: 31/01/18	Date: 31/01/18	Date: 31/01/18	Date: 31/01/18

Drawing Number: HE PIN | Originator | Volume
514508 - MMSJV - VES -
S0 - DR - LE - 100006
Location | Type | Role | Number

Project Ref. No.: 514508

Revision: P03

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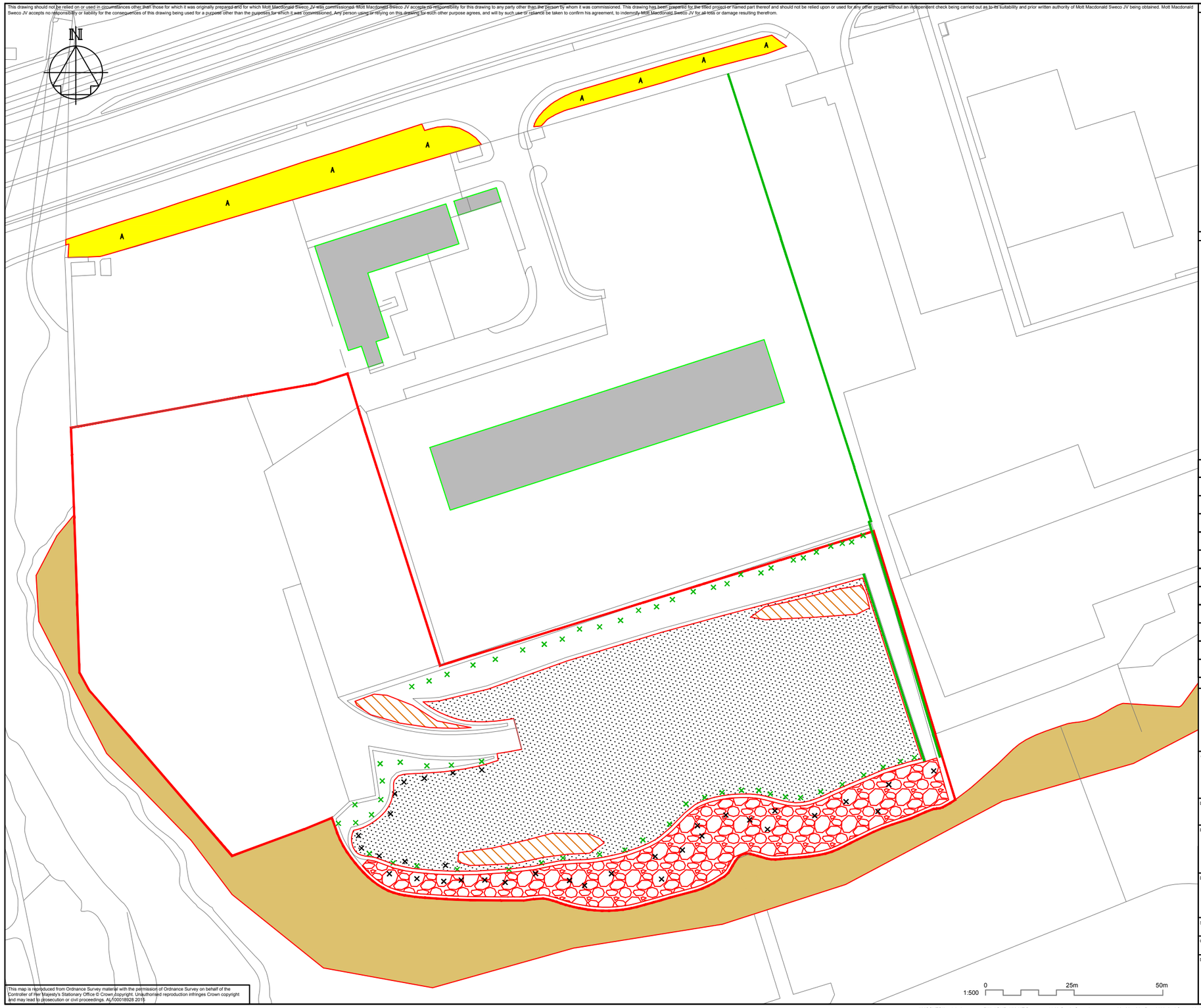


Notes

Key to symbols

LEGEND - 'G' COMPOUND

- POTENTIAL COMPOUND SITE BOUNDARY
- A2.2 SCRUB SCATTERED
- C3.1 TALL RUDERAL
- H1.1 MUD (INTERTIDAL COASTLAND)
- H1.3 INTERTIDAL BOULDERS / ROCKS
- J1.2 AMENITY GRASSLAND
- J1.3 EPHEMERAL/SHORT PERENNIAL
- J2.1.2 INTACT HEDGE SPECIES POOR
- J3.6 BUILDINGS
- J4 BARE GROUND

Rev	Date	Amendment Details	Drw'n	Chk'd	App'd
P03	14/09/18	SCHEME BOUNDARY EXTENTS AMENDED	VM	DW	LC
P02	16/08/18	ISSUED FOR HE APPROVAL	VM	DW	LC
P01	31/01/18	ISSUED FOR REVIEW & COMMENT	RE	DW	LC

Mott MacDonald Sweco

Client: highways england

Drawing Status: SHARED

Suitability: S4

Project Title: A63 CASTLE STREET IMPROVEMENTS, HULL

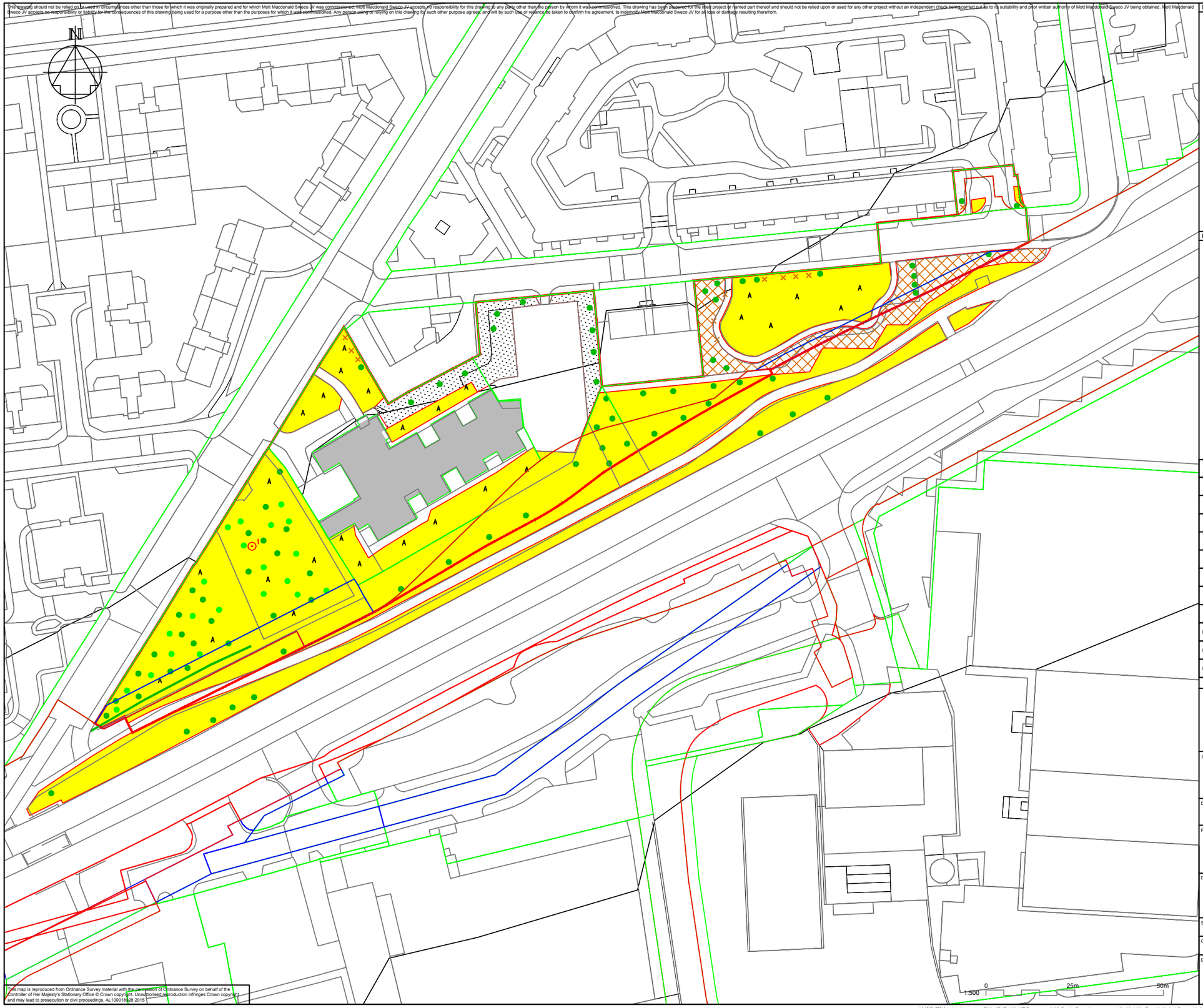
Drawing Title: PHASE 1 HABITAT MAP LIVINGSTONE ROAD SOUTH HUMBER PROPERTIES LTD.

Scale	Designed	Drawn	Checked	Approved
1:500	West, Adam	Ebbs, Ray	Wood, Diane	Cottrell, Linsey
Original Size A1	Date 31/01/18	Date 31/01/18	Date 31/01/18	Date 31/01/18

Drawing Number: 514508-MMSJV-VES-S0-DR-LE-100007 (HE PIN | Originator | Volume | Location | Type | Role | Number)

Project Ref. No.: 514508

Revision: P03



Notes

Key to symbols

LEGEND - 'O' COMPOUND

- PERMANENT LAND TAKE BOUNDARY
- PERMANENT RIGHTS BOUNDARY
- TEMPORARY LAND TAKE BOUNDARY
- POTENTIAL COMPOUND SITE BOUNDARY
- A3.1 SCATTERED BROADLEAVED TREES
- A3.3 PARKLAND, SCATTERED, MIXED
- J1.2 AMENITY GRASSLAND
- J1.4 INTRODUCED SHRUB
- J1.4 SCATTERED INTRODUCED SHRUB
- J2.1.2 INTACT HEDGE SPECIES POOR
- J3.6 BUILDINGS
- J4 BARE GROUND
- TARGET NOTE

Rev	Date	Amendment Details	Drw'n	Chk'd	App'd
P03	14/09/18	SCHEME BOUNDARY EXTENTS AMENDED	VM	DW	LC
P02	16/08/18	ISSUED FOR HE APPROVAL	VM	DW	LC
P01	31/01/18	ISSUED FOR REVIEW & COMMENT	RE	DW	LC

Mott MacDonald Sweco

Client: highways england

Drawing Status: SHARED

Suitability: S4

Project Title: A63 CASTLE STREET IMPROVEMENTS, HULL

Drawing Title: PHASE 1 HABITAT MAP MYTON CENTRE

Scale	Designed	Drawn	Checked	Approved
1:500	West, Adam	Ebbs, Ray	Wood, Diane	Cottrell, Linsey
Original Size: A1	Date: 31/01/18	Date: 31/01/18	Date: 31/01/18	Date: 31/01/18

Drawing Number: HE PIN 514508 - MMSJV - VES - S0 - DR - LE - 100008 (Location | Type | Originator | Volume | Role | Number)

Project Ref. No.: 514508

Revision: P03

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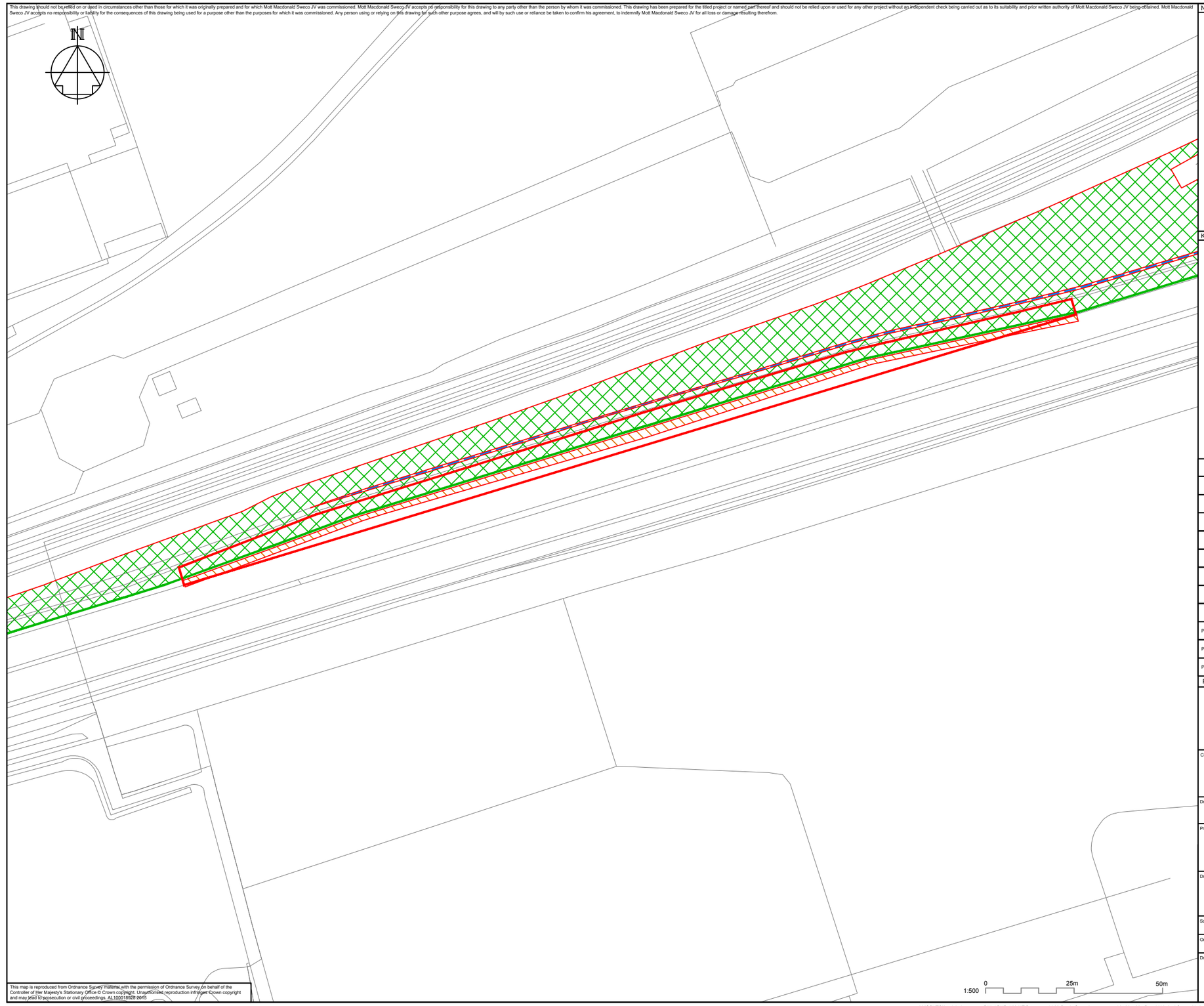

Notes

Key to symbols

LEGEND - 'P' COMPOUND

- POTENTIAL COMPOUND SITE BOUNDARY
- A2.1 SCRUB DENSE/CONTINUOUS
- C3.1 TALL RUDERAL
- J2.1.2 INTACT HEDGE SPECIES POOR
- J2.6 DRY DITCH/DRAIN

Rev	Date	Amendment Details	Drw'n	Chk'd	App'd
P03	14/09/18	SCHEME BOUNDARY EXTENTS AMENDED	VM	DW	LC
P02	16/08/18	ISSUED FOR HE APPROVAL	VM	DW	LC
P01	31/01/18	ISSUED FOR REVIEW & COMMENT	RE	DW	LC

Mott MacDonald Sweco

Client: highways england

Drawing Status: SHARED

Suitability: S4

Project Title: A63 CASTLE STREET IMPROVEMENTS, HULL

Drawing Title: PHASE 1 HABITAT MAP
A63 EASTBOUND RECOVERY BASE

Scale	Designed	Drawn	Checked	Approved
1:500	West, Adam	Ebbs, Ray	Wood, Diane	Cottrell, Linsey
Original Size A1	**Date** 31/01/18	**Date** 31/01/18	**Date** 31/01/18	**Date** 31/01/18

Drawing Number: HE PIN 514508 - Originator MMSJV - Volume VES - Location S0 - Type DR - Role LE - Number 100009

Project Ref. No. 514508

Revision P03

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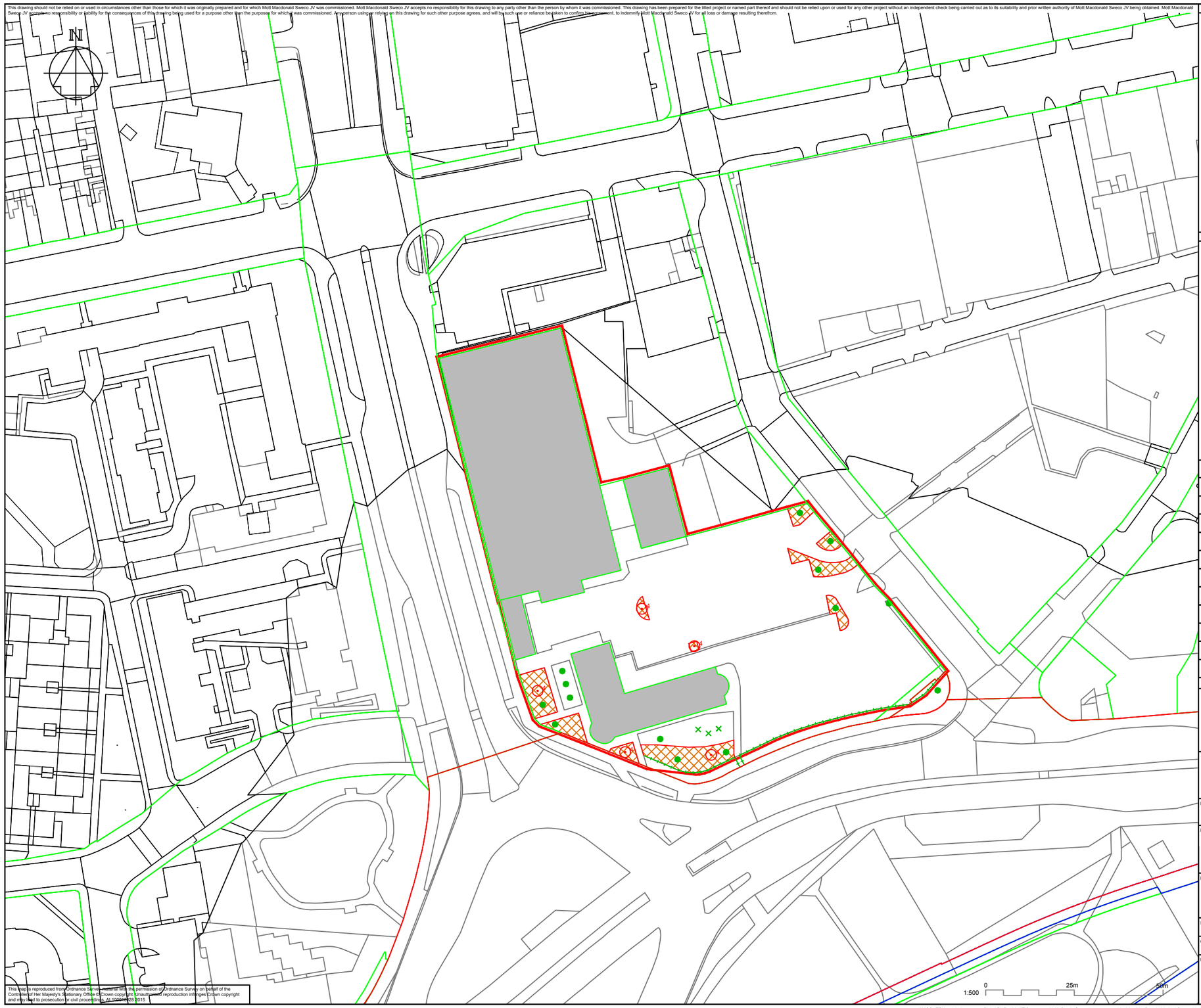

Notes

Key to symbols

LEGEND

- SURVEY BOUNDARY
- A2.2 SCRUB SCATTERED
- A3.1 SCATTERED BROADLEAVED TREES
- J1.4 INTRODUCED SHRUB
- J2.3.2 HEDGE AND TREES SPECIES POOR
- J3.6 BUILDINGS
- TARGET NOTE
- PERMANENT LAND TAKE BOUNDARY
- PERMANENT RIGHTS BOUNDARY
- TEMPORARY LAND TAKE BOUNDARY

Rev	Date	Amendment Details	Drw'n	Chk'd	App'd
P03	14/09/18	SCHEME BOUNDARY EXTENTS AMENDED	VM	DW	LC
P02	16/08/18	ISSUED FOR HE APPROVAL	VM	DW	LC
P01	31/01/18	ISSUED FOR REVIEW & COMMENT	RE	DW	LC

Mott MacDonald Sweco

Client: highways england

Drawing Status: SHARED

Suitability: S4

Project Title: A63 CASTLE STREET IMPROVEMENTS, HULL

Drawing Title: PHASE 1 HABITAT MAP STAPLES SITE (ALTERNATIVE OPTION 'B')

Scale	Designed	Drawn	Checked	Approved
1:500	West, Adam	Ebbs, Ray	Wood, Diane	Cottrell, Linsey
Original Size A1	Date 31/01/18	Date 31/01/18	Date 31/01/18	Date 31/01/18

Drawing Number: HE P/N 514508 - Originator MMSJV - Volume VES - Location S0 - Type DR - Role LE - Number 100010

Project Ref. No.: 514508

Revision: P03

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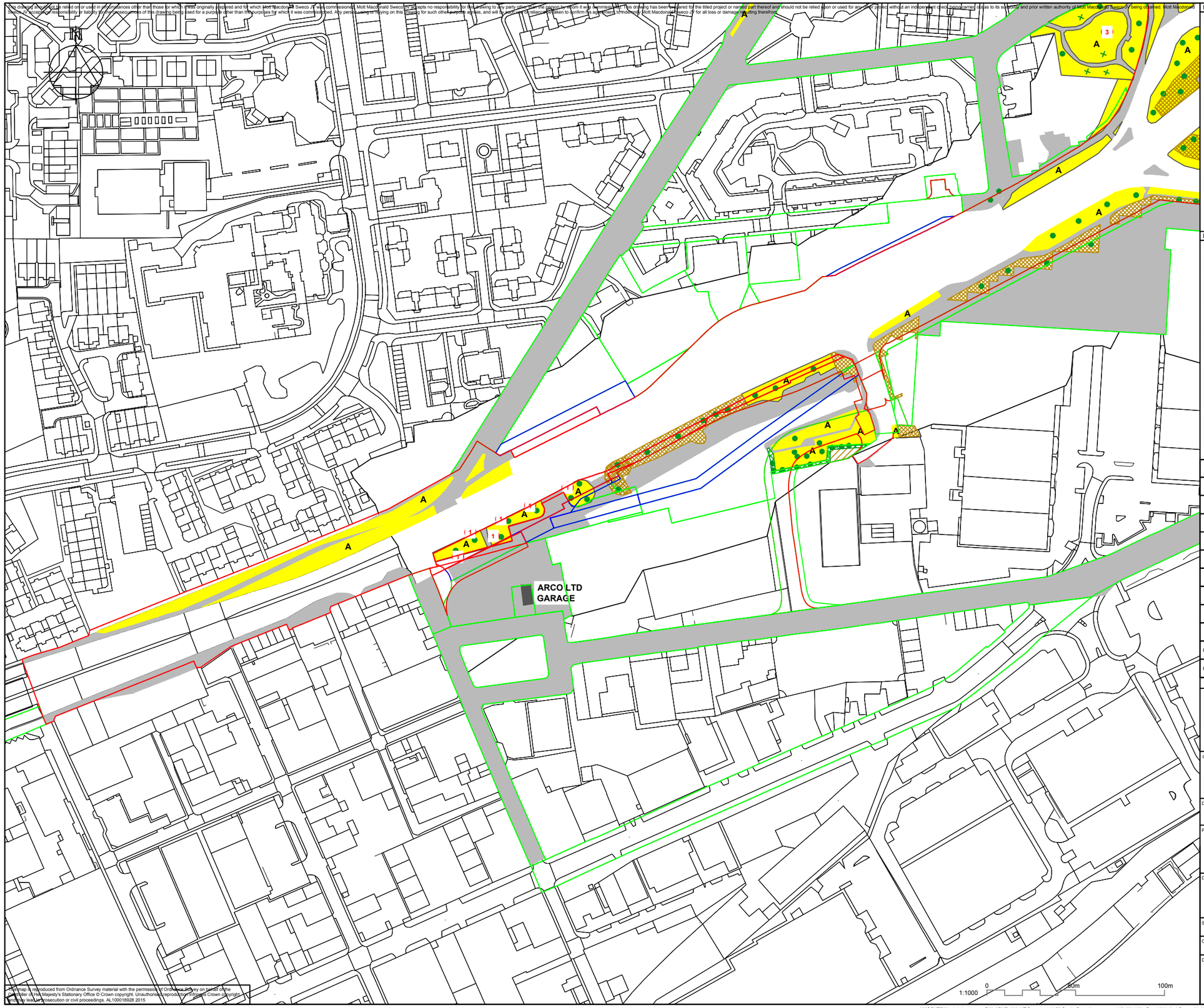


Notes

Key to symbols

- PERMANENT LAND TAKE BOUNDARY
- PERMANENT RIGHTS BOUNDARY
- TEMPORARY LAND TAKE BOUNDARY
- SPECIES-POOR HEDGEROW
- SPECIES-POOR HEDGEROW AND TREES
- WALL
- FENCE
- BUILDING
- HARDSTANDING
- INTRODUCED SHRUB
- AMENITY GRASSLAND
- TALL RUDERAL
- SCATTERED INTRODUCED SHRUB
- DENSE SCRUB
- SCATTERED SCRUB
- STANDING WATER
- TREE
- TARGET NOTE
- SPECIES POOR GRASSLAND
- SWAMP
- BARE GROUND
- INTERTIDAL BOULDERS / ROCKS

Rev	Date	Amendment Details	Drw'n	Chk'd	App'd
P02	14/09/18	SCHEME BOUNDARY EXTENTS AMENDED	VM	DW	LC
P01	16/08/18	ISSUED FOR REVIEW & COMMENT	VM	DW	LC

Mott MacDonald Sweco

Client: highways england

Drawing Status: SHARED

Suitability: S4

Project Title: A63 CASTLE STREET IMPROVEMENTS, HULL

Drawing Title: PHASE 1 HABITAT MAP ARCO SITE (PREFERED OPTION 'A')

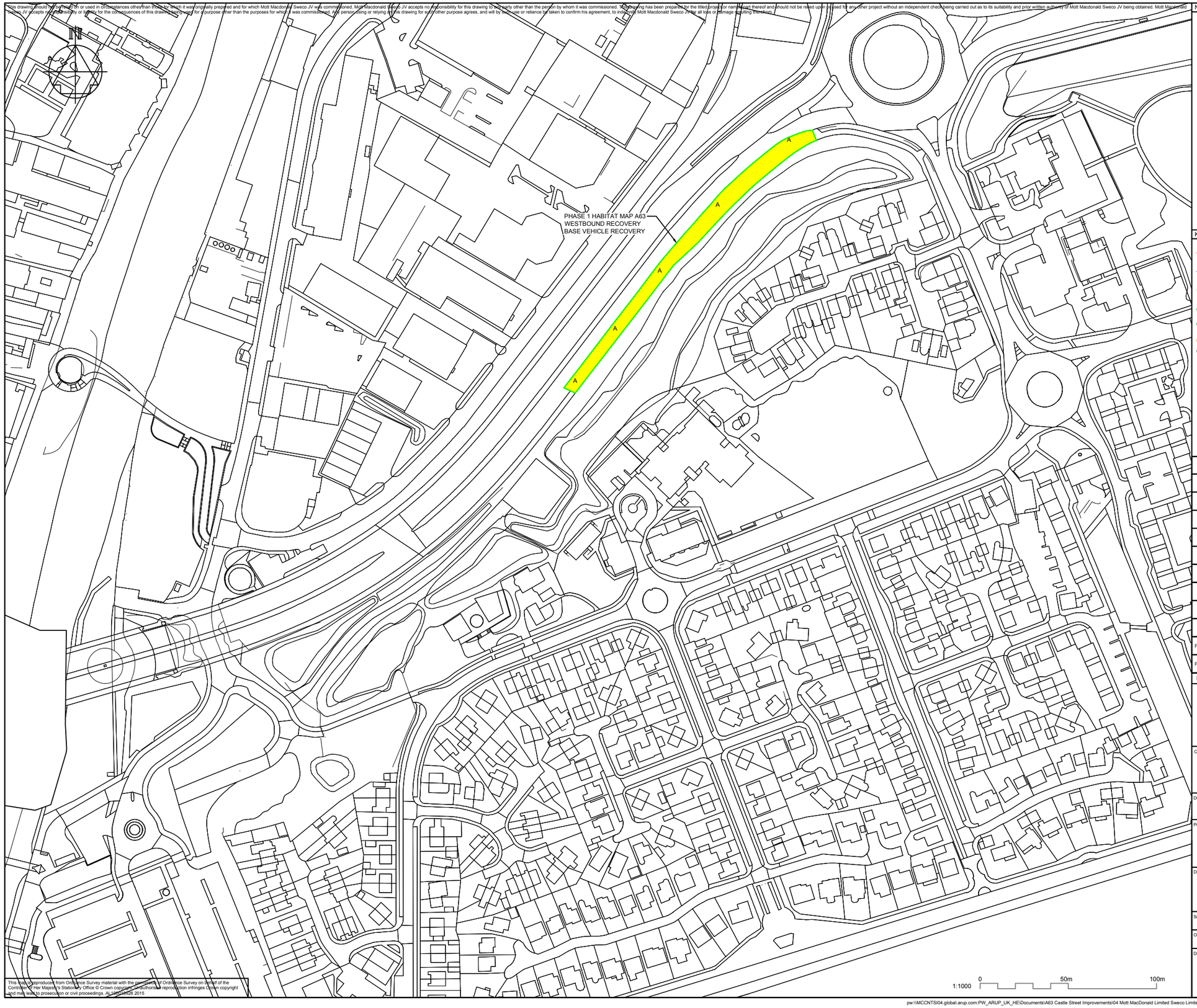
Scale	Designed	Drawn	Checked	Approved
1:1000	West, Adam	Mchugh, Vincent	Wood, Diane	Cottrell, Linsey
Original Size A1	Date 31/07/18	Date 31/07/18	Date 31/07/18	Date 31/07/18

Drawing Number: HE PIN | Originator | Volume
514508 - MMSJV - VES -
S0 - DR - LE - 100012
Location | Type | Role | Number

Project Ref. No. 514508

Revision P02

pw:\\MCCNTSI04.global.arup.com:PW_ARUP_UK_HE\Documents\A63 Castle Street Improvements\04 Mott MacDonald Limited Sweco Limited JV\LE - Landscape and environment - Environmentalist\DR - Drawing\HE514508-MMSJV-VES-S0-DR-LE-100001



Notes

Key to symbols

- PERMANENT LAND TAKE BOUNDARY
- PERMANENT RIGHTS BOUNDARY
- TEMPORARY LAND TAKE BOUNDARY
- SPECIES-POOR HEDGEROW
- SPECIES-POOR HEDGEROW AND TREES
- WALL
- FENCE
- BUILDING
- HARDSTANDING
- INTRODUCED SHRUB
- AMENITY GRASSLAND
- TALL RUDERAL
- SCATTERED INTRODUCED SHRUB
- DENSE SCRUB
- SCATTERED SCRUB
- STANDING WATER
- TREE
- TARGET NOTE
- SPECIES POOR GRASSLAND
- SWAMP
- BARE GROUND
- INTERTIDAL BOULDERS / ROCKS

Rev	Date	Amendment Details	Drw'n	Chk'd	App'd
P02	14/09/18	SCHEME BOUNDARY EXTENTS AMENDED	VM	DW	LC
P01	16/08/18	ISSUED FOR REVIEW & COMMENT	VM	DW	LC

Mott MacDonald Sweco

Client: highways england

Drawing Status: SHARED

Suitability: S4

Project Title: A63 CASTLE STREET IMPROVEMENTS, HULL

Drawing Title: PHASE 1 HABITAT MAP A63 WESTBOUND RECOVERY BASE VEHICLE RECOVERY

Scale	Designed	Drawn	Checked	Approved
1:1000	West, Adam	Mchugh, Vincent	Wood, Diane	Cottrell, Linsey
Original Size: A1	Date: 31/07/18	Date: 31/07/18	Date: 31/07/18	Date: 31/07/18

Drawing Number: HE PIN | Originator | Volume
514508 - MMSJV - VES -
S0 - DR - LE - 100013
Location | Type | Role | Number

Project Ref. No.: 514508

Revision: P02

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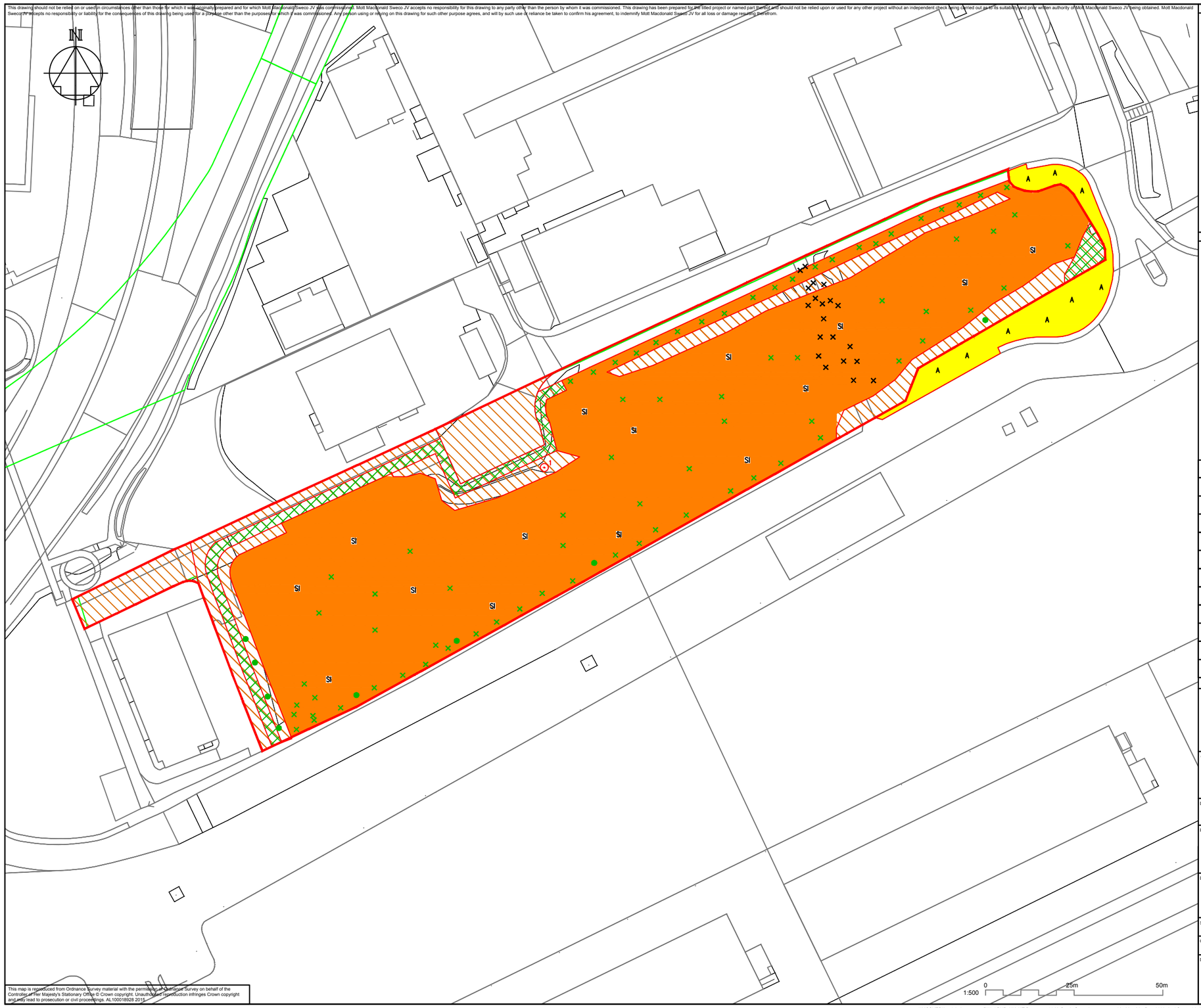

Notes

Key to symbols

LEGEND - 'R' COMPOUND

- POTENTIAL COMPOUND SITE BOUNDARY
- A2.1 SCRUB DENSE/CONTINUOUS
- A2.2 SCRUB SCATTERED
- A3.1 SCATTERED BROADLEAVED TREES
- SI B2.2 SEMI-IMPROVED NEUTRAL GRASSLAND
- C3.1 TALL RUDERAL
- A J1.2 AMENITY GRASSLAND
- J1.3 EPHEMERAL/SHORT PERENNIAL
- TARGET NOTE (LOG PILE)
- PERMANENT LAND TAKE BOUNDARY
- PERMANENT RIGHTS BOUNDARY
- TEMPORARY LAND TAKE BOUNDARY

Rev	Date	Amendment Details	Drw'n	Chk'd	App'd
P03	14/09/18	SCHEME BOUNDARY EXTENTS AMENDED	VM	MM	LC
P02	16/08/18	ISSUED FOR HE APPROVAL	VM	MM	LC
P01	22/06/18	INITIAL ISSUE	SF	MM	LC

Mott MacDonald Sweco

Client: highways england

Drawing Status: SHARED

Suitability: S4

Project Title: A63 CASTLE STREET IMPROVEMENTS, HULL

Drawing Title: PHASE 1 HABITAT MAP POTENTIAL SITE COMPOUND 'R' NEPTUNE STREET NORTH AND SOUTH

Scale	Designed	Drawn	Checked	Approved
1:500	Wood, Diane	Finn, Shane / Ebbs, Ray	Wood, Diane	Cottrell, Linsey
Original Size A1	Date 03/01/17	Date 03/01/17	Date 03/01/17	Date 03/01/17

Drawing Number: 514508-MMSJV-VES-S0-DR-LE-000018 (HE PIN | Originator | Volume | Location | Type | Role | Number)

Project Ref. No.: 514508

Revision: P03

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Appendix B: Legislation

Bern Convention (1982)

The Convention on the Conservation of European Wildlife and Natural Habitats (the Bern Convention) was adopted in Bern, Switzerland in 1979, and was ratified in 1982. Its aims are to protect wild plants and animals and their habitats listed in Appendices 1 and 2 of the Convention, and regulate the exploitation of species listed in Appendix 3. The regulation imposes legal obligations on participating countries to protect over 500 plant species and more than 1000 animals.

To meet its obligations imposed by the Convention, the European Community adopted the EC Birds Directive (1979) and the EC Habitats Directive (1992). Since the Lisbon Treaty, in force since 1st December 2009, European legislation has been adopted by the European Union.

Bonn Convention

The Convention on the Conservation of Migratory Species of Wild Animals or 'Bonn Convention' was adopted in Bonn, Germany in 1979 and came into force in 1985. Participating states agree to work together to preserve migratory species and their habitats by providing strict protection to species listed in Appendix I of the Convention. It also establishes agreements for the conservation and management of migratory species listed in Appendix II.

In the UK, the requirements of the convention are implemented via the Wildlife & Countryside Act 1981 (as amended), Wildlife (Northern Ireland) Order 1985, Nature Conservation and Amenity Lands (Northern Ireland) Order 1985 and the Countryside and Rights of Way Act 2000 (CRoW).

Habitats Directive

The Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora, or the 'Habitats Directive', is a European Union directive adopted in 1992 in response to the Bern Convention. Its aims are to protect approximately 220 habitats and 1,000 species listed in its several Annexes.

In the UK, the Habitats Directive is transposed into national law via the Conservation of Habitats and Species Regulations 2017 in England, Scotland and Wales, and via the Conservation (Natural Habitats, &c) Regulations (Northern Ireland) 1995 (as amended) in Northern Ireland.

Birds Directive

The EC Directive on the Conservation of Wild Birds (791409/EEC) or 'Birds Directive' was introduced to achieve favourable conservation status of all wild bird species across their distribution range. In this context, the most important provision is the identification and

classification of Special Protection Areas (SPAs) for rare or vulnerable species listed in Annex 1 of the Directive, as well as for all regularly occurring migratory species, paying particular attention to the protection of wetlands of international importance.

The Conservation of Habitats and Species Regulations 2017

The Conservation of Habitats and Species Regulations 2017 came into force on 30 November 2017 and amend the Conservation of Habitats and Species Regulations 2010 to ensure the various provisions of Directive 92/43/EC ('the Habitats Directive') are transposed in a clear manner.

Regulations place a duty on the Secretary of State to propose a list of sites which are important for either habitats or species (listed in Annexes I or II of the Habitats Directive respectively) to the European Commission. These sites, if ratified by the European Commission, are then designated as Special Protection Areas (SPAs) within six years. The Regulations include that public bodies help preserve, maintain and re-establish habitats for wild birds.

The Regulations also make it an offence to deliberately capture, kill, disturb or trade in the animals listed in Schedule 2, or pick, uproot, destroy, or trade in the plants listed in Schedule 5.

Wildlife and Countryside Act 1981 (as amended)

This is the principal mechanism for the legislative protection of wildlife in the UK. This legislation is the chief means by which the 'Bern Convention' and the Birds Directive are implemented in the UK. Since it was first introduced, the Act has been amended several times.

The Act makes it an offence to (with exception to species listed in Schedule 2) intentionally:

- kill, injure, or take any wild bird,
- take, damage or destroy the nest of any wild bird while that nest is in use, or
- take or destroy an egg of any wild bird.

In addition, the Act makes it an offence (subject to exceptions) to:

- intentionally or recklessly kill, injure or take any wild animal listed on Schedule 5,
- interfere with places used for shelter or protection, or intentionally disturbing animals occupying such places.

The Act also prohibits certain methods of killing, injuring, or taking wild animals.

Finally, the Act also makes it an offence (subject to exceptions) to:

- intentionally pick, uproot or destroy any wild plant listed in Schedule 8, or any seed or spore attached to any such wild plant,
- unless an authorised person, intentionally uproot any wild plant not included in Schedule 8,
- sell, offer or expose for sale, or possess (for the purposes of trade), any live or dead wild plant included in Schedule 8, or any part of, or anything derived from, such a plant.

Following all amendments to the Act, Schedule 5 'Animals which are protected' contains a total of 154 species of animal, including several mammals, reptiles, amphibians, fish and invertebrates. Schedule 8 'Plants which are Protected' of the Act, contains 185 species, including higher plants, bryophytes and fungi and lichens. A comprehensive and up-to-date list of these species can be obtained from the JNCC website.

Part 14 of the Act makes unlawful to plant or otherwise case to grow in the wild any plant which is listed in Part II of Schedule 9.

The Hedgerow Regulations 1997

The Hedgerow Regulations 1997 were made under Section 97 of the Environment Act 1995 and came into force in 1997. They introduced new arrangements for local planning authorities in England and Wales to protect important hedgerows in the countryside, by controlling their removal through a system of notification. Important hedgerows are defined by complex assessment criteria, which draw on biodiversity features, historical context and the landscape value of the hedgerow.

Protection of Badgers Act 1992

The main legislation protecting badgers in England and Wales is the Protection of Badgers Act 1992 (the 1992 Act). Under the 1992 Act it is an offence to: wilfully kill, injure, take or attempt to kill, injure or take a badger; dig for a badger; interfere with a badger sett by, damaging a sett or any part thereof, destroying a sett, obstructing access to a sett, causing a dog to enter a sett or disturbing a badger while occupying a sett.

The 1992 Act defines a badger sett as: "*any structure or place which displays signs indicating current use by a badger*".

Natural Environment and Rural Communities Act (NERC) 2006

Section 41 (S41) of this Act requires the Secretary of State to publish a list (in consultation with Natural England) of habitats and species which are of principal importance for the conservation of biodiversity in England. The S41 list is used to guide decision-makers such as public bodies including local and regional authorities, when carrying out their normal (eg planning functions). The S41 list includes 65 habitats of principal importance and 1,150 species of principal importance.

Biodiversity Action Plan

The UK Biodiversity Action Plan (UKBAP) lists a number of priority habitats and species (including bats) for conservation action in the UK.

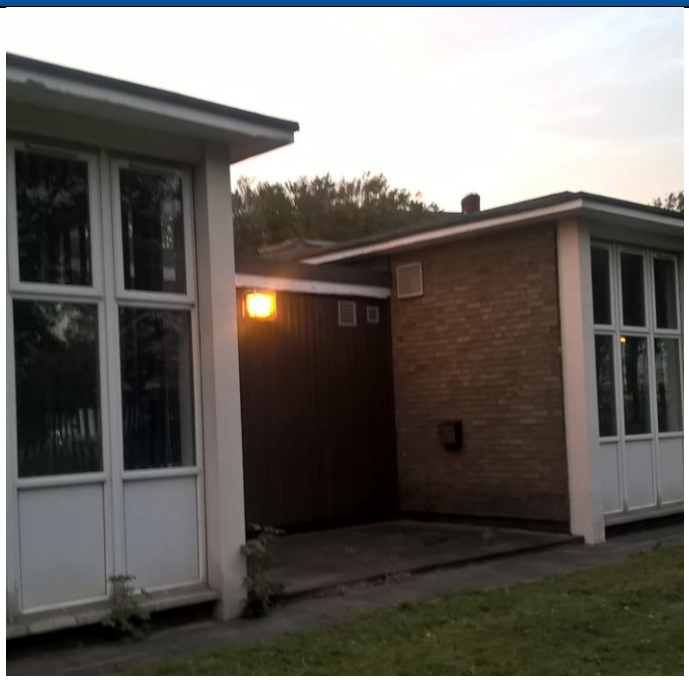
The 'UK Post-2010 Biodiversity Framework' (published in July 2012) has now succeeded the UKBAP. Much of the work previously carried out by the UKBAP is now focussed at country level. The UKBAP lists of priority species and habitats remain important, and have been used to draw up the statutory lists of Species of Principal importance for the Conservation of Biodiversity in England, Scotland, and Wales under the NERC Act 2006 (as noted above).

Local Biodiversity Action Plans (LBAP) identify habitat and species conservation priorities at a local level (typically at the County level), and are usually drawn up by a consortium of local government organisations and conservation charities.

Appendix C: Target notes and photographs

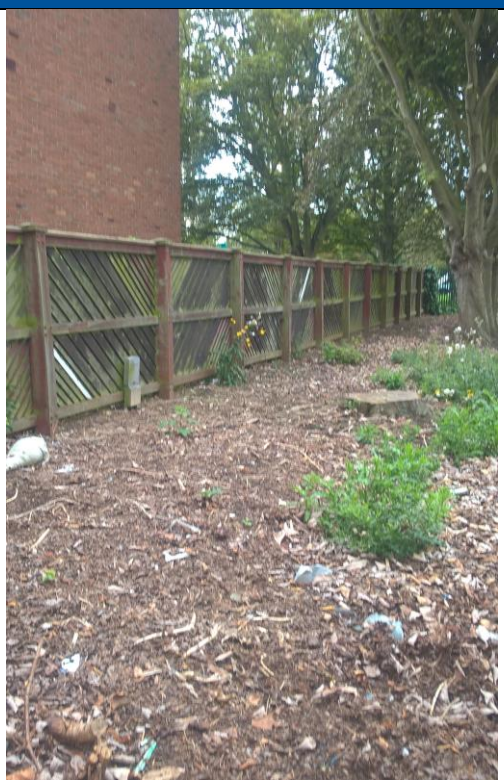
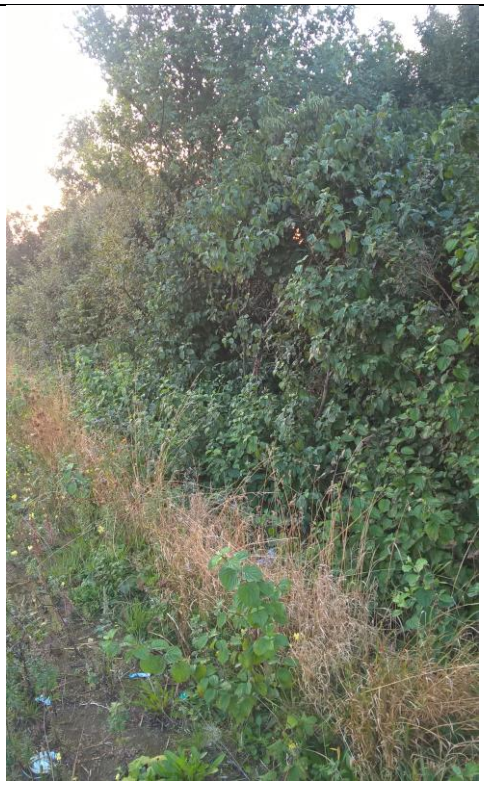
Target note or photograph no.	Notes	Photograph
Target Note 1	Mature amenity trees	**No photograph**
Target Note 2	Public park areas	**No photograph**
Target Note and Photograph 3	Trinity Burial Ground SNCI – taken September 2015	
Target Note and Photograph 4	Locations of cotoneaster and false acacia trees on Extended Phase 1 Map and photograph of cotoneaster in the Staples site Compound – taken September 2017	

Target note or photograph no.	Notes	Photograph
Photograph 5	Earl de Grey public house with bat roost potential taken September 2016.	
Photograph 6	Castle Buildings with bat roost potential taken September 2015.	

Target note or photograph no.	Notes	Photograph
Photograph 7	Myton Centre buildings with bat roost potential taken September 2016.	
Photograph 8	Arco Ltd garage in main site with negligible bat roost potential.	

Target note or photograph no.	Notes	Photograph
Photograph 9	The main Holiday Inn building is located adjacent to site compound at land south east of Mytongate Junction and has negligible bat roost potential.	
Photograph 10	Holiday Inn substation located between Trinity Burial Ground and site compound at land south east of Mytongate Junction has negligible bat roost potential. Ivy-covered trees behind it have low bat roost potential.	

Target note or photograph no.	Notes	Photograph
Photograph 11	Ephemeral/short perennial habitat on post-industrial land in Wellington Street Island Wharf site compound	
Photograph 12	Ephemeral plants on rubble bund and scrub to south of site compound at Livingstone Road.	

Target note or photograph no.	Notes	Photograph
Photograph 13	Habitats around Myton Centre buildings.	
Photograph 14	Unmanaged species-poor hedgerow at A63 eastbound recovery base	

A63 Castle Street Improvements, Hull
Environmental Statement

Volume 3 Appendix 10.2

ECOLOGY AND NATURE CONSERVATION - BAT SURVEY REPORT

TR010016/APP/6.3
HE514508-MMSJV-EBD-S0-RP-LE-000003
6 September 2018

A63 Castle Street Improvements, Hull

Environmental Statement

Appendix 10.2 Bat survey report

Revision Record						
Rev No	**Date**	**Originator**	**Checker**	**Approver**	**Status**	**Suitability**
P01.1	06.03.14	J Daw/S Ward	D Wood/A West	J North	Draft	For review and comment
P01.2	22.01.17	B Mell/A West	D Wood/K Ross	J McKenna	Draft	For review and comment
P01	31.07.18	A West	D Wood	J McKenna	Shared	S4
P02	06.09.18	A West	D Wood	J McKenna	Shared	S4

Prepared for:
Highways England
Lateral
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1. Background

1.1 Current situation

1.1.1 Mott MacDonald Sweco Joint Venture (MMSJV), formerly known as Mott MacDonald Grontmij Joint Venture (MMGJV) was commissioned by Highways England to undertake bat surveys in relation to the proposed A63 Castle Street Improvement Scheme in Hull, East Yorkshire, hereafter referred to as 'the Scheme' (National Grid Reference TA 094 283). The location of the site is provided in Appendix A.

1.1.2 An Extended Phase 1 habitat survey was carried out between February 2013 and March 2014. An initial survey was completed on 26th February 2013 and several additional surveys were subsequently completed up to 2018 to assess potential site compound locations. All trees and nine buildings were subject to an assessment of bat roost potential and Trinity Burial Ground Site of Nature Conservation Interest (SNCI) was assessed as a potential foraging resource. Further surveys for bat roosts and bat activity surveys were undertaken between June and September 2013. The data obtained from these surveys is now out of date and the site was re-surveyed by MMSJV in 2015, 2016 and 2017.

1.1.3 This report details the results of the bat surveys, assesses the potential impacts of the Scheme on bats and makes recommendations for mitigation measures. The Scheme is a Nationally Significant Infrastructure Project (NSIP) and is subject to Environmental Impact Assessment (EIA). The bat surveys form part of the basis of the assessment of impacts on ecological receptors.

1.1.4 Bats are protected under UK and European law (see Appendix B). Activities that have the potential to disturb or harm bats, or damage their roosting sites, must be completed under a licence from the statutory nature conservation body, Natural England in this case.

1.2 Scheme description

Existing road

1.2.1 The existing A63 Castle Street is approximately a 1.5km stretch of dual carriageway, from the eastern side of Rawlings Way grade separated junction, in the vicinity of Ropery Street, to the Market Place/Queen Street junctions.

1.2.2 The A63 Castle Street is located within Hull city centre, close to the River Hull and the Humber Estuary. To the north of Castle Street are the major shopping areas within the city centre. To the south are the Humber Dock and Railway Dock

marinas and several recent developments providing shops, offices, tourist and recreational facilities along with some residential properties.

1.2.3 The A63 Castle Street is approached from the west along a dual, two lane, all-purpose carriageway known as A63 Clive Sullivan Way and Hessle Road. Hessle Road becomes Castle Street near the junction with Porter Street. Continuing eastwards away from Castle Street, the road becomes Garrison Road (now known as Roger Millard Way) at the junction with Market Place/Queen Street, and then crosses the River Hull via Myton Bridge.

1.2.4 The A63 Castle Street forms part of an east to west route connecting Hull city centre, the Port of Hull and the docks to the east; with the M62 and strategic road network to the west. The A63 also links to the Humber Bridge and the A15 and M180 to the south. The A63 is part of the E20 Euroroute, which for the UK connects Hull to Liverpool.

The Scheme

1.2.5 The Scheme will improve a 1.5 kilometre stretch of the A63 from the eastern side of Rawlings Way grade separated junction, in the vicinity of Ropery Street, to the Market Place/Queen Street junctions.

1.2.6 From Ropery Street to St James Street / Porter Street, the central reserve area would be narrowed in places to be a consistent width of 1.8 metres. Where it is currently wider than 1.8 metres, to accommodate the existing pedestrian crossing, both the eastbound and westbound carriageways would move slightly closer to the central reserve, and this would create a wider area of grass verge between the carriageways and the existing footways/cycleways. Both the eastbound and westbound carriageways in this section would remain as two lanes.

1.2.7 From Spruce Road, the A63 would be gradually lowered so that it would be approximately six metres lower than the existing level at the location of the current Mytongate Junction. In the area where it is lowered, the A63 would be in a cutting, where ground material would have been excavated to leave an open trench for the road to pass through. Piled retaining walls would be built to support the sides of the cutting.

1.2.8 Ferensway and Commercial Road would be raised by approximately half a metre and cross over the A63 on a new bridge to make Mytongate Junction a grade-separated (split level) junction. This junction arrangement would allow traffic on the A63 to pass freely through the junction.

1.2.9 Eastbound traffic leaving the A63 at Mytongate Junction would use a single lane diverge (exit) slip road which would have a hard shoulder. The slip road would widen to three lanes at the top of the slip road for the junction with Ferensway. The

wall between the slip road and mainline A63 would be a retaining wall with a parapet fence mounted on top, approximately 1.5m high.

1.2.10 Westbound traffic joining the A63 from Mytongate Junction would use a single lane merge (entry) slip road which would have a hard shoulder. The wall between the slip road and mainline A63 would be a retaining wall with a parapet fence mounted on top, approximately 1.5m high. From the slip road, a limited movements junction (it would only be possible to turn left into it, and to turn left out of it) into a service road would provide access for delivery vehicles for Arco and Kingston Retail Park and for all vehicles to ATS Euromaster and Armstrong Hydraulic Services. If the Arco site is selected as the bentonite compound, a link road would be constructed during Phase 0 between Spruce Road and Lister Street as a replacement and permanent access for local businesses. Spruce Road would be closed once construction had finished.

1.2.11 Westbound traffic leaving the A63 at Mytongate Junction would use a two lane slip road. The slip road would widen to three lanes at the top of the slip road for the junction with Commercial Road. The wall between the slip road and the A63 mainline would be a retaining wall with a parapet fence mounted on top, approximately 1.5m high. The wall between the slip road and the grounds of the Holiday Inn and Trinity Burial Ground would also be a retaining wall, which would also serve as a boundary wall. The retaining wall would remain visible, and would be faced in new red brick to be in keeping with the existing boundary wall.

1.2.12 Temporary traffic management around Mytongate Junction will bring vehicles into close proximity to the Castle Buildings and Earl De Grey public house. To accommodate traffic, scaffolding currently on the exterior of the Castle Building will need to be removed. The Earl De Grey public house will be dismantled.

1.2.13 The realigned A63 and the westbound exit slip road to Commercial Road would pass through the northern part of Trinity Burial Ground SNCI, resulting in the loss of one third of its area. To accommodate works, further tree removal is required within Trinity Burial Ground SNCI. Approximately 40 trees within Trinity Burial Ground SNCI are to be removed. Many roadside trees across the Scheme footprint would also need to be felled to accommodate construction works.

1.2.14 Eastbound traffic joining the A63 at Mytongate Junction would use a short length of a two lane slip road, with the nearside (left hand) lane of the slip road dedicated as a local access road for Myton Street, including for access to the Princes Quay Shopping Centre car park. Beyond Myton Street, the slip road reduces to one lane with a hard shoulder up to Princes Dock Street. The wall between the slip road and the A63 mainline would be a retaining wall with a parapet fence mounted on top approximately 1.5m high. For safety reasons, the slip road lane would be physically separated from the main eastbound carriageway as far as Princes Dock

Street by a paved verge. Eastbound between Princes Dock Street and Market Place, the A63 mainline would become three lanes wide, with the nearside lane used for merging traffic from the slip road, and for diverging traffic weaving to exit at Market Place.

1.2.15 The westbound carriageway would remain as two lanes between Queen Street Junction and Mytongate Junction.

1.2.16 East of Mytongate Junction, the A63 level would gradually rise from being in a cutting, to be at existing ground level in the vicinity of the Earl de Grey Pub.

1.2.17 The central reserve would be a minimum width of 1.8m, widening to accommodate sight lines as necessary. A 900mm high concrete step barrier (CSB) would be installed.

1.2.18 The existing 40 mph speed limit would be retained.

1.2.19 New structures include a two-span precast concrete overbridge at Mytongate Junction; retaining walls for the underpass at Mytongate Junction; a pumping station to the south east of Mytongate Junction; retaining walls at the Holiday Inn; a pedestrian, cycle and disabled user bridge at Porter Street and a pedestrian, cycle and disabled user bridge over the A63 at Princes Quay.

1.2.20 A rising main downstream of the pumping station would transfer flow to a receiving network or watercourse. At present it is proposed to outfall (discharge) directly to the Humber Estuary, through an existing sheet piled wall. The outfall may not be required in the final design.

1.2.21 Potential temporary construction site compounds, a potential area for creation of public open space and recovery options have been included within the Scheme.

1.2.22 The design of the Scheme is shown on the Environmental Masterplan within the Environmental Statement.

1.3 Previous ecological surveys

1.3.1 Ecological survey work completed at earlier stages in the development of the Scheme is summarised in Table 1: Previous ecological survey reports.

Table 1: Previous ecological survey reports

Report	Date	Author	Key evaluation results
Environmental Survey	2003	Smeeden Foreman	Identification of Principal ecological receptors.
An Environmental Building Assessment, Bat Emergence	2005	WSP 2005	Presence of pipistrelle roost (single bat) identified in Castle Building

Report	Date	Author	Key evaluation results
and Dawn Swarming Survey for Castle Buildings, Quay West			
Phase 1 Ecological Survey, A63 Castle Street, Hull, Ecological Assessment Stage 2. Report Reference 06588242.501 Rev B0	2007	Golder Associates	Presence of non-statutory site of nature conservation importance (Trinity Burial Ground).
A63 Improvements – Hull, Environmental Assessment Report (Options Identification Stage). Report Reference W11189/VAA/03	2008	Pell Frischmann	Overall limited impact for the scheme with no significant differences in ecological impact between scheme options.
Environmental Scoping Report (Options Selection Stage) W11189/T13/01	2009	Pell Frischmann	No significant differences in ecological impact between scheme options.
Initial Screening Report for Appropriate Assessment (options selection stage). W11189/T13/06	2010	Pell Frischmann	Initial project screening of potential impacts to European protected site. Drainage design needed before final assessment can be completed.
Scheme Assessment Report (W11189/T11/05)	2010	Pell Frischmann	Overground scheme option has less impact on wildlife and biodiversity.
Preliminary Ecological Appraisal	2016	MMSJV	Identification of principal ecological receptors. Includes site survey data from 2013-2016

1.4 Survey scope and report aims and objectives

1.4.1 The following elements were included in the bat survey programme:

- Assessing habitats likely to be affected by the Scheme for bat roosting potential
- Establishing the presence or absence of roosting bats within any buildings or trees to be impacted
- Identifying the level and type of bat activity and the importance of the Scheme area for bats
- The purpose of the bat surveys was to provide field data to allow an informed assessment of the likely impacts of the Scheme on bats

1.4.2 The aims of the report presented are to:

- Outline the legislative protection given to bats

- Report on the findings of a desk-based study undertaken to identify any existing records for bats which are relevant to the site
- Summarise the findings of the bat surveys and provide an assessment of the potential ecological constraints to the proposed works at the site
- Provide recommendations for further survey, avoidance, mitigation and enhancement where appropriate.

2. Methodology

2.1 Desk study

2.1.1 A desktop study was undertaken as part of the Extended Phase 1 habitat survey by MMSJV in April 2014. To update the study the local biological records centre, North and East Yorkshire Ecological Data Centre (NEYEDC), was commissioned to provide historical records of bats within a 2km radius of the Scheme footprint in January 2016.

2.1.2 Previous ecological survey reports that are relevant to bats (detailed in Table 1: Previous Ecological Survey Reports were reviewed for background information.

2.1.3 Ordnance Surveys maps (1:25,000 scale) and aerial imagery (Google Earth) were used to assess habitat availability and connectivity in the wider area around the site.

2.2 Preliminary assessment survey

2.2.1 All surveys conducted in 2013 and 2015 followed methodologies outlined in Bat Surveys: Good Practice Guidelines 2nd Edition (Hundt, L. 2012)[1]. The surveys conducted in 2016 and 2017 followed methodologies outlined in Bat Surveys: Good Practice Guidelines 3rd Edition (Collins, J. 2016)[2].

2.2.2 A daytime preliminary bat roost potential assessment was undertaken on all buildings and trees identified as being suitable to support bats within the site boundary and included potential site compounds outside of the site boundary identified in 2013. This survey was repeated in 2016 as buildings and trees may have deteriorated in condition and thus provide more features with potential to support bat roosts since the surveys were last undertaken in 2013. Connecting habitat of potential value to bats and habitats within the site were also assessed for their bat habitat quality. Locations of trees and buildings assessed is provided in Appendix C.

2.2.3 The preliminary assessments involved an external inspection of buildings and trees with potential roosting features being inspected with a high powered torch (Clulite CB2) and close focussing binoculars to search for evidence in places that could not be reached. Where safe access was provided, an interior inspection of buildings, including any roof voids, was also carried out.

[1] Hundt, L (2012). *Bat Surveys. Good Practice Guidelines*. 2nd Edition. Bat Conservation Trust. London.

[2] Collins, J. (2016). *Bat Surveys. Good Practice Guidelines*. 3rd Edition. Bat Conservation Trust. London.

2.2.4 All our British bat species will make use of buildings on occasion, but for some species, buildings are essential as roost sites. Most bats in the UK evolved to roost in trees. Different types of roost are used by bats throughout the year, and bat species may show preferences for certain types of locations. The broad categories of bat species according to roosting preferences adapted from Collins, J. (2016) are as follows:

- Crevice dwelling bat species (which tend to be hidden from view): common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, Nathusius' pipistrelle *Pipistrellus nathusii*, Brandt's bat *Myotis brandtii*, whiskered bat *Myotis mystacinus*, Alcathoe bat *Myotis Alcathoe* and Bechstein's bat *Myotis bechsteinii*

- Roof-void dwelling bat species (that may or may not be visible on roof timbers): noctule *Nyctalus noctula*, serotine *Eptesicus serotinus*, Leisler's bat *Nyctalus leisleri*, Daubenton's bat *Myotis daubentonii* and Barbastelle *Barbastella barbastellus*

- Bat species that need flight space in certain types of roost (that may or may not be visible on roof timbers): Natterer's bat *Myotis nattereri*, brown long-eared bat *Plecotus auritus* and grey long eared bat *Plecotus austriacus*

- Bat species that need flight space and flying access (and roost hanging freely in the open): greater and lesser horseshoe bats *Rhinolophus ferrumequinum* and *Rhinolophus hipposideros*

2.2.5 The type of roost used may vary throughout the year. Roost types, as described in Collins, J. (2016) can be:

- Transitional/occasional Roost: Used by a few individuals or occasionally small groups for generally short periods of time on waking from hibernation or in the period prior to hibernation

- Maternity Roost: Where female bats give birth and raise their young to independence

- Satellite Roost: An alternative roost found in close proximity to the main nursery colony used by a few individual breeding females to small groups of breeding females throughout the breeding season

- Mating: Sites Where mating takes place from late summer and can continue through the winter

- Hibernation Roost: Where bats may be found individually or together during winter. They have a constant cool temperature and high humidity

- Night Roost: A place where bats rest or shelter in the night but are rarely found in the day. May be used by a single individual on occasion or it could be used regularly by the whole colony
- Day Roost: A place where individual bats, or small groups of males, rest or shelter in the day but are rarely found by night in the summer
- Feeding Roost: A place where individual bats or a few individuals rest or feed during the night but are rarely present by day
- Swarming sites: Where large numbers of males and females gather during late summer to autumn. Appear to be important mating sites

2.2.6 Different bat species have different foraging methods and species specific preferred foraging habitats, summarised in Table 2: The foraging habitat preferences of different UK bat species below (adapted from Collins, J. 2016).

Table 2: The foraging habitat preferences of different UK bat species

Species	Foraging habitat preferences
Lesser horseshoe	Broadleaved woodland well connected by commuting routes such as hedges, woodland edge and riparian trees. Also recorded in coniferous woodland. Probably reluctant to cross open space.
Greater horseshoe	Ancient semi natural and deciduous woodland and cattle-grazed pastures. Probably reluctant to cross open space.
Daubenton's bat	Over water, favouring riverine habitats, but also known to forage in woodland.
Whiskered/Brandt's bat	Mixed woodland and riparian vegetation as core foraging habitat, with arable and rough grassland habitats also utilised. Whiskered bats selects pasture with hedgerow, areas near rivers and more open habitats with hedges and more open habitats, whereas Brandt's bat favours woodland.
Natterer's bat	Semi natural broadleaved woodland, tree-lined river corridors and ponds. Also utilises mixed agricultural areas and grassland. Avoids coniferous plantation woodland.
Bechstein's bat	Ancient broadleaved woodland with a strong association with oak and ash. Also known to utilise mixed-age coppice, high forest with little understorey and unimproved grassland.
Noctule	Forages out in the open, often over trees, and with a strong affinity with water. Reported as selecting broadleaved woodland and pasture.
Leisler's bat	Woodland edge, scrub or woodland-lined roads and over pasture. Recorded as selecting parkland/amenity grassland, deciduous woodland edge and rivers/canals but avoiding improved grassland.
Common pipistrelle	Shows preference for deciduous woodland but is a generalist utilising a wide range of habitats.
Soprano pipistrelle	Selects riparian habitats over other available habitat types.

Nathusius' pipistrelle	Riparian habitats, broadleaved and mixed woodland and parkland, occasionally found in farmland but always near water. Found over lakes and rivers and lake-edge habitats.
Serotine	Cattle pasture, playing fields, village greens, white streetlights, tree-lined hedgerows and woodland edge.
Barbastelle	Forages over/in riparian zones, broadleaved woodland, unimproved grassland and field margins. Also been recorded at an irrigation reservoir, ponds in woodlands, areas of set-aside, floodplain habitats, a sewage farm and a pumping station.
Brown long-eared	Strongly associated with tree cover, prefers woodland with cluttered understorey containing native species, particularly deciduous. Also forages in woodland edge and among conifers. Use of hedgerows increases through the active season.
Grey long-eared	Prefers more open or edge habitats, including unimproved lowland grassland (meadows and marshes), wooded riparian vegetation and broadleaved woodland. Forages along field margins, hedgerows and scattered trees in agricultural habitats.

Buildings

2.2.7 During the preliminary assessment, features suitable for bats such as weatherboarding, hanging tiles, soffit boxes, gaps in brickwork, cracks and crevices, slipped or broken tiles, gaps around ridge tiles and lead flashing were noted. Any potential access points were identified and inspected for signs of bats such as:

- Bat droppings on the ground or stuck to walls
- Suitable entry and exit points around eaves, soffits, flashing, under tiles or gaps in mortar
- Live bats, bat corpses or skeletons
- Oily marks (from fur) or localised clean spots around possible access points and roost areas
- Lack of cobwebs along beams, roof timbers, or potential access points
- Feeding remains (such as moth wings)

2.2.8 Buildings were assigned a roost potential of high, medium or low based on the features of the structure and its location. Table 3: Features of buildings and built structures that are correlated with their use by bats in 2013 and 2015 surveys (Taken from Hundt, 2012) describes features of buildings and built structures that are correlated with their use by bats in summer used as guidance in 2013 and 2015 surveys. Table 4: Categories of bat roost potential in buildings used in 2016

and 2017 surveys (taken from Collins, J. 2016) summarises the categories of bat roost potential in buildings used as guidance in 2016 and 2017 surveys.

Table 3: Features of buildings and built structures that are correlated with their use by bats in 2013 and 2015 surveys (Taken from Hundt, 2012)

Likelihood of bats being present	Feature of the building or built structure and its location
Higher	Pre-20th century or early 20th century construction. Agricultural buildings of traditional brick, stone or timber construction. Large and complicated roof void with unobstructed flying spaces. Large (>20 cm) roof timbers with mortice joints, cracks and holes. Entrances for bats to fly through. Poorly maintained fabric providing ready access points for bats into roofs, walls, bridges, but at the same time not too draughty and cool. Roof warmed by the sun, in particular south facing roofs. Weatherboarding and/or hanging tiles with gaps. Low level of disturbance by humans. Bridge structures, follies, aqueducts and viaducts over water and/or wet ground. For rarer species, buildings or built structures in the core area of their distribution. Buildings and built structures in proximity to each other providing a variety of roosting opportunities throughout the year. Buildings or built structures close to good foraging habitat, in particular mature trees, parkland, woodland or wetland, especially in a rural setting.
Lower	Modern, well-maintained buildings or built structures that provide few opportunities for access by bats. Small, cluttered roof space. Buildings and built structures comprised primarily of prefabricated steel and sheet materials. Cool, shaded, light or draughty roof voids. Roof voids with a dense cover of cobwebs and no sections of clean ridge board. High level of regular disturbance. Highly urbanised location with few or no mature trees, parkland, woodland or wetland. High levels of external lighting.

Table 4: Categories of bat roost potential in buildings used in 2016 and 2017 surveys (taken from Collins, J. 2016)

Suitability	Description
Negligible	Negligible habitat features on site likely to be used by roosting bats.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or

	suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity of hibernation).
Moderate	A structure with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only – the assessments in this table are made irrespective of conservation status, which is established after presence is confirmed).
High	A structure with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially longer periods of time due to their size, shelter, protection, conditions and surrounding habitats.

Trees

The trees on site were assessed for their potential to support roosting bats. Table 5: Features of trees commonly used by bats for roosting and shelter used in 2013 and 2015 surveys (taken from Hundt, L. 2012) describes the features of trees that are commonly used by bats for roosting and shelter used as guidance in 2013 and 2015 surveys.

2.2.9 Table 6: Features of trees commonly used by bats for roosting or shelter used in 2016 and 2017 surveys (taken from Collins, J. 2016) summarises the features of trees that are commonly used by bats for roosting and shelter used as guidance in 2016 and 2017 surveys.

Table 5: Features of trees commonly used by bats for roosting and shelter used in 2013 and 2015 surveys (taken from Hundt, L. 2012)

Features of trees used as bat roosts	Signs indicating possible use by bats
Natural/rot holes	Tiny scratches around entry point
Woodpecker holes	Staining around entry point
Cracks/splits in major limbs	Bat droppings in, around or below entrance
Knot holes caused naturally or by pruning	Audible squeaking at dusk or in warm weather
Man-made holes	Flies around entry point
Hazard beams	Distinctive smell of bats
Cankers	Smoothing of surfaces around cavity
Double-leaders forming forks	
Gaps between overlapping branches	
Loose/platey bark	
Hollows/cavities	
Dense epicormics growth (bats may roost within it)	
Bird, dormouse and bat boxes	
Partially detached ivy with stem diameters over 50mm	

Table 6: Features of trees commonly used by bats for roosting or shelter used in 2016 and 2017 surveys (taken from Collins, J. 2016)

Features of trees used as bat roosts	Signs indicating possible use by bats
Natural/rot holes Woodpecker holes Cracks/splits in major limbs Knot holes caused naturally or by pruning Man-made holes Hazard beams Cankers Double-leaders forming forks Gaps between overlapping branches Loose/platey bark Hollows/cavities Dense epicormics growth (bats may roost within it) Bird, dormouse and bat boxes Partially detached ivy with stem diameters over 50mm	Staining around entry point Bat droppings in, around or below entrance Audible squeaking at dusk or in warm weather Distinctive smell of bats

Trees were assigned to categories following the inspection. Table 7: Categories of bat roost potential in trees used in 2013 and 2015 surveys (taken from Hundt, L. 2012) summarises the categories used to define tree roost potential used as guidance in 2013 and 2015 surveys.

2.2.10 Table 8: Categories of bat roost potential in trees used in 2016 and 2017 surveys (taken from Collins, J. 2016) summarises the categories used to define tree roost potential used as guidance in 2016 and 2017 surveys.

Table 7: Categories of bat roost potential in trees used in 2013 and 2015 surveys (taken from Hundt, L. 2012)

Tree category	Description
Category 1*	Trees with multiple highly suitable features capable of supporting larger roosts.
Category 1	Trees with definite bat potential, supporting fewer suitable features than category 1* trees or with potential for use by single bats.
Category 2	Trees with no obvious potential, although the tree is of a size and age that elevated surveys may result in cracks or crevices being found; or the tree supports some features which may have limited potential to support bats.
Category 3	Trees with no potential to support bats.

Table 8: Categories of bat roost potential in trees used in 2016 and 2017 surveys (taken from Collins, J. 2016)

Tree category	Description
High	Trees with multiple highly suitable features capable of supporting larger roosts.
Moderate	Trees with definite bat potential, supporting fewer suitable features or with potential for use by single bats.
Low	Trees with no obvious potential, although the tree is of a size and age that elevated surveys may result in cracks or crevices being found; or the tree supports some features which may have limited potential to support bats.
Negligible	Trees with no potential to support bats.

Habitat

2.2.11 The habitats on site were assessed for their bat habitat quality. Table 9: Criteria for assessing the value of habitat features for bats used in 2013 and 2015 surveys (taken from Hundt, 2012) summarises the criteria for assessing the value of habitat features for bats used in 2013 and 2015 surveys.

2.2.12 Table 10: Criteria for assessing the value of habitat features for bats used in 2016 and 2017 surveys (taken from Collins, J. 2016) summarises the criteria for assessing the value of habitat features for bats used in 2016 and 2017 surveys.

Table 9: Criteria for assessing the value of habitat features for bats used in 2013 and 2015 surveys (taken from Hundt, 2012)

Value for bats	Criteria
Low ↓ Higher	No features likely to be used by bats (for roosting, foraging, and commuting). Small number of potential (opportunistic) roost sites (i.e. probably not maternity roosts or hibernacula). Isolated habitat that could be used by foraging bats e.g. a lone tree or patch of scrub (not parkland). Isolated site not connected by prominent linear features to suitable adjacent/other foraging habitat. Several potential roosts in the buildings, trees or other structures. Habitat could be used by foraging bats e.g. trees, shrub, grassland or water. Site is connected with the wider landscape by linear features that could be used by commuting bats e.g. lines of trees and scrub or linked back gardens.

 High	Buildings, trees or other structures (such as mines, caves, tunnels, ice houses and cellars) with features of particular significance for roosting bats. Habitat of high quality for foraging bats e.g. broadleaved woodland, tree-lined watercourses and grazed parkland. Site is connected with the wider landscape by strong linear features that would be used by commuting bats e.g. river/stream valleys or hedgerows. Site is close to known roost. Bats recorded or observed using an area for foraging or commuting close to a potential roost
Confirmed presence	Evidence indicates a building, tree or other structure is used by bats e.g.: bats seen roosting or observed flying from a roost or freely in the habitat droppings, carcasses, feeding remains, etc. found; and/or bats heard 'chattering' inside on a warm day or at dusk.

Table 10: Criteria for assessing the value of habitat features for bats used in 2016 and 2017 surveys (taken from Collins, J. 2016)

Suitability	Description
Negligible	Negligible habitat features on site likely to be used by commuting or foraging bats.
Low	Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or unvegetated stream, but isolated, i.e. not very well connected to the surrounding landscape by other habitat. Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.
Moderate	Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.
High	Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge. High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses and grazed parkland. Site is close to and connected to known roosts.

2.3 Nocturnal field surveys

2.3.1 All surveys conducted in 2013 and 2015 followed methodologies outlined in *Bat Surveys: Good Practice Guidelines* 2nd Edition (Hundt, L. 2012). All surveys conducted in 2016 and 2017 followed methodologies outlined in *Bat Surveys: Good Practice Guidelines* 3rd Edition (Collins, J. 2016).

Bat roost surveys

2.3.2 Dusk emergence and pre-dawn re-entry surveys are used to determine the presence or likely absence of bat roosts in buildings and trees when the preliminary roost assessment cannot reasonably rule out the presence of roosting bats. They can only be completed in the season when bats are most active (May to September with optimum bat activity between June and August).

2.3.3 Refresher surveys of the Castle Buildings, the Earl de Grey public house and trees within Trinity Burial Ground SNCI had one dusk emergence and one dawn re-entry survey undertaken upon them on separate days. All of the Castle Buildings were surveyed as they were part of the Scheme (the newer east wing has since been de-listed and demolished in 2018 and is no longer a part of the Scheme), but the results have been kept and used to assess the bat activity at Mytongate Junction.

2.3.4 Dusk surveys were undertaken between June and September 2013, in August and September 2015 and in July, August and September 2016 and in September 2017. Dawn surveys were undertaken between July and September 2013, and in September 2015. The dusk emergence surveys began 15 minutes prior to sunset and lasted for approximately two hours after sunset. Four surveyors were located one at each side of the Castle Buildings and the same for the Earl de Grey public house. The pre-dawn re-entry surveys began two hours before sunrise and continued until sunrise and surveyors were located in the same positions.

2.3.5 During the surveys within Trinity Burial Ground SNCI, four surveyors adopted mobile positions centred on a group of trees and moved around them in response to bat activity. During the pre-dawn re-entry survey, the aim was to track bats back to any roosts present and identify any roosting activity in the burial ground, such as swarming behaviour.

2.3.6 Notes were made on the times of bat calls and any bat activity seen or heard (commuting, foraging, roosting or social calls). Bat calls were recorded using Roland R05 recorders from a Petterson D240x (time expansion) detectors, an AnaBat SD1, an EM3+, a Magenta, a BatBox Duet and AnaBat Walkabout detectors. Recorded data were used to verify the survey notes and for analysis of the following information:

- Time and species of first and last bat calls
- Location of bats/proximity to the buildings/trees.
- Number and species of bats present (where identification is possible).
- Number of bats recorded entering/exiting the buildings/trees.

- Bat activity levels (foraging, commuting, social calls).
- Any bat calls recorded that were not identified on field notes.

Bat activity surveys

2.3.7 Bat activity surveys are used to ascertain if bats are present or absent from the site, which species of bat use the site, the level of bat activity at the site, what the bats are using the site for, if bat activity is associated with temporal or special locations within the site, and how habitats within the site are connected to habitats in the surrounding area. Eight activity surveys were conducted in 2013 with a further six conducted in 2016. One activity survey was conducted in 2017.

2.3.8 Transect routes are designed to encompass the different range of habitats within the site, with those habitats determined to have moderate to high potential for bat use being the focus of the transects.

2.3.9 The transect routes incorporated habitat likely to be used by foraging and commuting bats. The transect routes are provided in Appendix D.

2.3.10 In 2013 and 2016, two surveyors walked each transect together for health and safety reasons. They were equipped with a heterodyne bat detector (Bat Box Duet or similar) to aid detection of bats and made notes of the times and locations of bat calls and any bat activity that had been seen or heard (commuting, foraging or social calls). The locations of the origin of the bat calls were plotted on a map. Bat calls (in time expansion format) were recorded using a Roland R05 recorder from a Petterson D240x, Wildlife Acoustics EM3+, or in frequency division format from an AnaBat SD1 for later analysis using AnalookW and BatSound4 analysis software. Surveyors walked at a constant speed along the transect line, stopping at predetermined listening points per transect for at least three minutes, to record bat activity and enable comparisons of bat activity levels throughout the site. The recordings and the field notes were used to help build a picture of bat use across the site and to identify areas of relatively higher use.

2.3.11 In 2017, two surveyors were deployed to a small park and adopted static positions within the park. They were equipped with AnaBat Walkabout detectors which recorded bat calls in full spectrum mode to aid detection of bats and made notes of the times and locations of bat calls and any bat activity that had been seen or heard (commuting, foraging or social calls). The locations of the origin of the bat calls were plotted on a map. Bat call recordings were analysed using AnaBat Insight software to verify the field notes and to identify, where possible, bats which were not identified in the field.

Commuting route surveys

2.3.12 Additional bat activity surveys were completed at Mytongate Junction to assess the use of existing trees within the junction by bats flying across the A63. The trees within the island provide potential habitat connectivity between habitats north and south of the road.

2.3.13 Three commuting route surveys were conducted in 2013. Two further surveys were completed throughout spring and summer 2016. The surveys commenced fifteen minutes before sunset and lasted for at least one hour after sunset. On each commuting route survey, a single surveyor monitored bat activity across the junction from a suitable vantage point.

Automated surveys

2.3.14 With reference to Hundt, L. (2012), one automatic bat detector (Song Meter 2) was left at the Castle Building for seven consecutive nights during June, July, August and September 2013. The detector was also left within Trinity Burial Ground SNCI for seven consecutive nights during June, July, August and September 2013. A Song Meter 2 was left in Trinity Burial Ground SNCI for seven consecutive nights during August 2015.

2.3.15 The locations of the automated recorder were in positions away from disturbance from the public; within the Castle Buildings and padlocked to trees within Trinity Burial Ground (Appendix E). The detector was set to record from 30 minutes before sunset until 30 minutes after dawn. The data recorded was used to supplement the bat roost survey data. The number of bat passes per species was calculated per night to give an index or indication of bat activity levels, but the numbers of individual bats cannot be identified by this method.

Data analysis

2.3.16 Recorded data were analysed using AnalookW software for the Song Meter 2 and AnaBat SD1, BatSound4 for the Roland R05 recorders and AnaBat Insight for the Walkabouts.

Surveyor information

2.3.17 The 2013 surveys were undertaken by Jenny Singh CEnv MCIEEM (Senior Ecologist), Steven Ward MCIEEM (Ecologist and Licenced Bat Surveyor CLS01363), John Daw MSc MCIEEM (Ecologist), Sarah Gooch CEnv MCIEEM and Nick Weaver MCIEEM with assistance from Bernadette Middleton (Graduate Consultant).

2.3.18 Surveys in 2015 and 2016 were led by either Diane Wood MCIEEM (Senior Ecologist, MMS) who holds a level 2 Natural England bat class licence (registration number 2015-13155-CLS-CLS) or Adam West (Graduate Ecologist,

MMS) who holds a level 2 Natural England bat class licence (registration number 2016-24724-CLS-CLS), assisted by Samara Hyde, Laith Al-Bodier and Jack Hogg (Graduate Engineers, MMS), Michael Canning Grad CIEEM (Assistant Ecologist, MMS), Dan Robinson (Graduate Consultant, MMS), James Sexton (Assistant Project Manager, MMS), Ryan Bolton (Intern, MMS) and James Lamb (Casual Field Ecologist, MMS).

2.3.19 Surveys in 2017 were led by either Diane Wood MCIEEM (Senior Ecologist, MMS) who holds a level 2 Natural England bat class licence (registration number 2015-13155-CLS-CLS) or Adam West (Assistant Ecologist, MMS) who holds a level 2 Natural England bat class licence (registration number 2016-24724-CLS-CLS), assisted by Ishbel Campbell (Consultant Ecologist, MMS) and Beth Mell (Graduate Ecologist, MMS).

2.3.20 Details of surveyors, dates and weather conditions during the surveys are included with full results in Appendix F.

2.4 Survey limitations

2.4.1 The comprehensiveness of any ecological assessment will be limited by the season in which surveys are undertaken. To determine presence or likely absence of a protected species and their status (i.e. the number of individuals present) usually requires multiple visits at suitable times of the year. The survey conditions and timings were suitable for surveying bats and therefore are not considered to be a limitation to the effectiveness of the surveys.

2.4.2 Automated surveys were conducted at the Castle Buildings in 2013 but were not repeated during 2015 and 2016. In these years it was not deemed safe to leave the equipment on site at this location; there was a high risk of equipment being discovered and vandalised or stolen. Internal surveys of the Castle Buildings and the Earl de Grey public house could not be undertaken as the buildings were structurally unsafe to do so. As nocturnal surveys were undertaken at both of these buildings in 2013, 2015 and 2016, it is considered that adequate survey measures were employed and the recent lack of an automated survey or internal survey is not a constraint to the results.

2.4.3 The dusk emergence survey undertaken on 24 August 2016 was ended prematurely due to rain commencing 1 hour and nine minutes after the survey began. The survey duration was considered to be long enough to have observed any emerging bats and is not considered a constraint to the results.

2.4.4 The findings of bat surveys, and the recommendations based on those findings, remain valid for two years. Beyond this period it is recommended that a new review of the ecological conditions is undertaken. The results of the 2015 surveys

contained in this report will remain valid until 2017, while the results of the 2016 surveys will remain valid until 2018 and the results of the 2017 surveys remain valid until 2019. Beyond this period, if works have not commenced, it is recommended that a new review of the ecological conditions is undertaken.

3. Desk study results

3.1 WSP – Bat Survey, Quay West, Hull 2005[3]

3.1.1 The Castle Buildings was surveyed for bats as part of another scheme in 2005. At this time, the building was less dilapidated and it was safe to undertake internal surveys. During the internal survey, a single common pipistrelle bat was found roosting between a window pane and the wooden sheet boarding up the window. No roosting bats were recorded during the nocturnal surveys.

3.2 NEYEDC

3.2.1 Details of historical protected species records within 2 km of the Scheme held by NEYEDC are summarised in Table 11: Bat records received from NEYEDC below:

Table 11: Bat records received from NEYEDC

Protected species	Details
Bats	Eight records of pipistrelle occurring within the local area were received. These records are dated from 1967 to 1994 respectively, with the closest record located approximately 775 m north and the most distant record located approximately 12.5 kilometre south west.

[3] WSP (2005). Quay West, Hull. Bat Survey Report.

4. 2013 Field survey results

4.1 Introduction

4.1.1 A summary of the results of the surveys are presented below with full results provided in Appendix F. The field surveys were undertaken between 10 June and 18 August 2013, surveyor locations are provided in Appendix G.

4.2 Location and surrounding habitat

4.2.1 The extent and location of all habitat types within the survey area are shown in Appendix H. The majority of the habitat within the main survey area is of limited value to bats due to the dominance of hard standing with isolated areas of amenity grassland and ornamental planting, as well as the location within a heavily urbanised area of Hull. The only area of semi natural habitat of potential value to bats is within Trinity Burial Ground SNCI, an area of urban parkland with many mature trees. Small urban parks, scattered roadside trees and areas of introduced scrub also provide some limited potential foraging habitat for bats.

4.2.2 The locations of all surveyed buildings and trees are shown in Appendix C. The Castle Buildings, Earl de Grey public house, Myton Centre, Holiday Inn, ARC Building, Arco garage, Holiday Inn substation, substation 1 and substation 2 were located within or directly adjacent to the survey area. The Holiday Inn substation, Earl de Grey public house and the Myton Centre would be demolished within the Scheme.

4.2.3 The location of trees identified to contain potential for supporting roosting bats is shown in Appendix C.

4.3 Bat roost potential assessment

Buildings

4.3.1 Table 12: Description of buildings and bat roost potential presents the full results of the bat roost potential assessments of the buildings and Table 13: Categories of bat roost potential in buildings categorises the results.

Table 12: Description of buildings and bat roost potential

Building name	General external description	Internal description	Potential roosting features	Building photograph
Arco Garage	A single-storey building containing garages and storage areas. The building is of modern design, constructed from brick with a flat roof. Four large wooden doors and wooden boarding are located on the western elevation of the building. An access door and wooden boarding was also located on the southern elevation of the building covering a window. Building is in good condition and in use as a storage area at the time of the survey.	The building's interior comprised a single room. The interior was characterised by bare brick walls and large wooden doors. No internal loft or ceiling was present, resulting in exposed wooden rafters and roofing of the external flat roof.	Gaps under wooden boarding on western and southern elevations. Gaps noted under flat roofing, western elevation.	
Castle Buildings	The building is constructed from brick and contains a tiled pitched roof. The roofing tiles of the eastern section of the building had been removed, exposing the wooden rafters and roofing felt. Several chimneys are located on the roof of the building as well as a dormer window. A two-storey extension is located in the north of the building. The extension's design and construction is in keeping with the remainder of the building and contained a tiled hipped-roof. The building is in a delapidated condition and unoccupied; with damage	No internal access was gained at the time of the survey. Therefore an internal assessment and survey for evidence of roosting bats could not be undertaken.	Cracks in external brick work on eastern corner and northern elevation of the building. Numerous slipped and missing tiles in roofing in southern elevation. Missing, slipped and raised ridge tiles recorded on northern extension. Missing mortar on verge and slipped tiles	

	recorded to the external walls and roofing. The majority of windows are missing or have broken window panes. Scaffolding and a corrugated tin roof surrounded the entire building.		recorded at or near northern gable. Raised lead flashing.	
Earl de Grey public house	Main section comprises a three-story brick build with a two-storey extension located to the north. The building contains a complex arrangement of pitched roofs with various aspects and ridges. Wooden fascia boarding is located on the western, eastern and southern elevations. At the time of the survey, the ground floor and all external windows were covered with wooden security boarding and the building was unoccupied. The building is in a poor to moderate condition at the time of the survey.	No internal access was gained at the time of the survey. Therefore, an internal assessment and survey for evidence of roosting bats could not be undertaken.	Several slipped tiles recorded on tiled roof. Gap under ridge tile located at northern and western gables. Raised lead flashing. Gap identified under fascia boarding. Damage identified to external wall under the eave. Missing mortar identified on verge of tiled roof, south east corner.	

Holiday Inn substation	Small utility building containing operational electrical service equipment. The building is of modern design and is constructed from brick and breeze block. The roofing consists of a tiled hipped-roof which was in good condition. Wooden fascia and soffit boarding ran the entire length of the building's eaves.	The interior of the building comprised brick walls with no internal loft space. The absence of an internal ceiling results in exposed rafters and bituminous roofing felt.	1cm to 2cm wide gap between external wall and wooden soffit. Access into the building's interior through slatted door in southern elevation.	
Myton Centre	Building of modern design and constructed from brick. The majority of the building is single-storey with large external windows. Majority of the building contains a flat roof consisting of bitumen felt with wooden fascia boarding and soffit boxes. A two-storey section (west wing) is of the same design and construction but contains a pitched felted roof. A closed brick chimney is located in the west of the building.	No internal loft space present.	Raised roofing felt; dilapidated soffit box at NW corner; gaps under fascia boarding.	

Holiday Inn	Large four-storey building with single-storey annex attached. Main building and annex are of modern design and are constructed from brick and concrete. Both buildings contain tiled pitched roofs with plastic fascia boarding and guttering.	No internal access was gained at the time of the survey. Therefore an internal assessment and survey for evidence of roosting bats could not be undertaken.	Missing curb mortar at NE corner of hotel; missing mortar and ridge tile in NW and SW corners of annex.	
ARC Building	Building is of modern design and is constructed from prefabricated materials including concrete, metal, glass and plastic. The building is characterised by a large, sloping roof consisting of perforated metal sheeting which dominates the eastern elevation of the building. Main part of the building comprises five large concrete columns.	No internal loft space present.	None. Building is in good condition with no features identified.	

substation 1	Small, single storey building constructed from brick and concrete. Contains a flat felted roof with concrete edging.	No internal loft space present.	None. Building is in good condition with no features identified.	
substation 2	Small, single-storey building constructed from brick. Contains a flat concrete roof with concrete edging.	No internal loft space present.	None. Building is in good condition with no features identified.	

Table 13: Categories of bat roost potential in buildings

Building	Bat roost potential
Arco Garage*	Negligible
Holiday Inn substation*	Negligible
Castle Buildings	High
Earl De Grey public house	High
Myton Centre*	Negligible
Holiday Inn	Low
Arc Building	Negligible
substation 1	Negligible
substation 2	Negligible

* buildings where all potential roosting features identified in Table 13 were fully inspected by the surveyors.

Trees

4.3.2 All trees located outside of Trinity Burial Ground SNCI were found to have negligible potential for roosting bats due to absence of suitable roosting features. The results of the bat roost potential assessment on trees within the burial ground is provided in Table 14: Description of trees and bat roost potential and their locations are provided in Appendix C.

Table 14: Description of trees and bat roost potential

Tree reference number	Description of tree	Roost potential
1	Mature crack willow, 15m in height, with split limbs and dense ivy growth.	Moderate
2	Mature poplar with large split limb noted on southern elevation.	Moderate
3	Mature ash, dense ivy growth on trunk and major branches. Unable to fully assess.	Unknown
4	Mature London plane, cavity identified at top of flush-cut located on east elevation of trunk.	Moderate
5	Mature ash, two knot-holes and peeling bark in trunk. Woodpecker hole noted at approximately 3m above ground (east elevation).	Moderate
6	Semi mature ash, 12m in height, large tear-out with cavity noted north elevation, large cavity near base (extends into tree) and knot-hole above scar (west elevation).	High
7	Mature oak, 20m in height, good condition but with knot-hole recorded in branch (west elevation).	Moderate

8	Mature poplar, 20m in height, with large dead section in main leader containing two woodpecker holes and split limb. Knot-hole recorded in trunk, south elevation.	Moderate
9	Mature lime, 15m in height, split limbs and tear-out recorded (south elevation).	Moderate
10	Mature ash, 20m in height, with knot-hole recorded above longitudinal tear in main branch. Small items of peeling bark also recorded.	High
11	Mature ash, 17m in height. Several items of attached deadwood with peeling bark.	Moderate
12	Mature sycamore 15m in height, moderate condition. Dense ivy growth in trunk and branches. Unable to fully assess.	Unknown
13	Mature sycamore 15m in height, moderate condition. Dense ivy growth in trunk and branches. Unable to fully assess.	Unknown
14	Semi mature sycamore, 10m in height moderate condition. Dense ivy growth in trunk and branches. Unable to fully assess.	Unknown
15	Semi mature sycamore, 10m in height. Dense ivy growth in trunk and branches. Unable to fully assess.	Unknown
16	Mature poplar, 20m in height, moderate condition. Cavity recorded in trunk west elevation, attached deadwood with peeling bark and split limbs.	Moderate
17	Mature ash, 12m in height, moderate condition. Woodpecker hole, large split limb and peeling bark recorded.	High
18	Mature ash, 15m in height, moderate condition. Contains peeling bark and split limb (south west elevation) and large tear-out with cavity (west elevation) and knot-hole.	Moderate
19	Semi mature sycamore, 10m in height. Dense ivy growth on trunk and major limbs. Unable to fully assess.	Unknown

4.4 Surveyors and weather conditions

4.4.1 The surveys were undertaken by John Daw, Steven Ward, Jenny Singh, Sarah Gooch CEnv MCIEEM and Nick Weaver MCIEEM, with the assistance of Bernadette Middleton.

4.4.2 Details of the surveyors used in each survey are included in Appendix F alongside the full survey data. John Daw and Steven Ward took part in all survey visits, providing an element of surveyor consistency.

4.4.3 Weather conditions during each survey are also detailed in Appendix F with the full survey data.

4.5 Roost presence/absence surveys

4.5.1 Four dusk emergence and/or dawn swarming surveys were completed at the following buildings and trees during summer and autumn 2013 to establish the presence or absence of roosting bats:

- Castle Buildings
- Earl de Grey public house
- Trees within Trinity Burial Ground SNCI

4.5.2 During the preliminary assessments, these buildings and trees were assessed as having features of moderate to high potential for roosting bats and roost presence could not be ruled out without further investigation.

4.5.3 The completion of four surveys spread over summer and autumn at these buildings and trees was considered to provide an adequate level of detail to make an accurate assessment of roost presence. Bat Conservation Trust guidelines recommend at least three dusk/dawn surveys for buildings or trees with high potential. The fourth survey was completed to account for the lack of internal access to the Castle Buildings and Earl de Grey public house.

4.5.4 No further survey work was completed at the remaining buildings surveyed, as follows:

- Arco garage
- Holiday Inn substation
- Myton Centre
- Holiday Inn
- ARC Building
- substations 1 and 2

4.5.5 These buildings were assessed as having low or negligible potential for roosting bats due to a lack of suitable features and/or evidence and, therefore, no further investigations were considered necessary. Only the Holiday Inn substation would be directly impacted by the Scheme, which has negligible potential for roosting bats.

4.5.6 The results of the dusk emergence and dawn swarm surveys are summarised in the sections below. Full details of survey findings, including annotated plans are included in Appendix F.

Castle building

4.5.7 Four dusk emergence surveys were completed at the Castle Buildings. No roosting activity within the building was recorded during any of these surveys.

4.5.8 An incidental observation of a common pipistrelle commuting route past the Castle Buildings was made during the surveys. A maximum of eight bats per survey commuted southwards from the direction of buildings located 70m to the north, past the western elevation of the Castle Buildings and across the A63 towards the Trinity Burial Ground SNCI. The commuting route is shown in Appendix I.

4.5.9 A low level of foraging activity by common pipistrelle bats was detected around the trees and an area of industrial wasteland adjacent to the Castle Buildings during each survey.

4.5.10 The results are summarised in Table 15: Results of dusk emergence surveys at the Castle Building below.

Table 15: Results of dusk emergence surveys at the Castle Buildings

Date	Type of survey	Sunset	Roosting activity	Bat activity
10/6/2013	Dusk emergence	21:30	None	No bats emerged from the building. Four common pipistrelles commuted southwards past the building from the direction of buildings to the north and crossed the A63 between 21:52 and 22:48. Low level of common pipistrelle foraging activity during survey around trees and wasteland area near to the building.
16/7/2013	Dusk emergence	21:23	None	No bats emerged from the building. Three common pipistrelles commuted southwards past the building from the direction of buildings to the north and crossed the A63 between 21:53 and 22:05. Low level of common pipistrelle foraging activity during survey around trees and wasteland area near to the building, including bats commuting north and south across A63.
20/8/2013	Dusk emergence	20:20	None	No bats emerged from the building. Eight common pipistrelles commuted southwards past the building from the

				direction of buildings to the north and crossed the A63 between 20:31 and 20:59. Low level of common pipistrelle foraging activity during survey around trees and wasteland area near to the building.
17/9/2013	Dusk emergence	19:13	None	No bats emerged from the building. One common pipistrelle commuted southwards past the building from the direction of buildings to the north and crossed the A63 at 19:25. Low level of common pipistrelle foraging activity during survey around trees and wasteland area near to the building, including bats commuting north and south across A63.

Earl de Grey public house

4.5.11 A single dawn re-entry survey and three dusk emergence surveys were completed at the Earl de Grey public house.

4.5.12 The surveys recorded no roosting activity within the building.

4.5.13 Very occasional foraging activity by individual common pipistrelle bats was recorded around the building during the surveys, mostly associated with semi mature landscaping trees directly to the east of the building. Bats were observed flying across the A63 between these trees on the northern side of the road and habitats within Trinity Burial Ground on the south side.

4.5.14 The results are summarised in Table 16: Results of dusk/dawn surveys at the Earl de Grey public house below.

Table 16: Results of dusk/dawn surveys at the Earl de Grey public house

Date	Type of survey	Sunset / Sunrise	Roosting activity	Bat activity
11/6/2013	Dawn swarming/re-entry	04:31	None	No bats emerged from, swarmed around or re-entered the building. Low level of common pipistrelle foraging activity during survey around trees near to the building.
15/7/2013	Dusk emergence	21:24	None	No bats emerged from the building. Low level of common pipistrelle foraging activity around trees to east of building by individual bats. Bats flew north and south across A63 between these trees and Trinity Burial Ground.

21/8/2013	Dusk emergence	20:18	None	No bats emerged from the building. Very low level of common pipistrelle foraging activity around trees to east of building.
18/9/2013	Dusk emergence	19:10	None	No bats emerged from the building. One common pipistrelle commuted southwards past the building from the direction of buildings to the north and crossed the A63 at 19:44. No further foraging activity was detected.

Trinity Burial Ground SNCI

4.5.15 A single dusk emergence survey and three dawn re-entry surveys were completed within the Trinity Burial Ground SNCI.

4.5.16 The surveys concentrated on trees identified as having features of high, moderate or unknown roosting potential (Trees 1 to 4, 12 to 14 and 16 to 19) within the area of the burial ground as illustrated in Appendix C.

4.5.17 During the single dusk emergence survey, the trees with moderate to high roosting potential (1, 2, 4, 16, 17 and 18) could be adequately monitored by surveyors. However, during dawn surveys an assessment of all potential roost locations could be made throughout the area to be removed, as well as in the remainder of the burial ground, due to the mobile position of surveyors.

4.5.18 No roosting activity associated with the burial ground trees was found during any of the surveys.

4.5.19 Frequent to constant foraging by a small number of common pipistrelle bats (maximum of three bats seen at any one time) was observed throughout the burial ground surveys in June, July and August. No bat activity was recorded during the survey in September.

4.5.20 During the dawn surveys in July and August the last bat activity observed consisted of common pipistrelle bats flying out of the burial ground to the north, mainly across Mytongate Junction, but also straight over the A63. The results of the surveys are summarised in Table 17: Results of dusk/dawn surveys within Trinity Burial Ground SNCI below.

Table 17: Results of dusk/dawn surveys within Trinity Burial Ground SNCI

Date	Type of survey	Sunset/sunrise	Roosting activity	Bat activity
11/6/2013	Dusk emergence	21:31	No	No bats were detected emerging from Trees 1, 2, 4, 16, 17 or 18.

				Frequent to constant foraging activity by a small number of common pipistrelles was recorded from 21:49 to the end of the survey (maximum 3 bats seen at one time).
16/7/2013	Dawn swarming / re-entry	04:51	No	No bat swarming or roost re-entry was observed anywhere within the burial ground. Frequent to constant foraging activity by a small number of common pipistrelles was recorded until 04:25 (maximum 3 bats seen at one time). Last activity observed were 3 common pipistrelles flying north out of burial ground over the Mytongate Junction.
21/8/2013	Dawn swarming / re-entry	05:47	No	No bat swarming or roost re-entry was observed anywhere within the burial ground. Frequent to constant foraging activity by a small number of common pipistrelles was recorded until 05.28 (maximum 3 bats seen at one time). Between 05:13 and 05:29 common pipistrelles (4) were recorded flying north out of burial ground over the Mytongate Junction, as well as straight across the A63.
18/9/2013	Dawn swarming / re-entry	06:40	No	No bats recorded anywhere within the burial ground during the survey.

4.6 Bat activity surveys

Transects

4.6.1 The results of the bat activity transects are detailed in Table 18: Results of the bat activity transects below. This shows the number of bat passes recorded at each point count and walk along Transect A and Transect B over the four survey visits. The transect routes are shown in Appendix D. The location of bat activity recorded during each transect survey is shown in Appendix K.

4.6.2 The only bat species encountered during the surveys was common pipistrelle. All passes recorded were of foraging bats; no commuting or roosting activity was identified during the transect surveys.

4.6.3 In general, low levels of bat activity were recorded throughout the survey area. The highest level of activity occurred in June, with a total of 32 bat passes recorded over both transects, equating to an average frequency of 18 passes per survey hour.

4.6.4 Levels of bat activity varied between different habitats. The highest levels of activity (highlighted in Table 18: Results of the bat activity transects) occurred within Trinity Burial Ground SNCI (Transect A: Point B and Walk 2) and within a small park on the north side of the A63 (Transect B: Point B). Bat activity recorded within these two areas comprises a significant proportion of the total activity recorded and elevates the average bat activity level across the whole survey area. Activity levels outside of these areas were very low.

Table 18: Results of the bat activity transects

Transect	Point (A-E) / Walk (W1-W5)	Species	Number of bat passes				
			Survey 1 10/06/13	Survey 2 15/07/13	Survey 3 20/08/13	Survey 4 17/09/13	Surveys 1-4 combined
Transect A	A	Common pipistrelle	0	2	0	0	2
	W1	Common pipistrelle	0	3	3	0	6
	B	Common pipistrelle	11	10	3	3	27
	W2	Common pipistrelle	1	4	2	6	13
	C	Common pipistrelle	0	0	0	0	0
	W3	Common pipistrelle	0	2	0	0	2
	D	Common pipistrelle	7	1	0	0	8
	W4	Common pipistrelle	2	1	3	0	6
	E	Common pipistrelle	0	1	0	0	1
	Total Transect A		21	24	11	9	65
Transect B	A	Common pipistrelle	0	1	1	0	2
	W1	Common pipistrelle	20	2	0	1	5
	B	Common pipistrelle	1	1	1	15	18

Transect	Point (A-E) / Walk (W1-W5)	Species	Number of bat passes				
			Survey 1 10/06/13	Survey 2 15/07/13	Survey 3 20/08/13	Survey 4 17/09/13	Surveys 1-4 combined
	W2	Common pipistrelle	0	0	0	0	0
	C	Common pipistrelle	5	1	0	1	7
	W3	Common pipistrelle	1	0	0	0	1
	D	Common pipistrelle	0	0	0	0	0
	W4	Common pipistrelle	0	0	1	0	1
	E	Common pipistrelle	1	1	0	0	2
	W5	Common pipistrelle	1	0	4	0	5
	Total Transect B		11	6	7	17	41
Index of bat activity	Total passes/night		32	30	18	26	106
	Average passes/hour		18	15	9	15	14

4.7 Commuting route survey

4.7.1 Dusk bat activity surveys were completed at the Mytongate Junction. Trees on two islands within the junction form a habitat link between the Trinity Burial Ground SNCI and a small park to the north of the junction. The objective of the survey was to assess the use of this habitat by bats and its importance as a habitat corridor across the A63.

4.7.2 The surveys found that the junction is used as a commuting route by a small number of common pipistrelle bats. Up to five bats in each survey were recorded flying across the junction between habitats either side of the A63.

4.7.3 A summary of the survey results is included in Table 19: Summary of Mytongate Junction activity survey results below. Full results and annotated plans are included in Appendix F.

Table 19: Summary of Mytongate Junction activity survey results

Date	Type of survey	Sunset	Number of bat passes	Bat activity
15/7/2013	Dusk activity	21:24	6	Between 21:59 and the end of the survey at 22:25 six common pipistrelle passes across the junction were recorded, three moving southwards and three moving northwards.
21/8/2013	Dusk activity	20:18	5	Between 20:35 and 21:00 five common pipistrelles were observed commuting north to south across the junction into the burial ground.
18/8/2013	Dusk activity	19:10	4	Between 19:33 and 19:59 four common pipistrelles were observed commuting north to south across the junction into the burial ground.

4.8 Automated monitoring surveys

4.8.1 The location of automated detector deployment is shown in Appendix E.

4.8.2 Over the entire duration of the monitoring, four species of bat were recorded: common pipistrelle, Nathusius' pipistrelle, noctule and an unknown species of the *Myotis* genus. The vast majority of bat activity, over 99%, was by common pipistrelle bats.

Trinity Burial Ground SNCI

4.8.3 Throughout the monitoring period, over 19,000 passes by common pipistrelle bats were detected within Trinity Burial Ground SNCI. A single Nathusius' pipistrelle pass was detected on 22 September 2013.

4.8.4 On any given night, an average of 67 bat passes per hour were recorded within the burial ground. Table 20: Summary of bat activity recorded within the Trinity Burial Ground summarises the bat activity data recorded for each month of monitoring.

4.8.5 The highest activity levels within a night were recorded on 12 June (1,623 passes) and 24 September (1,841 passes). Figure 1: Total number of bat passes per night within Trinity Burial Ground illustrates total bat activity per night during each month of monitoring.

4.8.6 Average bat activity levels in relation to time after sunset are shown in Figure 2: Average bat passes per hour after sunset within Trinity Burial Ground for each month of monitoring.

4.8.7 Minutes between sunset and sunrise times, and the timing of the first and last bats detected varied considerably across the monitoring period, as shown in **Error! Reference source not found.**. Registrations of the first bat recorded ranged from

four minutes before sunset to thirty-three minutes after sunset. The mean time for the first bat registration detected was 17 minutes across the entire monitoring period. Registrations for the last bat recorded prior to sunrise ranged between one and 92 minutes, with a mean time of 26 minutes.

Table 20: Summary of bat activity recorded within the Trinity Burial Ground

	June	July	August	September
Total number of bat passes	6,377	989	2,171	9,679
Mean number of bat passes per night	91	141	310	1,384
Mean number of bat passes per hour	77	18	32	117

Figure 1: Total number of bat passes per night within Trinity Burial Ground

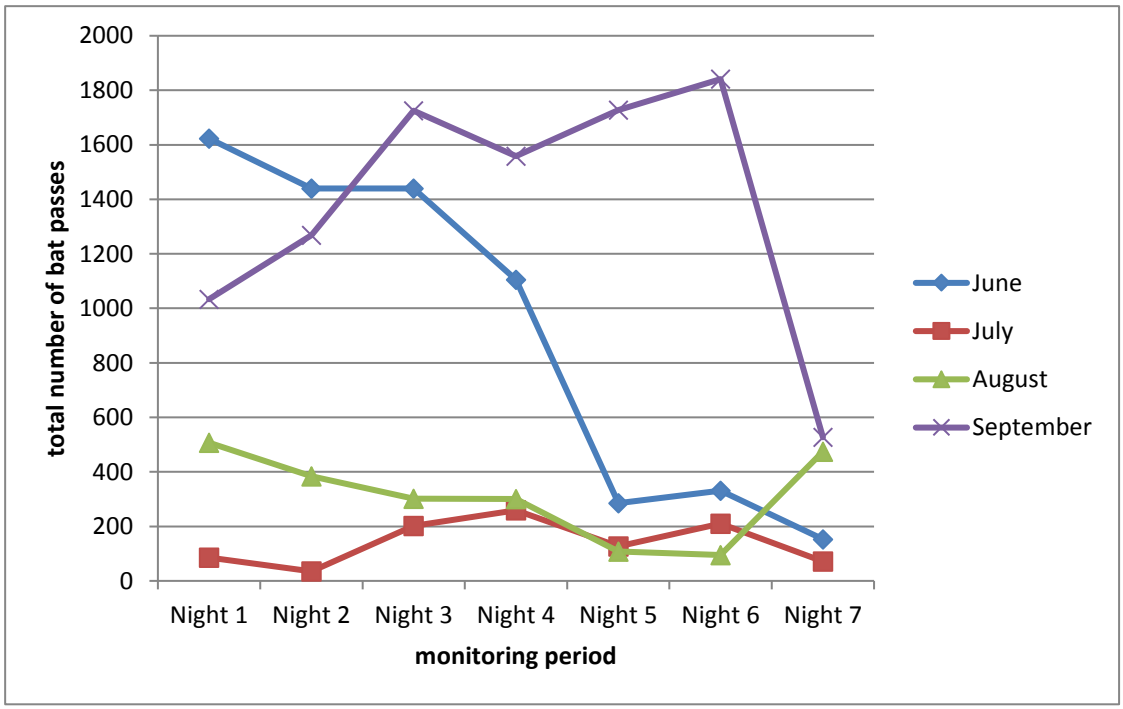


Figure 2: Average bat passes per hour after sunset within Trinity Burial Ground

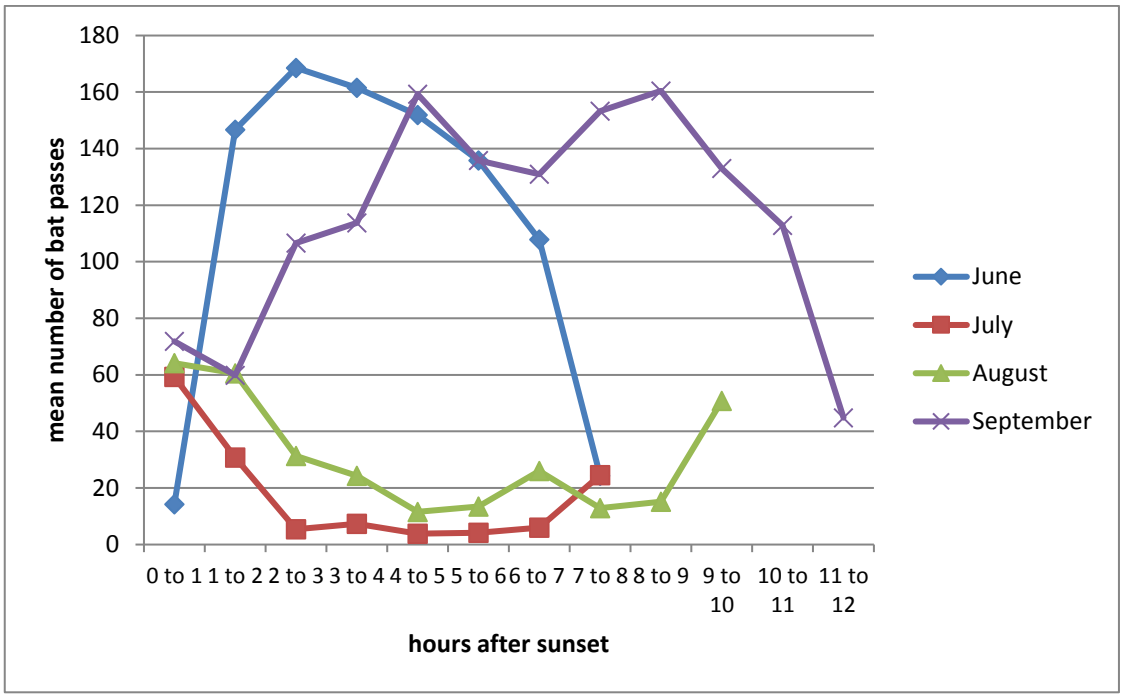
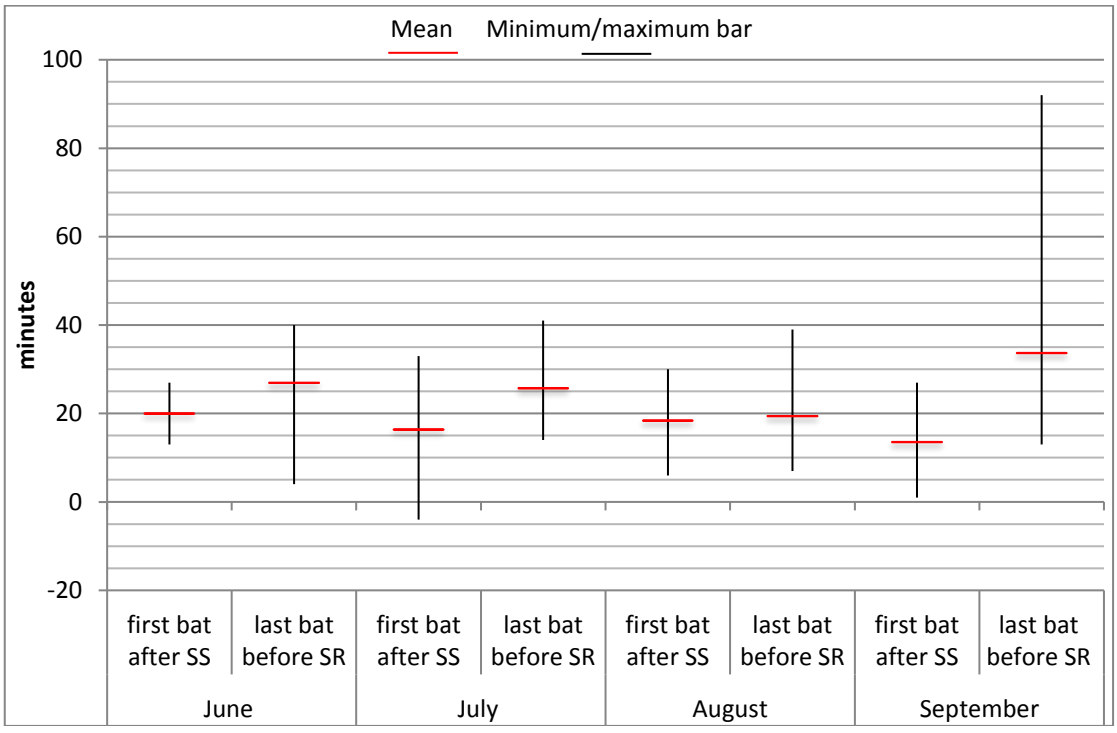


Figure 3: Mean and min/max timings between first bat registrations and sunset, and last bat registrations and sunrise (SS = sunset, SR = sunrise) within Trinity Burial Ground



Castle Buildings

4.8.8 In comparison, the Castle Buildings had significantly lower bat activity overall with a total of 837 bat passes recorded over the monitoring period. The vast majority of passes were by common pipistrelle bats. Two passes by a noctule bat and a single pass by an unidentified Myotis bat were also recorded in August and September.

4.8.9 As detailed within Table 21: Summary of bat activity recorded at the Castle Buildings, bat activity peaked in August (473 bat passes over seven nights). The highest activity level recorded within a night occurred on 22 September (159 passes). Across the entire monitoring period, the mean number of bat passes recorded per hour was four.

Total bat activity per night in each month is shown in

Figure 4: Total number of bat passes per night at the Castle Buildings. Average bat activity levels in relation to time after sunset are shown in

4.8.10 Figure 5: Average bat passes per hour after sunset at the Castle Buildings. Minutes between sunset/sunrise times and the timing of the first/last bats detected varied considerably across the monitoring period, as shown in Figure 6: Mean and min/max timings between first bat registrations and sunset, and last bat registrations and sunrise at the Castle Buildings (SS = sunset, SR = sunrise). First bat passes detected ranged from 17 to 674 minutes after sunset. Across the entire monitoring period the mean time for the first bat pass was 95 minutes. The last bat recorded ranged between 16 and 495 minutes before sunrise, with a mean time of 90 minutes.

Table 21: Summary of bat activity recorded at the Castle Buildings

	June	July	August	September
Total number of bat passes	*	62	473	302
Mean number of bat passes per night	*	9	68	43
Mean number of bat passes per hour	*	1.5	6.9	3.7

* Automated detector failed to record during June due to unknown technical fault.

Figure 4: Total number of bat passes per night at the Castle Buildings

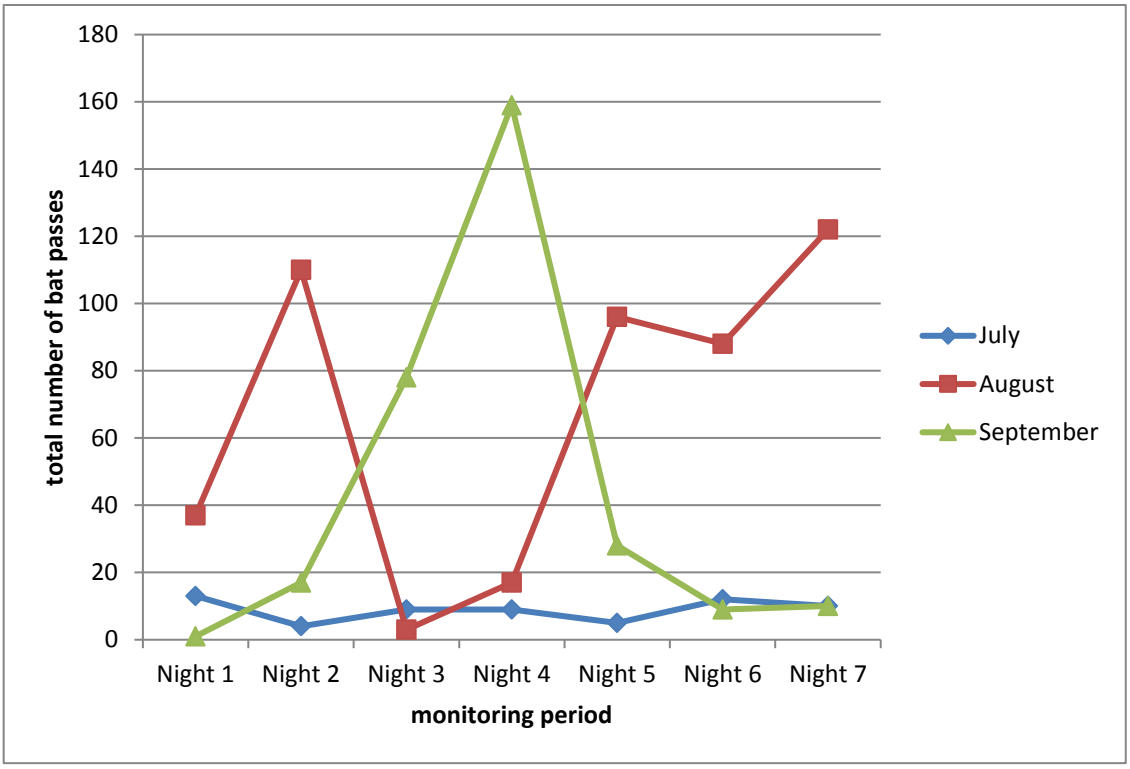


Figure 5: Average bat passes per hour after sunset at the Castle Buildings

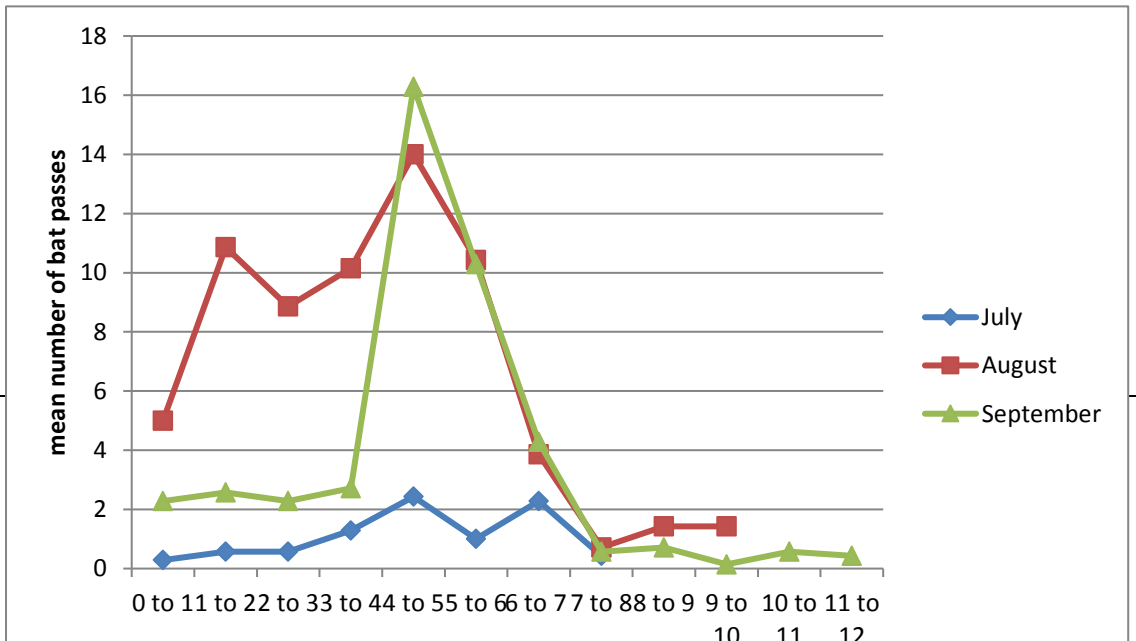
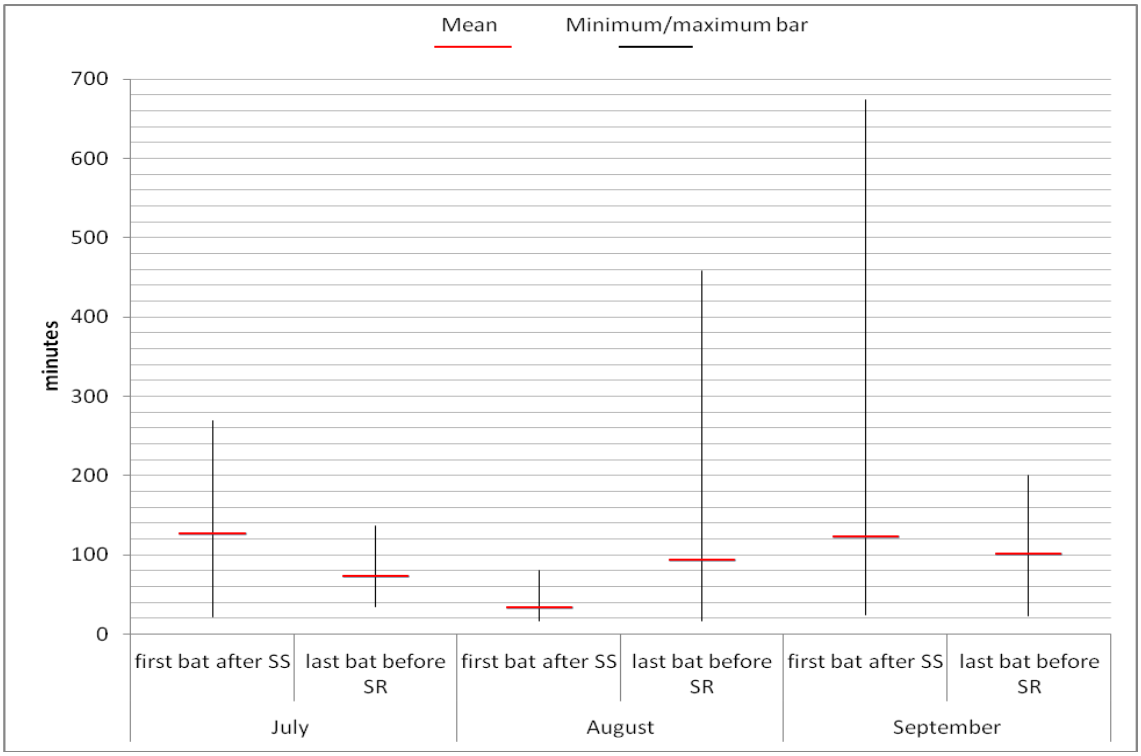


Figure 6: Mean and min/max timings between first bat registrations and sunset, and last bat registrations and sunrise at the Castle Buildings (SS = sunset, SR = sunrise)



5. 2015 field surveys

5.1 Introduction

5.1.1 The findings of bat surveys, and the recommendations based on those findings, remain valid for two years. The purpose of the 2015 surveys was to update the results obtained in 2013 and to take into account changes in the site boundary, which included additional site compounds.

5.1.2 A summary of the results of the surveys are presented below with full results provided in Appendix F. The field surveys were undertaken between 29 May and 28 September, surveyor locations are provided in Appendix G.

5.2 Surveyors and weather conditions

5.2.1 The surveys were led by Diane Wood MCIEEM (Senior Ecologist, MMS) who holds a level 2 Natural England bat class licence (registration number 2015-13155-CLS-CLS), assisted by Samara Hyde, Laith Al-Bodier and Jack Hogg (Graduate Engineers, MMS), Michael Canning Grad CIEEM (Assistant Ecologist, MMS), Dan Robinson (Graduate Consultant, MMS),

5.2.2 Details of the surveyors used in each survey are included in Appendix F alongside the full survey data. Diane Wood took part in all survey visits, providing an element of surveyor consistency.

5.2.3 Weather conditions during each survey are also detailed in Appendix F with the full survey data.

5.3 Dusk emergence and dawn re-entry surveys

5.3.1 Section 5.3 should be read with reference to Appendix F, which shows the surveyor locations during the dusk emergence and dawn re-entry surveys. Full survey results are also presented in Appendix F. Information on dates, timing, weather conditions and surveyors are given for each survey in Table 22: Survey dates, weather and surveyor locations below.

Table 22: Survey dates, weather and surveyor locations

Survey site & type	Date & time	Sunrise sunset	Weather conditions	Surveyors
Trinity Burial Ground SNCI Dusk emergence	12/8/15 20:00-22:30	20:38	Rain: none Cloud cover: 8/8 Wind: F1 (Beaufort scale) Temperature: 17°C	D. Wood (Location A) M. Canning (Location B) L. Al-Bodier (Location C) J. Hogg (Location D)

Trinity Burial Ground SNCI Dawn re-entry	29/9/15 05:15–07:00	07:00	Rain: Mist Cloud cover: 0/8 Wind: F0 (Beaufort scale) Temperature: 16°C	D. Wood (Location A) M. Canning (Location B) J. Sexton (Location C) S. Hyde (Location D)
Castle Building Dusk emergence	24/9/15 18:30 – 20:30	18:55	Rain: none Cloud cover: 1/8 Wind: F3 (Beaufort scale) Temperature: 15°C	D. Wood (Location A) S. Hyde (Location B) D. Robinson (Location C)
Castle Building Dawn re-entry	25/9/15 05:00 – 07:00	06:52	Rain: none Cloud cover: 0/8 Wind: F1 (Beaufort scale) Temperature: 8-10°C	D. Robinson (Location D)
Castle Building Dusk emergence	28/9/15 18:30 – 19:00	18:45	Rain: none Cloud cover: 8/8 Wind: F1 (Beaufort scale) Temperature: 17°C	D. Wood (Location A) M. Canning (Location C)
Earl de Grey Dusk emergence	24/9/15 18:30 – 20:30	18:55	Rain: none Cloud cover: 1/8 Wind: F3 (Beaufort scale) Temperature: 15°C	M. Canning (Location D)
Earl de Grey Dawn re-entry	25/9/15 05:00 – 07:00	06:52	Rain: none Cloud cover: 0/8 Wind: F1 (Beaufort scale) Temperature: 18-10C	D. Wood (Location A) M. Canning (Location B) S. Hyde (Location C)
Earl de Grey Dusk emergence	28/9/15 18:30 – 19:00	18:45	Rain: none Cloud cover: 8/8 Wind: F1 (Beaufort scale) Temperature: 17°C	S. Hyde (Location C) J. Sexton (Location D)

5.3.2 No further survey work was completed during 2015 at the remaining buildings surveyed for bat roost potential in 2013, as follows:

- Arco garage
- Holiday Inn substation
- Myton Centre

- Holiday Inn
- ARC Building
- substations 1 and 2

Castle Buildings

Dusk Emergence Survey 24/9/2015

5.3.3 The first bat, a common pipistrelle was recorded at 19:25, 30 minutes after sunset. Three further common pipistrelles were recorded at Location A. Three common pipistrelles were recorded at Location B and one at Location C. Two bats were observed commuting from north to south towards Trinity Burial Ground SNCI, but the rest were faint, distant bat calls heard that were unseen. No bats were observed roosting in the building.

Dawn Re-entry Survey 25/9/2015

5.3.4 Location D was surveyed at dawn the following morning. One common pipistrelle bat was observed at 06:43, 9 minutes before sunrise. The bat flew from the car park to the north of the building and headed south west toward Trinity Burial Ground SNCI. No bats were observed roosting in the building.

Dusk Emergence Survey 28/9/2015

5.3.5 The first bat, a common pipistrelle was recorded at 19:28, 43 minutes after sunset at Location A and a second common pipistrelle was recorded 11 minutes later. Neither bat was seen but heard to be commuting past quickly. No bats were recorded at Location C and no bats were observed roosting in the building.

Earl de Grey public house

Dusk Emergence Survey 24/9/2015

5.3.6 Location D was surveyed and the surveyor reported a possible sighting of an unidentified bat flying over the building heading east. This occurred at 19:49, 54 minutes after sunset. No bats were observed roosting in the building.

Dawn Re-entry Survey 25/9/2015

5.3.7 The last bat, a common pipistrelle was observed at 05:38, 1 hour and 14 minutes before sunrise at Locations B and C. Two other common pipistrelle bats were observed commuting to the south earlier on during the survey at Location C. No bats were recorded at Location A. No bats were observed roosting in the building.

Dusk Emergence Survey 28/9/2015

5.3.8 No bats were recorded during this survey.

Trinity Burial Ground SNCI

Dawn Re-entry Survey 29/5/2015

5.3.9 No bats were recorded during this survey. It was noted that all the ground understorey vegetation had been removed.

Dusk Emergence Survey 12/8/2015

5.3.10 The first bat, a common pipistrelle was observed at 20:59 at Location A, 21 minutes after sunset. It flew from the west, dropped low and foraged in a circle around the central, open parts of the SNCI. A second common pipistrelle flew in from the north, 8 minutes later and joined the first bat in foraging in a circular route around the centre of the site. At the other locations, first bat calls were heard at 21:06, Location B; 21:00 Location C and 21:02 at Location D. At least two common pipistrelles remained constantly foraging in the site until 22:30. The most bats seen at one time were three, but none were seen roosting in the trees on site.

5.4 Automated monitoring survey

The location of the automated Song Meter 2 bat detector in Trinity Burial Ground SNCI is provided in Appendix E. The weather conditions while the bat detector was recording are provided in Table 23: Weather conditions during automated bat monitoring at Trinity Burial Ground SNCI.

Figure 7: Chart to show number of bat passes per night at Trinity Burial Ground SNCI shows the number of bat passes recorded on each night of the monitoring period and

5.4.1 Figure 8: Chart to show length of time after sunset of first bat recorded and length of time before dawn of last bat recorded at Trinity Burial Ground SNCI shows the times of the first bat recorded after sunset and the last bat recorded before sunrise throughout the monitoring period.

Table 23: Weather conditions during automated bat monitoring at Trinity Burial Ground SNCI

Date	Sunrise/sunset	Weather conditions
12/8/15	20:38	Rain: none Cloud cover: 8/8 Wind: F1 (Beaufort scale) Temperature: 17°C
13/8/15	05:37 20:35	Rain: none Cloud cover: 1/8 Wind: F1 (Beaufort scale) Temperature: 16°C

Date	Sunrise/sunset	Weather conditions
14/8/15	05:38 20:33	Rain: drizzle Cloud cover: 7/8 Wind: F2 (Beaufort scale) Temperature: 15°C
15/8/15	05:40 20:30	Rain: none Cloud cover: 0/8 Wind: F0 (Beaufort scale) Temperature: 8°C
16/8/15	05:42 20:28	Rain: none Cloud cover: 0/8 Wind: F0 (Beaufort scale) Temperature: 8°C
17/8/15	05:44 20:26	Rain: drizzle Cloud cover: 8/8 Wind: F2 (Beaufort scale) Temperature: 12°C
18/8/15	05:45 20:24	Rain: some rain Cloud cover: 6/8 Wind: F3 (Beaufort scale) Temperature: 15C
19/8/15	05:47 20:22	Rain: some rain Cloud cover: 8/8 Wind: F3 (Beaufort scale) Temperature: 15°C

Figure 7: Chart to show number of bat passes per night at Trinity Burial Ground SNCI

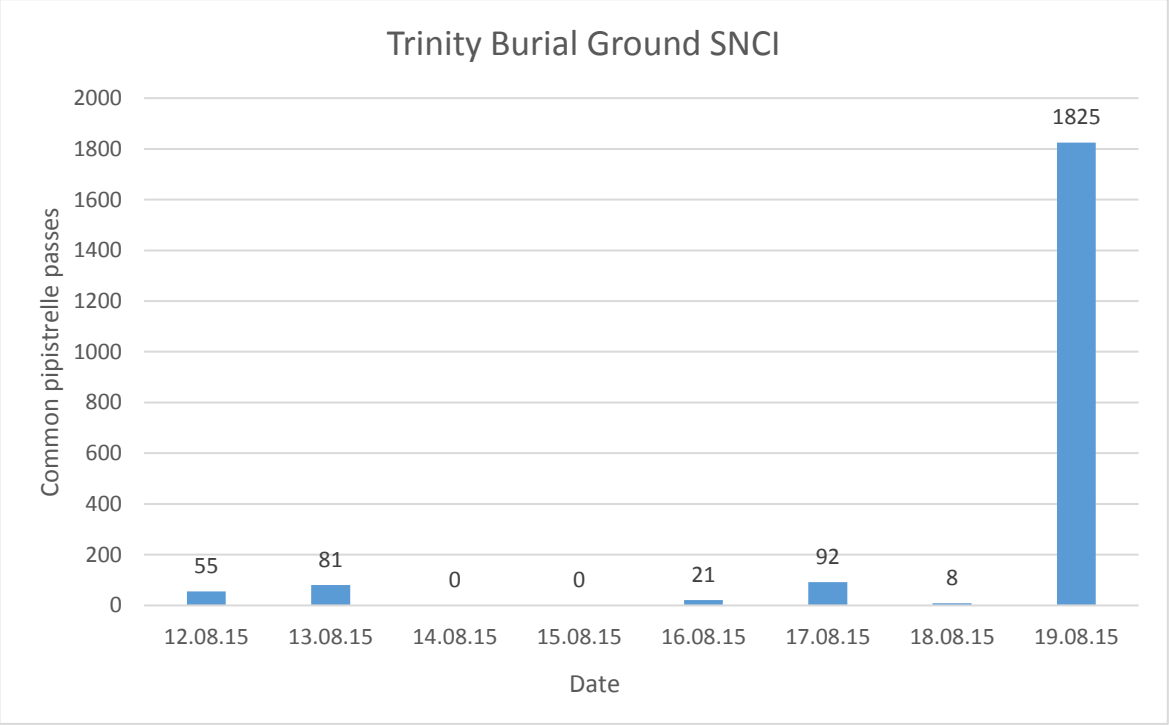
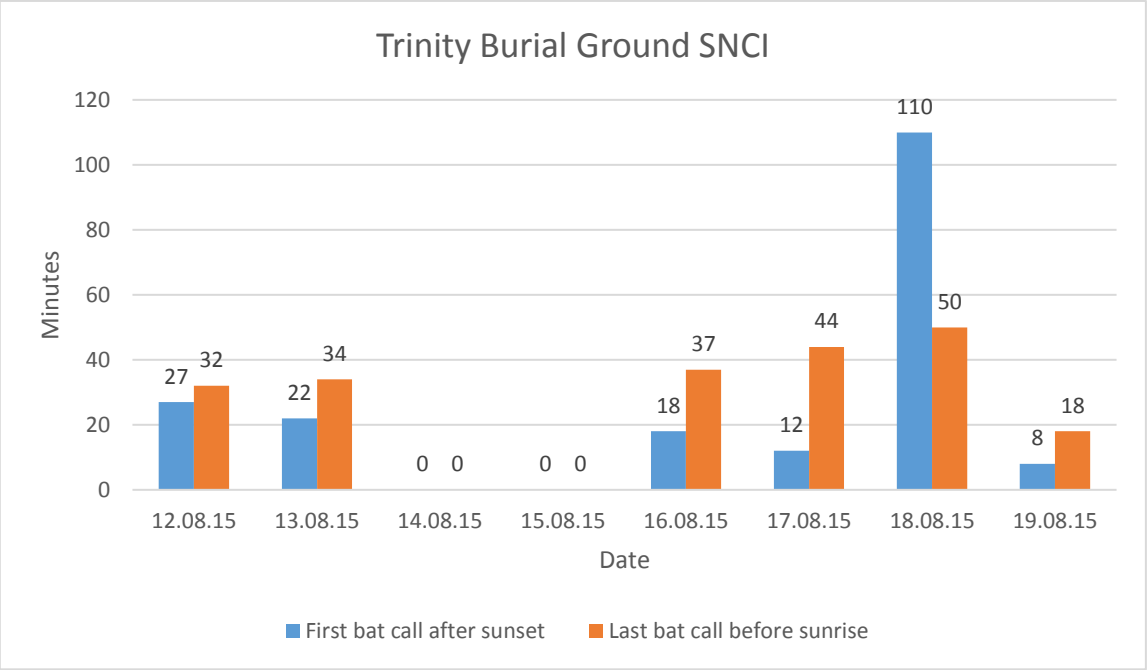


Figure 8: Chart to show length of time after sunset of first bat recorded and length of time before dawn of last bat recorded at Trinity Burial Ground SNCI



5.4.2 All bat species recorded were common pipistrelles. It is likely that a small number of common pipistrelle bats were foraging in the SNCI as observed during the dusk emergence survey undertaken on the 12 August 2015. Two of the first bat calls recorded were eight and twelve minutes after sunset, indicating that they emerged from a roost close to the bat detector.

6. 2016 field survey results

6.1 Introduction

6.1.1 The findings of bat surveys, and the recommendations based on those findings, remain valid for two years. The purpose of the 2016 surveys was to update the results obtained in 2013 and to take into account changes in the site boundary, which included additional site compounds.

6.1.2 The surveys were undertaken by Diane Wood (Senior Ecologist, MMS), who holds a holds a level 2 Natural England bat class licence (registration number 2015-13155-CLS-CLS), with the assistance of Adam West (Graduate Ecologist, MMS), who also holds a level 2 Natural England bat class licence (registration number 2016-24724-CLS-CLS), Ryan Bolton (Intern, MMS) and James Lamb (Casual Field Ecologist, MMS).

6.1.3 A summary of the results of the surveys are presented below with full results provided in Appendix F. The field surveys were undertaken between the 22 July and 28 September 2016, surveyor locations are provided in Appendix G.

6.1.4 The extent and location of all habitat types within the survey area are shown on Appendix H. As in 2013, the majority of the habitat within the survey area is of limited value to bats due to the dominance of hard standing with isolated areas of amenity grassland and ornamental planting. The only area of semi natural habitat of potential value to bats is within Trinity Burial Ground SNCI, an area of urban parkland with many mature trees. Small urban parks, scattered roadside trees and areas of introduced scrub also provide some limited potential foraging habitat for bats. In 2016, seven potential temporary construction site compounds, a potential area for creation of public open space and recovery options have been selected outside of the main site boundary to facilitate the works. These also provide some limited potential foraging habitat for bats.

6.1.5 The locations of all buildings and trees surveyed for the presence/likely absence of bat roosts are shown in Appendix J. The Castle Buildings, Earl De Grey public house, Myton Centre (Area for creation of open space), and a disused substation in potential site compound C (Tower Street Wharf north and south) are located within the survey area.

6.2 Bat roost potential assessment

6.2.1 Upon re-inspection, the structures within the survey area which had been assessed in 2013 were found to be unchanged, with the exception of the ARC building which had been demolished in the intervening period and the Myton Centre (Area for creation of open space) which had previously been assessed as

having negligible bat roost potential but had low bat roost potential in 2016. The results of the 2013 roost potential assessment on the remaining buildings (Section 4.3) remain valid for 2016. Following changes to the red line boundary, a further structure was assessed for bat roost potential (Table 12: Description of buildings and bat roost potential). It was noted during the emergence survey of the Earl de Grey public house on 24 August 2016 that refurbishment work had been carried out on this building. This included re-boarding of all windows and re-painting the rendering on the building. The roof appeared unchanged and as the potential roost features identified on this building were confined to the roof, the refurbishment had no impact on its assessed suitability for roosting bats.

6.2.2 In addition to the buildings assessed in 2013, a further structure was assessed in 2016 following changes to encompass a number of potential site compounds. One such potential compound (Compound Site C Tower Street Wharf north and south which is now removed from the Scheme) contained a disused substation. The assessment of these buildings is summarised in Table 24: Description of buildings and bat roost potential.

Table 24: Description of buildings and bat roost potential

Building name	General external description	Internal description	Potential roosting features	Building photograph
Disused Sub-station in Potential Compound Tower Street Wharf north and south (now removed from the Scheme)	Small utility building. The building is of modern design and is constructed from brick. The roofing consists of a flat, felt covered roof which was in good condition. Wooden fascia and soffit boarding ran the length of the building's northern and eastern elevations.	Only a small portion of the interior was accessible. No potential roost features were identified in this section.	Numerous gaps between external wall and wooden soffit. Access into the building's interior through unglazed circular window on northern elevation. Access into the building's interior through slatted door in eastern elevation.	 

Building name	General external description	Internal description	Potential roosting features	Building photograph
Myton Centre	Mid-sized office building. The building is of modern design and is constructed from brick. The roofing consists of a flat, felt covered roof which was in good condition. Wooden fascia and soffit boarding ran the length of the building's roof perimeter.	No internal inspection was performed.	Small number of gaps between external wall and wooden soffit on south elevation. Damaged soffit box on western elevation allowing access into soffit box.	

6.3 Surveyors and weather conditions

6.3.1 The surveys were led by Diane Wood MCIEEM (Senior Ecologist, MMS) who holds a level 2 Natural England bat class licence (registration number 2015-13155-CLS-CLS) or Adam West (Graduate Ecologist, MMS) who holds a level 2 Natural England bat class licence (registration number 2016-24724-CLS-CLS), assisted by Ryan Bolton (Intern, MMS) and James Lamb (Casual Field Ecologist, MMS).

6.3.2 Details of the surveyors used in each survey are included in Appendix F alongside the full survey data. Diane Wood and Adam West took part in all survey visits, providing an element of surveyor consistency.

6.3.3 Weather conditions during each roost presence/absence survey and the commuting routes survey are also detailed in Appendix F with the full survey data. Weather conditions during activity surveys are presented in section 6.4.

6.4 Roost presence/absence surveys

6.4.1 Section 6.4 should be read with reference to Appendix F, which shows the surveyor locations during the dusk emergence and dawn re-entry surveys. Full survey results are also presented in Appendix F. Information on dates, timing, weather conditions and surveyors are given for each survey in Table 25: Survey dates, weather and surveyor locations below.

Table 25: Survey dates, weather and surveyor locations

Survey site & type	Date & time	Sunrise/sunset	Weather conditions	Surveyors
Proposed Compound Tower Street (now removed from the Scheme) Dusk emergence	21/7/16 20:50-22:46	21:16	Rain: None Cloud cover: 100% Wind: F1 (Beaufort scale) Temperature: 18°C	D. Wood A. West
Earl de Grey public house Dusk emergence	24/8/16 19:46–20:55	20:09	Rain: None then started at 20:46 Cloud cover: 100% Wind: F1 (Beaufort scale) Temperature: 18°C	D. Wood A. West
Castle Buildings	14/9/16	19:18	Rain: None	D. Wood

Dusk emergence	19:04-20:12		Cloud cover: 100% Wind: F1 (Beaufort scale) Temperature: 15°C	A. West
Myton Centre Dusk emergence	28/9/16 18:19 – 20:06	18:44	Rain: none Cloud cover: 80% Wind: F1 (Beaufort scale) Temperature: 21°C	D. Wood A. West

6.4.2 No further survey work was completed at the remaining buildings assessed for bat roost potential, as follows:

- Arco garage
- Holiday Inn substation
- Holiday Inn
- substations 1 and 2

6.4.3 These buildings were assessed as having negligible bat roost potential and will not be impacted by works on the Scheme with the exception of Holiday Inn substation which is to be demolished. In addition, the ARC building was demolished between the 2013 and 2016 bat roost potential surveys being undertaken.

Survey results

22/7/2016 Proposed compound (Tower Street North and South) emergency survey

6.4.4 The first bat was noted at 21:41, 25 minutes after sunset. A total of six bat passes were recorded, with the final bat detected at 21:53. Commuting behaviour only was observed. One species was identified in this survey: common pipistrelle. No bats were observed to emerge from the structure being surveyed. This compound has now been removed from the Scheme.

24/8/2016 Earl de Grey public house emergency survey

6.4.5 No bats were detected during this survey. The survey was ended prematurely due to rain commencing 1 hour and nine minutes after the survey began. The survey duration was considered to be long enough to have observed any emerging bats (Section 2.4). However, none were detected.

14/9/2016 Castle Buildings emergency survey

6.4.6 The first bat was noted at 19:51, 33 minutes after sunset. A total of two bat passes were recorded, with the final bat detected at 19:52. Commuting behaviour only was observed. One species was identified in this survey: common pipistrelle. No bats were observed to emerge from the structure being surveyed.

28/9/2016 Myton Centre emergency survey

6.4.7 The first bat was noted at 19:09, 25 minutes after sunset. The final bat detection was made at 19:29. Commuting and foraging behaviour was observed along the A63 roadside trees. One species was identified in this survey: common pipistrelle. No bats were observed to emerge from the structure being surveyed.

6.5 Bat activity surveys

6.5.1 Section 6.5 should be read with reference to Appendix D, which shows the transect routes. Full survey results are presented in Appendix F. Information on dates, timing, weather conditions and surveyors are given for each survey in Table 26: Survey dates, weather and surveyors below.

Table 26: Survey dates, weather and surveyors

Survey site & type	Date & time	Sunrise sunset	Weather conditions	Surveyors
Transect A Activity survey	25/7/16 21:08-22:54	21:08	Rain: none Cloud cover: 100% Wind: F1(Beaufort scale) Temperature: 18°C	A. West J. Lamb
Transect B Activity survey	28/7/16 21:05-22:43	21:05	Rain: none Cloud cover: 90% Wind: F1(Beaufort scale) Temperature: 16°C	A. West R. Bolton
Transect B Activity survey	4/8/16 20:52-22:49	20:52	Rain: none Cloud cover: 60% Wind: F2(Beaufort scale) Temperature: 17°C	A. West J. Lamb
Transect A Activity survey	4/8/16 20:52-22:49	20:52	Rain: none Cloud cover: 60% Wind: F2(Beaufort scale)	D. Wood R. Bolton

Survey site & type	Date & time	Sunrise sunset	Weather conditions	Surveyors
			Temperature: 17°C	
Transect A Activity survey	10/8/16 21:07-22:26	20:40	Rain: light drizzle Cloud cover: 100% Wind: F1(Beaufort scale) Temperature: 14°C	D. Wood R. Bolton
Transect B Activity survey	10/8/16 21:07-22:26	20:40	Rain: light drizzle Cloud cover: 100% Wind: F1(Beaufort scale) Temperature: 14°C	A. West J. Lamb

Survey results

25/7/2016 Transect A

6.5.2 The first bat was noted at 21:46, 38 minutes after sunset. A total of eight bat passes were recorded, with the final bat detected at 22:21. Commuting and foraging behaviour was observed. One species was identified in this survey: common pipistrelle.

28/7/2016 Transect B

6.5.3 One bat pass was recorded in this survey at 22:23, one hour and 15 minutes after sunset. Commuting behaviour only was observed. One species was identified in this survey: common pipistrelle.

4/8/2016 Transect A

6.5.4 One bat was seen during this survey at 21:59, one hour and seven minutes after sunset. Commuting behaviour only was observed. One species was identified in this survey: common pipistrelle.

4/8/2016 Transect B

6.5.5 One bat was seen during this survey at 21:11, 19 minutes after sunset. Commuting behaviour only was observed. One species was identified in this survey: common pipistrelle.

10/8/2016 Transect A

6.5.6 Several bats were detected during this survey at a number of locations around the transect route. The first bat was detected at 21:28, 48 minutes after sunset. Commuting and foraging behaviours were observed. One species was identified in this survey: common pipistrelle.

10/8/2016 Transect B

6.5.7 Bats were recorded at two locations during this survey. The first at 22:09, one hour and 29 minutes after sunset. Commuting behaviour only was observed. One species was identified in this survey: common pipistrelle.

6.6 Commuting route surveys

6.6.1 Section 6.6 should be read with reference to Appendix I, which shows the surveyor locations. Full survey results are presented in Appendix F. Information on dates, timing, weather conditions and surveyors are given for each survey in Table 27: Survey dates, weather and surveyors below.

Table 27: Survey dates, weather and surveyors

Survey site & type	Date & time	Sunrise/sunset	Weather conditions	Surveyors
Mytongate Junction Commuting route survey	14/9/16 20:19-21:00	19:18	Rain: None Cloud cover: 100% Wind: F1 (Beaufort scale) Temperature: 15°C	D Wood A West

Survey results

14/9/2016 Commuting route survey north west of Mytongate Junction

6.6.2 The first bat was noted at 20:20, one hour and one minute after sunset. A total of six bat passes were recorded, with the final bat detected at 21:02. Commuting and foraging behaviour was observed. One species was identified in this survey: common pipistrelle. All bats recorded were foraging within trees on the Mytongate Junction roundabout or around the canopies of roadside trees. No evidence of bats commuting across the roundabout was discovered.

14/9/2016 Commuting route survey south east of Mytongate Junction

6.6.3 The first bat was noted at 20:21, one hour and two minutes after sunset. A total of 11 bat passes were recorded, with the final bat detected at 20:54. Commuting and foraging behaviour was observed. One species was identified in this survey: common pipistrelle. All bats recorded were foraging within, or at the margin of, Trinity Burial Ground. No evidence of bats commuting across the roundabout was discovered.

7. 2017 field survey results

7.1 Introduction

7.1.1 The findings of bat surveys, and the recommendations based on those findings, remain valid for two years. The purpose of the 2017 surveys was to update the results obtained in 2015 and to take into account changes in the site boundary, which included an additional site compound.

7.1.2 The surveys were undertaken by Diane Wood (Principal Ecologist, MMS), who holds a holds a level 2 Natural England bat class licence (registration number 2015-13155-CLS-CLS), Adam West (Assistant Ecologist, MMS), who also holds a level 2 Natural England bat class licence (registration number 2016-24724-CLS-CLS), Ishbel Campbell (Consultant Ecologist, MMS) and Beth Mell (Graduate Ecologist, MMS).

7.1.3 A summary of the results of the surveys are presented below with full results provided in Appendix F. The field surveys were undertaken on the 14 and 19 September 2017, surveyor locations are provided in Appendix G.

7.1.4 The extent and location of all habitat types within the survey area are shown on Appendix H. As in 2015, the majority of the habitat within the survey area is of limited value to bats due to the dominance of hard standing with isolated areas of amenity grassland and ornamental planting. The only area of semi natural habitat of potential value to bats is within Trinity Burial Ground SNCI, an area of urban parkland with many mature trees. Small urban parks, scattered roadside trees and areas of introduced scrub also provide some limited potential foraging habitat for bats. In 2017, one additional potential temporary construction site compound has been selected outside of the main site boundary, at William Oak Park, to facilitate the works. This additional site also provides some limited potential foraging habitat for bats.

7.2 Surveyors and weather conditions

7.2.1 Details of the surveyors used in each survey are included in Appendix F alongside the full survey data. Adam West took part in all survey visits, providing an element of surveyor consistency.

7.2.2 Weather conditions during each survey are also detailed in Appendix F with the full survey data.

7.3 Roost presence/absence survey

Trinity Burial Ground SNCI

7.3.1 A single dusk emergence survey was completed within the Trinity Burial Ground SNCI. Four surveyors were used, distributed within the burial ground to observe the trees previously identified as having potential for roosting bats. Surveyor locations are given in Appendix G.

7.3.2 A summary of the results of the surveys are presented below. The field survey was undertaken on 14 September 2017. Details of the surveyors used in each survey are included in Appendix F alongside the full survey data.

7.3.3 The first bat, a common pipistrelle, was recorded at 19:32, 13 minutes after sunset. Frequent to constant foraging by a small number of common pipistrelle bats (maximum of two bats seen at any one time) was observed throughout the burial ground, with bats recorded by all surveyors. No roosting activity associated with the burial ground trees was found during the survey.

7.4 Bat activity survey

William Oak Park

7.4.1 A single dusk activity survey was completed within William Oak Park. Bat activity surveys typically involve a walked transect with predetermined listening points along the transect route. Given the small size of William Oak Park, approximately 0.2 hectares, the typical methodology was deemed inappropriate. Instead, two surveyors were deployed within the park in static positions. This was sufficient to accurately assess the level and nature of bat activity within the park. Surveyor locations are given in Appendix G.

7.4.2 A summary of the results of the surveys are presented below. The field survey was undertaken on 19 September 2017. Details of the surveyors used in each survey are included in Appendix F alongside the full survey data.

7.4.3 The first bat was noted at 19:17, 10 minutes after sunset. A total of 16 bat passes were recorded by Adam West and 16 bat passes by Beth Mell. The final bat was detected at 20:32. Commuting and foraging behaviour was observed. One species only was identified during this survey: common pipistrelle. Up to three bats were observed at one time. No bats were observed emerging from trees on site.

8. Summary and interpretation of results

8.1 Bat species recorded

8.1.1 Four bat species were recorded during the targeted bat surveys in 2013, but the vast majority of activity was by common pipistrelle bats. In 2015, 2016 and 2017, across all surveys, common pipistrelle bats only were recorded.

8.1.2 Two single passes by a noctule were recorded in late August and late September 2013. Noctules are fast, high flying bats which are adapted to hunting insects at high altitudes over a wide variety of habitats, including cities. The single recorded registrations are indicative of a high flying commuting noctule passing over the site and given the absence of repeated passes over a short space of time may indicate foraging behaviour. Therefore, noctules are not considered to use the habitats within the survey area and would not be affected by the Scheme.

8.1.3 Single recordings of Nathusius' pipistrelle and an unidentified bat of the *Myotis* genus were recorded in August and September 2013. Typical habitat for both Nathusius' pipistrelle and Myotis species generally comprises semi natural habitats of woodland and areas of open water. These species are not usually associated with heavily built-up urban environments. The single recordings during late summer and early autumn are likely indicative of individuals migrating through the area, rather than being regularly present. Therefore, these species are not likely to be impacted by the Scheme.

8.1.4 Nathusius' pipistrelle is known to undertake seasonal, long-distance (over 1,000 km) migrations between summer and winter hibernation roosts in continental Europe. There is uncertainty of the migratory movements of the species in the UK, though there is a growing body of evidence to suggest the seasonal migratory movement of the species between the UK and continental Europe, including recent research conducted at Spurn Point (Yorkshire Wildlife Trust Nature Reserve) located at the mouth of the Humber Estuary.

8.2 Summary of survey results

Bat roost surveys

8.2.1 During the 2013, 2015 and 2016 emergence and re-entry surveys, no bat roosts were identified in the Castle Buildings, Earl De Grey public house or Trinity Burial Ground SNCI. The Castle Buildings and Earl de Grey free house were assessed as having high potential for roosting bats and targeted surveys were necessary to determine the presence or absence of roosts. Four dusk/dawn surveys throughout summer and autumn 2013 revealed no signs of roosting activity within either building. Furthermore, automated monitoring data from the exterior of the Castle

Buildings did not indicate roost presence. The data showed a wide range of timings for the first bat detected after sunset (mean timing of 95 minutes after sunset), whereas regular first registrations within 30 minutes after sunset would be expected if the building was used as a roost site. Pipistrelle bats can use a variety of crevices in buildings in an area on an occasional basis. This may explain the historical record of a single common pipistrelle roosting behind a boarded up window on the Castle Buildings in 2005. The 2013 surveys detected foraging around roadside trees to the east of the Earl De Grey public house. A commuting route was incidentally discovered to the west of the Castle Building, with bats flying south towards Trinity Burial Ground SNCI.

8.2.2 During the 2015 and 2016 update surveys, commuting behaviour only was observed around the Castle Buildings and Earl de Grey public house. Common pipistrelle was the only species recorded during the emergence and re-entry surveys and the timings of the first bat recorded was at least 30 minutes after sunset and last bat recorded was at least 30 minutes before dawn, indicating roosting in or close to the buildings is less likely. The exception was the dusk emergence survey on 25 September 2015 where the first bat was seen 9 minutes after sunset. This bat was clearly observed commuting overhead to Trinity Burial Ground SNCI.

8.2.3 The 2016 emergence surveys found no roosting bats in the substation in potential compound Tower Street (since removed from the Scheme) or in the Myton Centre. Common pipistrelle were the only species recorded. Bats were observed foraging along the A63 roadside trees in the Myton Centre and commuting towards the River Hull at Tower Street.

8.2.4 The 2013 surveys found no bat roosts were identified within any of the trees within Trinity Burial Ground SNCI during the dusk emergence and dawn re-entry surveys. Foraging common pipistrelle bats only were observed flying out of the burial ground across the road to the north near dawn, suggesting that the bats roost elsewhere. The update surveys in 2015 found the earliest first bat after sunset was 21 minutes later. All bats were common pipistrelle and it was observed that a small number of these bats were foraging for prolonged periods in the SNCI. No roosts were recorded. The update surveys in 2017 found the earliest first bat after sunset was 13 minutes later. All bats were common pipistrelle and it was observed that a small number of these bats were foraging for prolonged periods in the SNCI. No roosts were recorded.

Automated surveys

8.2.5 Automated surveys were performed in 2013 at the Castle Buildings. Low levels of activity were detected with the majority of activity associated with common pipistrelle commuting behaviour. During dusk emergence surveys at the Castle

Buildings, an incidental observation was made of a common pipistrelle commuting route. A maximum of eight individual bats were observed flying from the direction of a group of buildings to the north of the survey area, past the Castle Buildings and over the A63 into Trinity Burial Ground. Registrations recorded on the automated detector on the Castle Buildings are considered to be from bats commuting along this route. The status or location of roosting associated with this commuting route was not fully determined as it was outside the survey area and would not be affected by the Scheme. Two passes by of noctule and a single pass by of an unidentified species of the genus Myotis were also recorded.

8.2.6 The automated surveys in 2013 and 2015 conducted in Trinity Burial Ground SNCI revealed much higher levels of activity. The majority of activity was associated with one species, common pipistrelle. A single Nathusius' pipistrelle pass was also recorded. The results from Trinity Burial Ground SNCI indicate that small numbers of common pipistrelle forage consistently at this site throughout the summer months.

Activity surveys

8.2.7 Activity surveys were performed in 2013, 2016 and 2017. Foraging and commuting behaviour was observed. Common pipistrelle was the only species recorded during the activity surveys. Low levels of activity were recorded across the majority of transects. In 2013 and 2016, bat activity was concentrated on Trinity Burial Ground SNCI where small numbers of bats were observed foraging. 2013 surveys also recorded persistent foraging in a small park to the north west of Mytongate Junction, William Oak Park. 2016 surveys recorded low levels of foraging around roadside trees in this area. An update survey of William Oak Park in 2017 recorded common pipistrelle only. Low levels of activity were recorded, with a small number of individuals foraging in the park.

Commuting route surveys

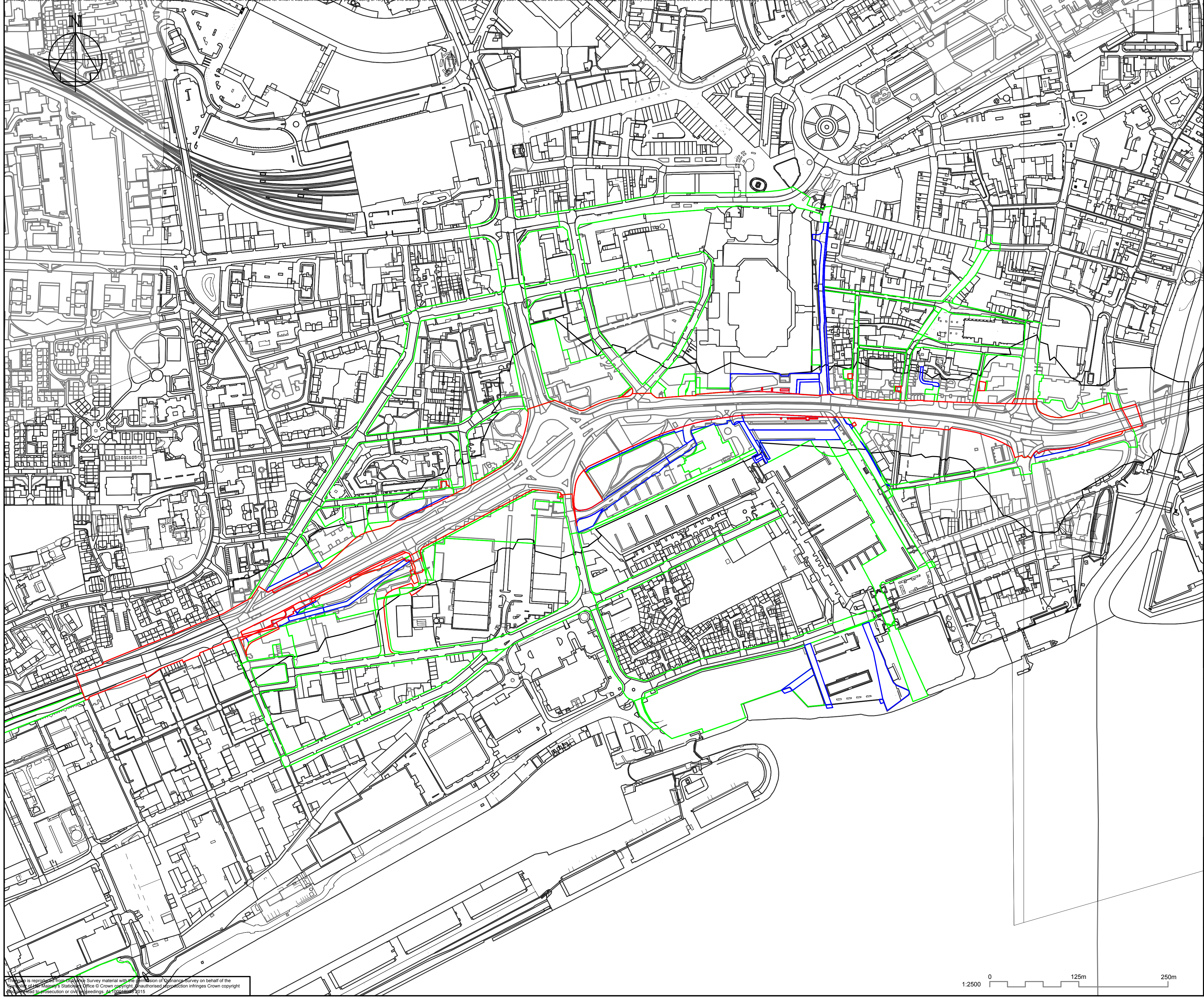
8.2.8 Commuting route surveys were performed in 2013 and 2016. In 2013, bats were observed to use the trees on the Mytongate Junction roundabout as a 'hop-over' crossing point between the small park to the north west of the junction and Trinity Burial Ground SNCI to the south east. Bats were observed foraging in the small park to the north west of Mytongate Junction, around the trees on the roundabout, and within and at the margins of Trinity Burial Ground SNCI. Common pipistrelle was the only species recorded during the surveys. No obvious commuting routes were observed in 2016 during the commuting route surveys, but bats were observed flying from north of the A63 to the SNCI during the emergence surveys of the Castle Buildings and the Earl de Grey public house.

8.3 Interpretation of results

8.3.1 Bat activity within the survey boundary is considered to be low, and dominated by a single species; common pipistrelle. Of the other species recorded, noctules and Nathusius' pipistrelle is known to be migratory. The data suggest that these species were recorded passing through the site and are not normally resident in, or dependent upon, habitat features within the site. The single Myotis pass recorded suggests that this species is also not normally resident.

8.3.2 No bats were observed to be roosting in any of the structures surveyed. Bat behaviour observed was commuting and foraging. Bat activity was concentrated on Trinity Burial Ground SNCI, which is an important foraging habitat for the local common pipistrelle bat population. The park to the north west of the junction is also frequently used by foraging bats. Two commuting routes were identified at Mytongate Junction, both of which connect Trinity Burial Ground SNCI with habitats to the north, reinforcing its importance as a feeding resource.

Appendix A: Site map



Notes

Key to symbols

- PERMANENT LAND TAKE BOUNDARY
- PERMANENT RIGHTS BOUNDARY
- TEMPORARY LAND TAKE BOUNDARY

Rev	Date	Amendment Details	Drw'n	Chk'd	App'd
P03	14/09/18	SCHEME BOUNDARY EXTENTS AMENDED	VM	DW	LC
P02	16/08/18	ISSUED FOR HE APPROVAL	VM	DW	LC
P01	31/01/18	ISSUED FOR REVIEW & COMMENT	RE	DW	LC

Mott MacDonald Sweco

Client

highways england

Drawing Status: SHARED

Suitability: S4

Project Title

A63 CASTLE STREET IMPROVEMENTS, HULL

Drawing Title

SITE MAP

Scale	Designed	Drawn	Checked	Approved
1:2500	West, Adam	Ebbs, Ray	Wood, Diane	Cottrell, Linsey
Original Size: A1	Date: 31/01/18	Date: 31/01/18	Date: 31/01/18	Date: 31/01/18

Drawing Number

HE PIN | Originator | Volume

514508- MMSJV- VES -

S0 - DR - LE - 200001

Location | Type | Role | Number

Project Ref. No.: 514508

Revision: P03

pw:\\MCCNTSI04.global.arup.com:PW_ARUP_UK_HE\Documents\A63 Castle Street Improvements\04 Mott MacDonald Limited Sweco Limited JV\LE - Landscape and environment - Environmentalist\DR - Drawing\HE514508-MMSJV-VES-S0-DR-LE-200001

Appendix B: Legislation and policy

European and domestic legislation

All bats in the UK are protected under UK and European law as follows:

- Included in Annex II and IV of EC Directive 92/43/EEC on the Conservation of Natural Habitats and of the Wild Fauna and Flora (the Habitats Directive 1992) as obligated by the Bern Convention (1979) which implements the Conservation of Habitats and Species Regulations 2017 making it a European protected species (listed under Schedule 2).
- Schedule 5 of the Wildlife and Countryside Act (1981) (as amended by the Countryside Rights of Way Act 2000).
- Appendix II on the Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention).
- Section 41 of the Natural Environment and Rural Communities Act (2006).

Under these statutes, it is an offence to:

- Damage or destroy a bat roost (whether or not occupied by bats at the time).
- Intentionally or recklessly obstruct access to a bat roost.
- Intentionally or recklessly disturb a bat in its roost, or deliberately disturb a group of bats.
- Deliberately kill, injure or take any bat.

With specific reference to the offence of disturbance, Regulation 39(1) of the Conservation of Habitats and Species (Amendment) Regulations 2012 states that a person commits an offence if he:

> "*deliberately disturbs wild animals of any such species [i.e. a European Protected Species] in such a way as to be likely significantly to affect:*
>
> *(i) the ability of any significant group of animals of that species to survive, breed, or rear or nurture their young; or*
>
> *(ii) the local distribution or abundance of that species"*.

Where development will result in damage to, or obstruct access to, any bat roost (whether occupied or not) or risks harming or significantly disturbing bats, a European Protected

Species Licence (EPSL) is required from Natural England to allow the development to proceed.

Bats are also afforded more general protection in England (and Wales) within the Natural Environment and Rural Communities Act (NERC) 2006. This imposes a duty on all public bodies, including local authorities and statutory bodies, in exercising their functions, "*to have due regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity*" [Section 40 (1)]. It notes that "*conserving biodiversity includes restoring or enhancing a population or habitat*" [Section 40 (3)]. Consequently, attention should be given to dealing with the modification or development of an area if aspects of it are deemed important to bats, such as roosts, flight corridors and foraging areas.

Section 41 (S41) of this Act requires the Secretary of State to publish a list (in consultation with Natural England) of habitats and species which are of principal importance for the conservation of biodiversity in England. The S41 list is used to guide decision-makers such as public bodies including local and regional authorities, when carrying out their normal (e.g. planning) functions. The S41 list includes 65 habitats of principal importance and 1,150 species of principal importance.

Seven species of bats (soprano pipistrelle *Pipistrelleistrellus pygmaeus*, brown long-eared bat *Plecotus auritus*, greater horseshoe bat *Rhinolophus ferrumequinum*, lesser horseshoe bat, *Rhinolophus hipposideros*, barbastelle *Barbastella barbastellus*, Bechstein's bat *Myotis bechsteinii* and noctule *Nyctalus noctula*) are listed under Section 41 of the NERC Act 2006.

Local Biodiversity Action Plans (LBAP) identify habitat and species conservation priorities at a local level (typically at the County level), and are usually drawn up by a consortium of local government organisations and conservation charities. Common pipistrelle *Pipistrellus pipistrellus*, and Natterer's bat Myotis *nattererii*, and noctule *Nyctalus noctula* are included in the East Riding of Yorkshire Biodiversity Action Plan Strategy[4]. Pipistrelle *Pipistrellus sp.* bats are also included on the Hull Local Biodiversity Action Plan[5].

Planning and policy guidance: Natural England's standing advice

Natural England's standing advice to LPAs follows the principles and advice set out in the National Planning and Policy Framework (NPPF)[6]. If there is reasonable likelihood that a

[4] ERYC (2010) *East Riding of Yorkshire Biodiversity Action Plan Strategy, version 1.0*. East Riding of Yorkshire Council, Beverley, UK.

[5] Hull Biodiversity Partnership (2008) *Hull Biodiversity Action Plan*. Available online at: http://www.hull.ac.uk/HBP/ActionPlan/.

[6] Department for Communities and Local Government (March 2012) *National Planning Policy Framework*; Department for Communities and Local Government.

protected species is present, sufficient information (in the form of species surveys) should be undertaken before the planning application is considered.

The NPPF provides LPAs with principles to consider in planning applications. These include:

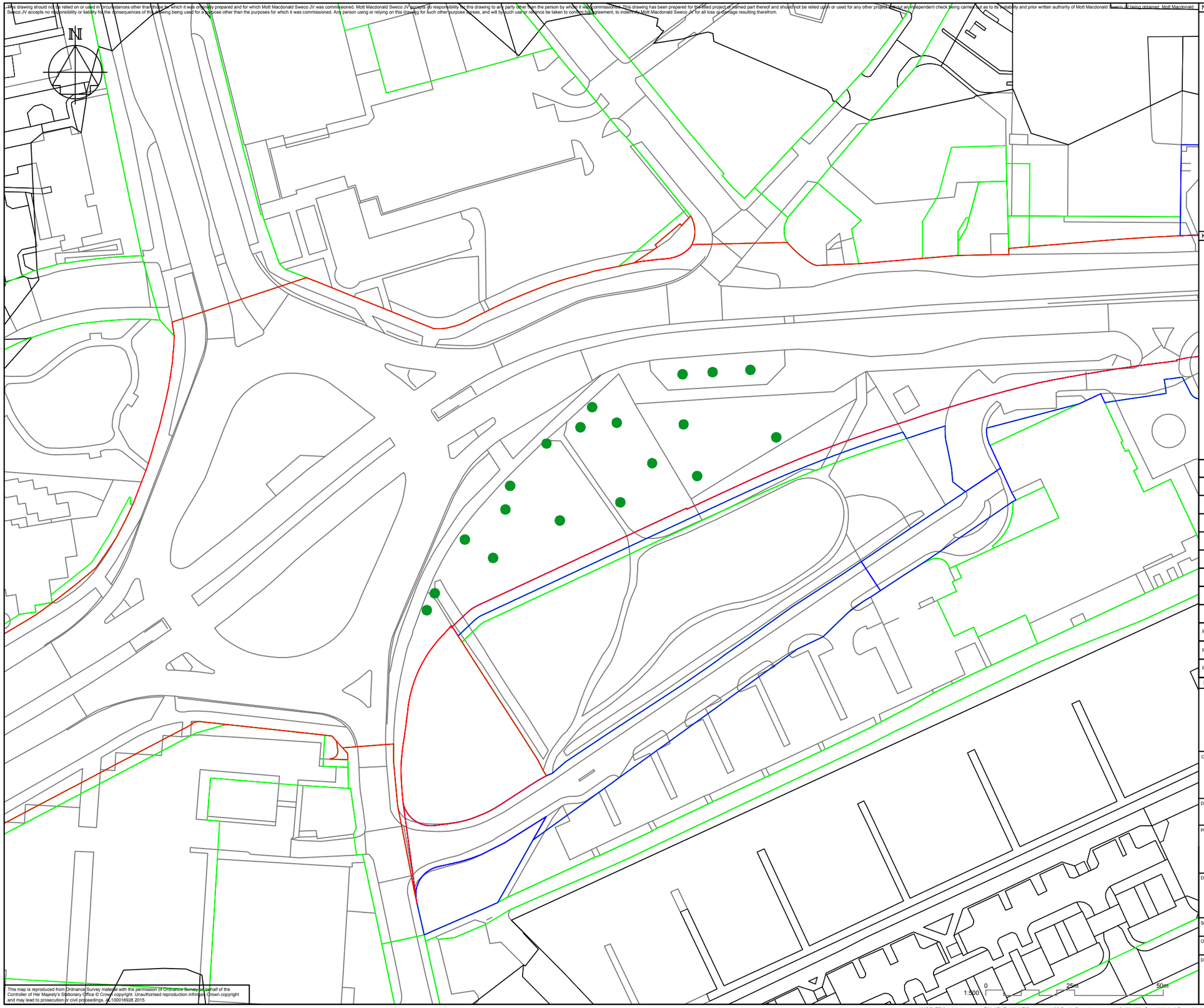
- Planning decisions should be based on up-to-date information about the environmental characteristics of the area. These characteristics should include the relevant biodiversity and geological resources of the area. In reviewing environmental characteristics, LPAs should assess the potential to sustain and enhance those resources;

- Planning decisions should aim to maintain, and enhance, restore or add to biodiversity and geological conservation interests. In taking decisions, local planning authorities should ensure that appropriate weight is attached to…..... protected species; and to biodiversity and geological interests within the wider environment. The aim of planning decisions should be to prevent harm to biodiversity and geological conservation interests. Where granting planning permission would result in significant harm to those interests, LPAs will need to be satisfied that the development cannot reasonably be located on any alternative sites that would result in less or no harm. In the absence of any such alternatives, LPAs should ensure that, before planning permission is granted, adequate mitigation measures are put in place. Where a planning decision would result in significant harm to biodiversity and geological interests which cannot be prevented or adequately mitigated against, appropriate compensation measures should be sought. If that significant harm cannot be prevented, adequately mitigated against, or compensated for, then planning permission should be refused.

The NPPF states that:

> *"It is essential that the presence or otherwise of protected species, and the extent that they may be affected by the proposed development, is established before the planning permission is granted, otherwise all relevant material considerations may not have been addressed in making the decision. The need to ensure ecological surveys are carried out should therefore only be left to coverage under planning conditions in exceptional circumstances, with the result that the surveys are carried out after planning permission has been granted. However, bearing in mind the delay and cost that may be involved, developers should not be required to undertake surveys for protected species unless there is a reasonable likelihood of the species being present and affected by the development. Where this is the case, the survey should be completed and any necessary measures to protect the species should be in place, through conditions and / or planning obligations, before the permission is granted."*

Appendix C: Location of trees & buildings assessed for bat roost potential



Notes

Key to symbols

- PERMANENT LAND TAKE BOUNDARY
- PERMANENT RIGHTS BOUNDARY
- TEMPORARY LAND TAKE BOUNDARY
- LOCATION OF TREES SURVEYED

Rev	Date	Amendment Details	Drw'n	Chk'd	App'd
P03	14/09/18	SCHEME BOUNDARY EXTENTS AMENDED	VM	DW	LC
P02	16/08/18	ISSUED FOR HE APPROVAL	VM	DW	LC
P01	31/01/18	ISSUED FOR REVIEW & COMMENT	RE	DW	LC

Mott MacDonald Sweco

Client: highways england

Drawing Status: SHARED

Suitability: S4

Project Title: A63 CASTLE STREET IMPROVEMENTS, HULL

Drawing Title: LOCATION OF TREES SURVEYED FOR BRP IN 2013

Scale	Designed	Drawn	Checked	Approved
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Original Size A1	Date 31/01/18	Date 31/01/18	Date 31/01/18	Date 31/01/18

Drawing Number: HE PIN 514508 - Originator MMSJV - Volume VES - Location S0 - Type DR - Role LE - Number 200002

Project Ref. No. 514508

Revision P03

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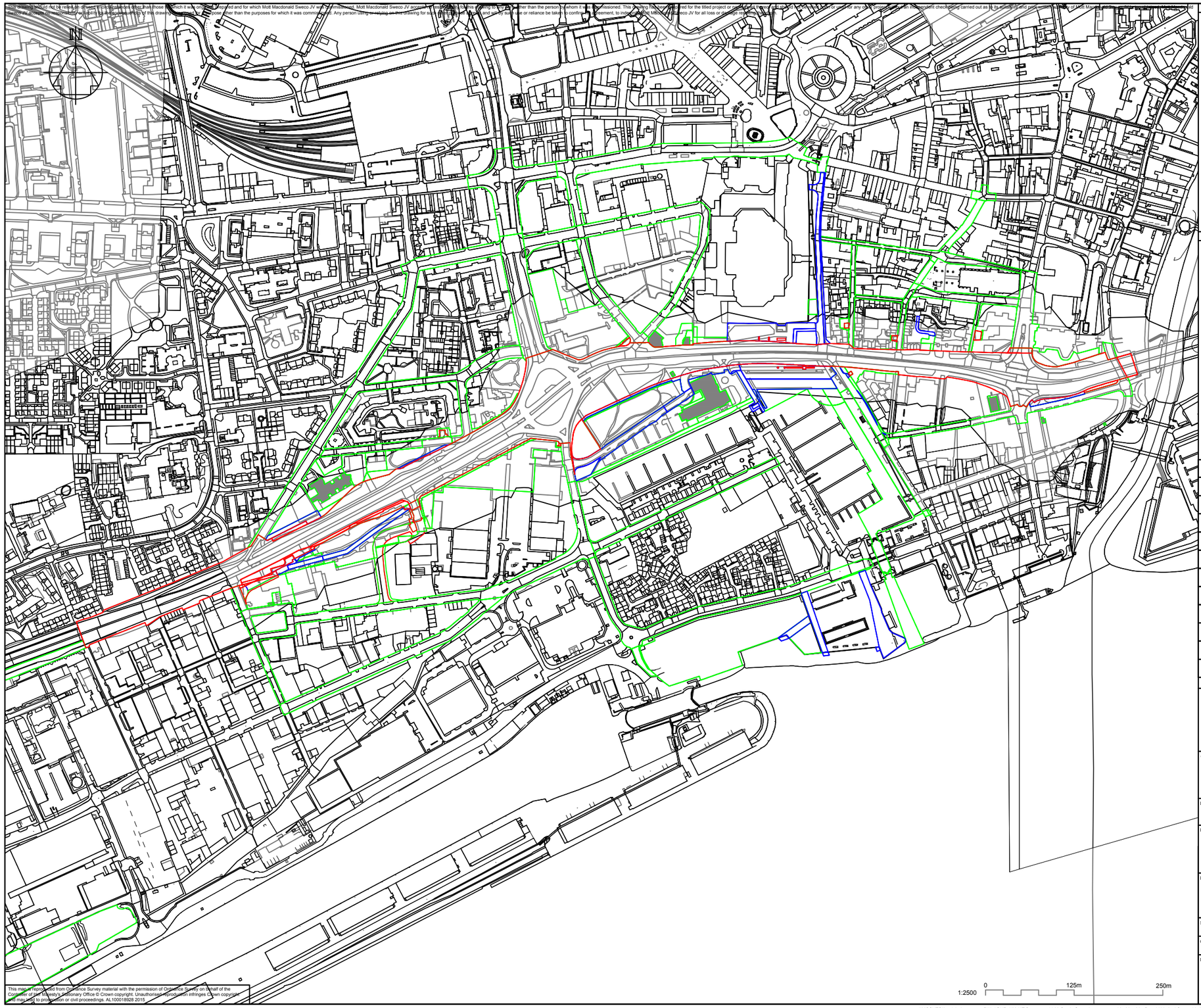

Notes

Key to symbols

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- PERMANENT RIGHTS BOUNDARY
- TEMPORARY LAND TAKE BOUNDARY
- BUILDINGS SURVEYED FOR BAT ROOST POTENTIAL

Rev	Date	Amendment Details	Drw'n	Chk'd	App'd
P03	14/09/18	SCHEME BOUNDARY EXTENTS AMENDED	VM	DW	LC
P02	16/08/18	ISSUED FOR HE APPROVAL	VM	DW	LC
P01	31/01/18	ISSUED FOR REVIEW & COMMENT	RE	DW	LC

Mott MacDonald Sweco

Client: highways england

Drawing Status: SHARED

Suitability: S4

Project Title: A63 CASTLE STREET IMPROVEMENTS, HULL

Drawing Title: BUILDINGS SURVEYED FOR BAT ROOST POTENTIAL

Scale	Designed	Drawn	Checked	Approved
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Original Size A1	Date 31/01/18	Date 31/01/18	Date 31/01/18	Date 31/01/18

Drawing Number: HE PIN | Originator | Volume | Location | Type | Role | Number

514508 - MMSJV - VES - S0 - DR - LE - 200003

Project Ref. No. 514508

Revision P03

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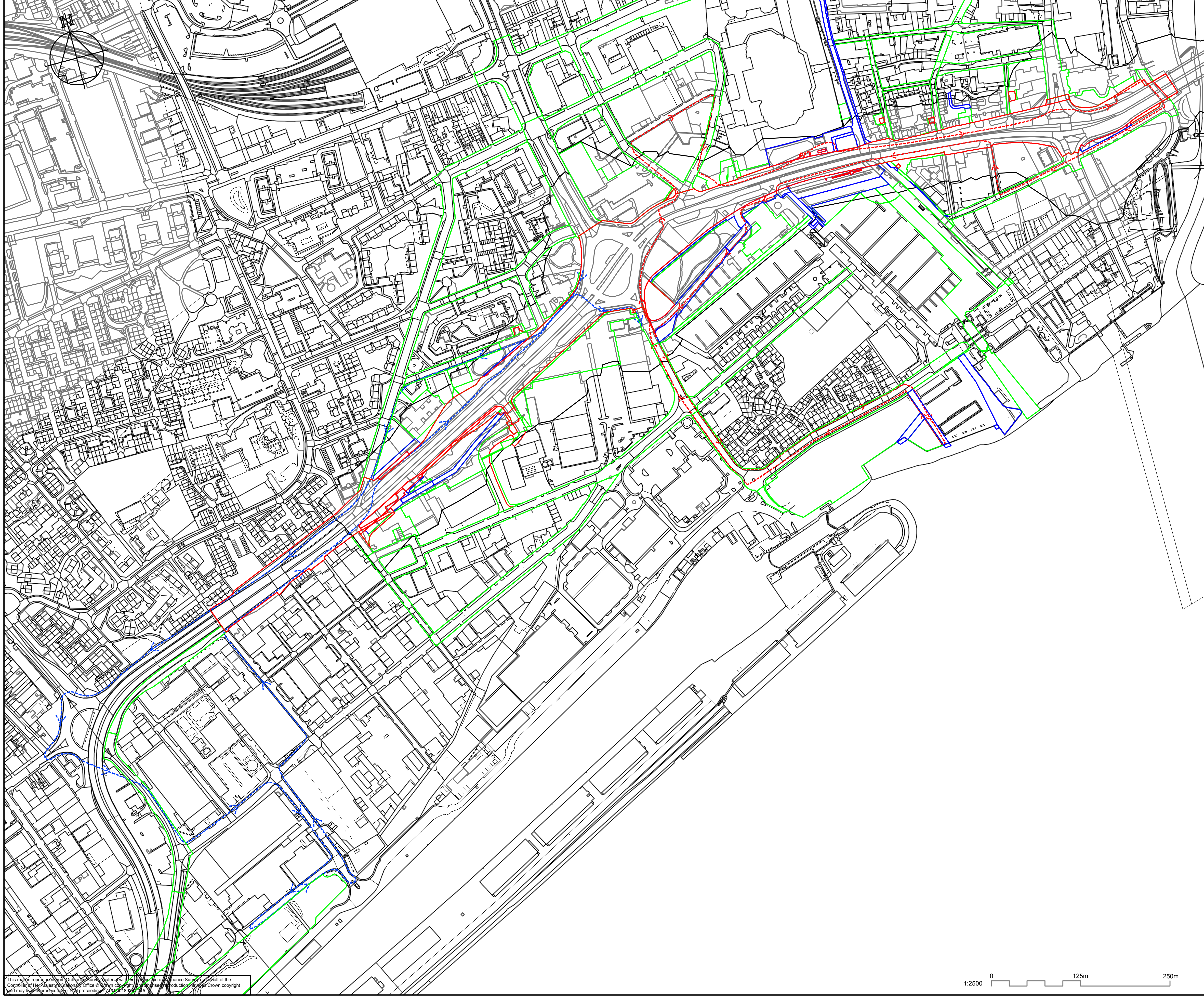
Appendix D: Bat transect routes



Notes

Key to symbols

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- PERMANENT RIGHTS BOUNDARY
- TEMPORARY LAND TAKE BOUNDARY
- TRANSECT A
- TRANSECT B

Rev	Date	Amendment Details	Drw'n	Chk'd	App'd
P03	14/09/18	SCHEME BOUNDARY EXTENTS AMENDED	VM	DW	LC
P02	16/08/18	ISSUED FOR HE APPROVAL	VM	DW	LC
P01	31/01/18	ISSUED FOR REVIEW & COMMENT	RE	DW	LC

Mott MacDonald Sweco

Client

highways england

Drawing Status: SHARED

Suitability: S4

Project Title

A63 CASTLE STREET IMPROVEMENTS, HULL

Drawing Title

BAT TRANSECTS

Scale	Designed	Drawn	Checked	Approved
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Original Size	Date	Date	Date	Date
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Drawing Number

HE PIN | Originator | Volume

514508 - MMSJV - VES -

S0 - DR - LE - 200004

Location | Type | Role | Number

Project Ref. No. 514508

Revision P03

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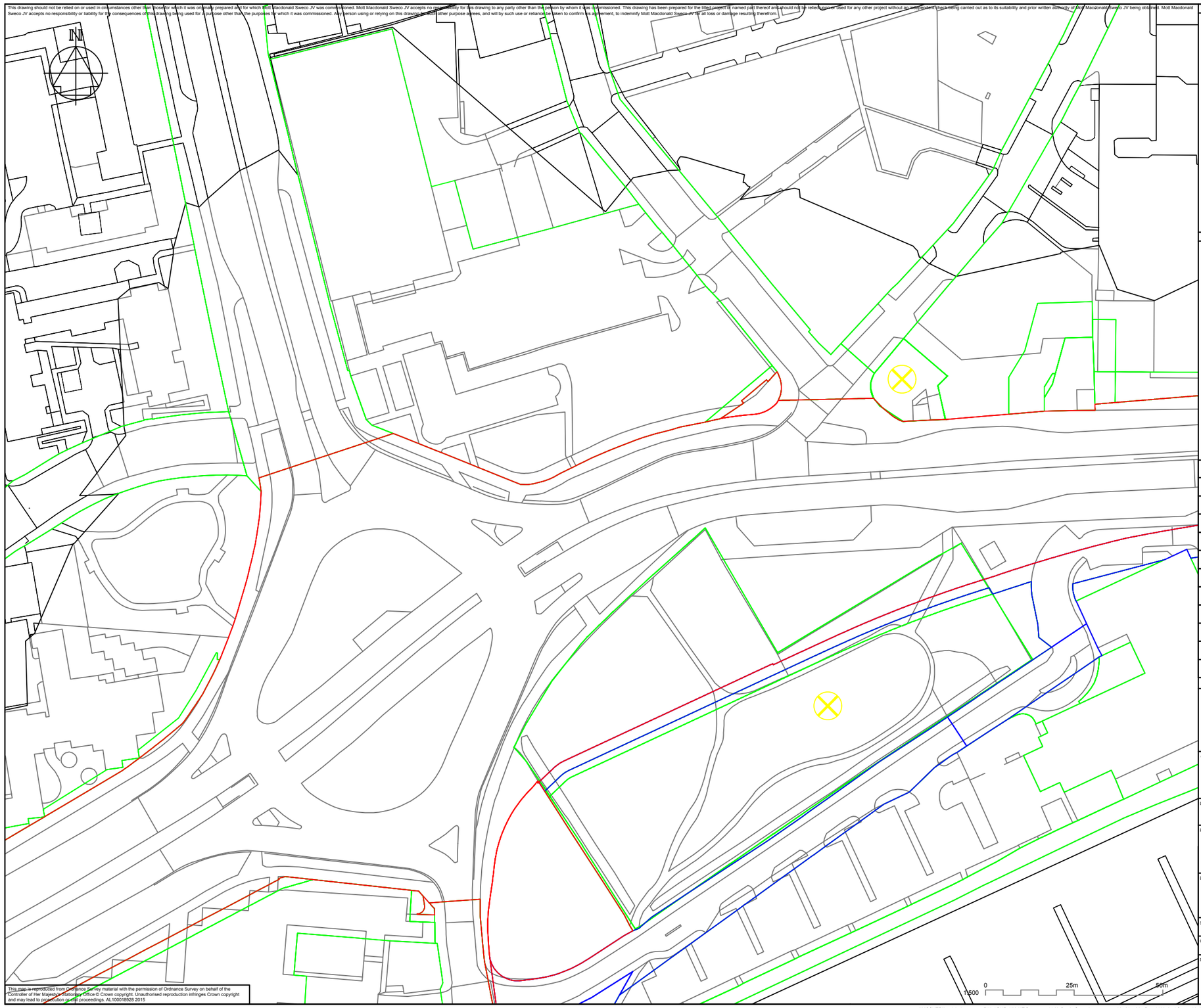
Appendix E: Location of static detectors during automated surveys



Notes

Key to symbols

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- PERMANENT RIGHTS BOUNDARY
- TEMPORARY LAND TAKE BOUNDARY
- DETECTOR LOCATION

Rev	Date	Amendment Details	Drw'n	Chk'd	App'd
P03	14/09/18	SCHEME BOUNDARY EXTENTS AMENDED	VM	DW	LC
P02	16/08/18	ISSUED FOR HE APPROVAL	VM	DW	LC
P01	31/01/18	ISSUED FOR REVIEW & COMMENT	RE	DW	LC

Mott MacDonald Sweco

Client: highways england

Drawing Status: SHARED

Suitability: S4

Project Title: A63 CASTLE STREET IMPROVEMENTS, HULL

Drawing Title: LOCATION OF STATIC DETECTORS DURING AUTOMATED SURVEYS

Scale	Designed	Drawn	Checked	Approved
1:500	Wood, Diane	Ebbs, Ray	Wood, Diane	Cottrell, Linsey
Original Size: A1	Date: 31/01/18	Date: 31/01/18	Date: 31/01/18	Date: 31/01/18

Drawing Number: 514508 - MMSJV - VES - S0 - DR - LE - 200005
(HE PIN | Originator | Volume | Location | Type | Role | Number)

Project Ref. No.: 514508

Revision: P03

pw:\\MCCNTSI04.global.arup.com:PW_ARUP_UK_HE\Documents\A63 Castle Street Improvements\04 Mott MacDonald Limited Sweco Limited JV\LE - Landscape and environment - Environmentalist\DR - Drawing\HE514508-MMSJV-VES-S0-DR-LE-200005

Appendix F: Full survey results

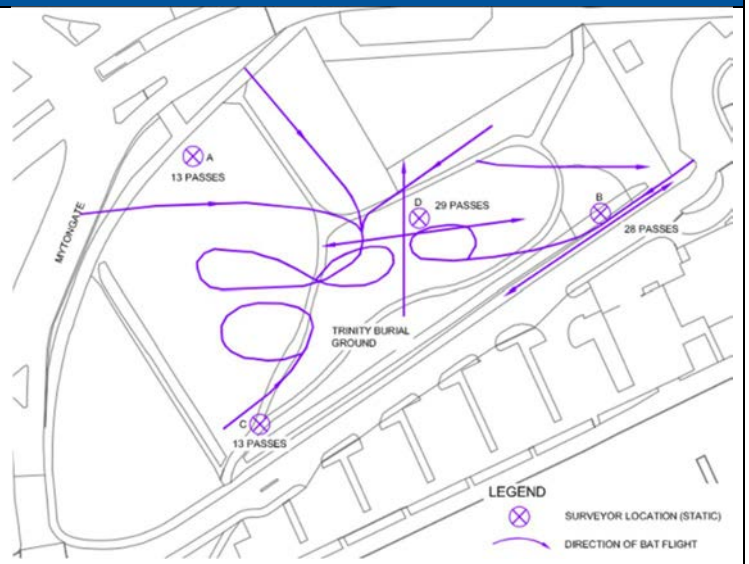
Trinity Burial Ground Emergence Survey					
Date	Time	Sunrise /sunset	Survey type	Surveyors	Weather
12/08/15	20:25-22:30	20:38	Dusk emergence	DW, MC, JH, LA	17ºC, C/C 100%, wind F0, dry

Survey results

Summary: no bats emerged from any of the trees within Trinity Burial Ground (TBG) during the survey. Extensive common pipistrelle commuting and foraging behaviour was observed within TBG.

Time	Species	No of bats	Activity	Plan ref
20:59	C. PIP	1	A- Flew west to east and foraged around centre of TBG	
21:00	C. PIP	1	C- Heard but not seen	
21:02	C. PIP	2	D- Foraging in circles ~5 m above ground	
21:04	C. PIP	1	A- Detected same bat passing every few minutes	
21:06	C. PIP	1	A- Same bat as detected at 21:04	
21:06	C. PIP	1	B- Commute from north east to south west along edge of TBG	
21:06	C. PIP	1	D- Flew south to north at ~2-3 m above ground	

Plan



21:07	C. PIP	1	A- Flew from north to south from Mytongate junction and foraged around centre of TBG		
21:07	C. PIP	1	B- Heard but not seen		
21:08	C. PIP	1	C- Foraging in circles around TBG		
21:08	C. PIP	2	C- Foraging in circles around TBG		
21:08	C. PIP	2	D- Foraging ~3 m above ground		
21:10	C. PIP	1	A- Unseen pass		
21:10	C. PIP	2	D- Foraging ~4 m above ground		
21:13	C. PIP	2	B- Both bats flew into central area of TBG		
21:14	C. PIP	3	C- Foraging in circles around TBG		
21:14	C. PIP	1	C- Heard but not seen		
21:14	C. PIP	2	D- Foraging in circles ~4 m above ground		
21:15	C. PIP	1	A- Foraging in circles around centre of TBG		
21:16	C. PIP	1	A- Flew north west to south east ~12 m high over tree tops		
21:20	C. PIP	2	D- Foraging in circles ~3-4 m above ground		
21:21	C. PIP	2	B- Foraging and passing over fence into TBG		
21:22	C. PIP	1	D- Foraging in circles ~3-4 m above ground		

21:23	C. PIP	1	C- Foraging in circles around TBG		
21:24	C. PIP	1	D- Flying west to east at ~4m above ground		
21:26	C. PIP	1	B- Heard but not seen		
21:27	C. PIP	1	D- Foraging ~5 m above ground		
21:29	C. PIP	2	D- Foraging ~5 m above ground		
21:30	C. PIP	1	A- Brief unseen pass		
21:32	C. PIP	1	A- Unseen foraging		
21:32	C. PIP	1	B- Foraging heard but no bat seen		
21:32	C. PIP	1	D- Flying west to east at ~3m above ground		
21:34	C. PIP	1	D- Foraging ~4-5 m above ground		
21:35	C. PIP	1	B- Heard but not seen		
21:36	C. PIP	1	B- Heard but not seen		
21:36	C. PIP	1	D- Flying east to west ~5 m above ground		
21:37	C. PIP	1	B- Heard but not seen		
21:38	C. PIP	1	A- Unseen commute		
21:38	C. PIP	1	B- Heard but not seen		
21:38	C. PIP	3	D- Flying west to east ~5 m above ground		

21:39	C. PIP	1	B- Flying south east to north west low to the ground		
21:40	C. PIP	2	B- Heard but not seen		
21:40	C. PIP	2	D- Flying west to east ~5 m above ground		
21:41	C. PIP	1	C- Heard but not seen		
21:42	C. PIP	1	B- Heard but not seen		
21:44	C. PIP	2	D- Flying west to east ~5 m above ground		
21:46	C. PIP	1	A- Brief distant unseen pass		
21:47	C. PIP	1	B- Heard but not seen		
21:48	C. PIP	1	A- Flew north to south east		
21:49	C. PIP	1	D- Flying east to west ~5 m above ground		
21:50	C. PIP	1	B- Heard but not seen		
21:50	C. PIP	1	C- Heard but not seen		
21:51	C. PIP	1	A- Brief unseen commute		
21:51	C. PIP	1	A- Brief unseen commute		
21:51	C. PIP	1	A- Brief unseen commute		
21:52	C. PIP	1	B- Foraging heard but no bat seen		
21:52	C. PIP	2	D- Flying east to west ~5 m above ground		

21:54	C. PIP	1	B- Foraging heard but no bat seen		
21:54	C. PIP	1	D- Flying east to west ~5-6 m above ground		
21:56	C. PIP	1	B- Heard but not seen		
21:57	C. PIP	1	D- Flying west to east ~5 m above ground		
21:58	C. PIP	1	A- Brief unseen commute		
21:58	C. PIP	1	B- Heard but not seen		
21:59	C. PIP	1	B- Heard but not seen		
21:59	C. PIP	1	C- Heard but not seen		
21:59	C. PIP	1	D- Flying east to west ~5 m above ground		
22:03	C. PIP	1	A- Brief unseen commute		
22:06	C. PIP	1	A- Brief unseen commute		
22:06	C. PIP	1	C- Heard but not seen		
22:07	C. PIP	1	B- Heard but not seen		
22:07	C. PIP	1	D- Flying east to west ~7 m above ground		
22:08	C. PIP	1	B- Heard but not seen		
22:09	C. PIP	1	D- Unseen pass		
22:10	C. PIP	1	A- Brief unseen commute		

22:10	C. PIP	1	B- Heard but not seen		
22:13	C. PIP	1	B- Heard but not seen		
22:13	C. PIP	1	D- Unseen pass		
22:14	C. PIP	1	A- Brief unseen commute		
22:15	C. PIP	1	B- Heard but not seen		
22:15	C. PIP	1	D- Flying west to east ~6-7 m above ground		
22:16	C. PIP	1	B- Heard but not seen		
22:19	C. PIP	1	B- Heard but not seen		
22:19	C. PIP	1	D- Unseen pass		
22:22	C. PIP	1	C- Heard but not seen		
22:22	C. PIP	1	D- Unseen pass		
22:25	C. PIP	1	C- Heard but not seen		
22:26	C. PIP	1	A- Brief unseen commute		
22:26	C. PIP	1	A- Brief unseen commute		
22:26	C. PIP	1	B- Heard but not seen		
22:26	C. PIP	1	D- Unseen pass		
22:29	C. PIP	1	A- Brief unseen commute		

22:30	C. PIP	1	C- Heard but not seen		
22:31	C. PIP	1	D- Unseen pass		

Castle Building Emergence Survey						Plan
Date	Time	Sunrise /sunset	Survey type	Surveyors	Weather	
24/09/15	18:28-20:30	19:00	Dusk emergence	DW, DR, SH, MC	15°C, C/C 100%, wind F1, dry	

Survey results

Summary: no bats emerged from the Castle building (CB) during the survey. Five common pipistrelles commuted past the CB unseen.

Time	Species	No of bats	Activity	Plan ref
19:25	C. PIP	1	Commuted past Castle building unseen.	
19:25	C. PIP	1	Commuted past Castle building flying north east to south west at a height of ~3 m.	
19:26	C. PIP	1	Commuted past Castle building unseen.	
20:01	C. PIP	1	Commuted past Castle building unseen.	
20:10	C. PIP	1	Commuted past Castle building unseen.	

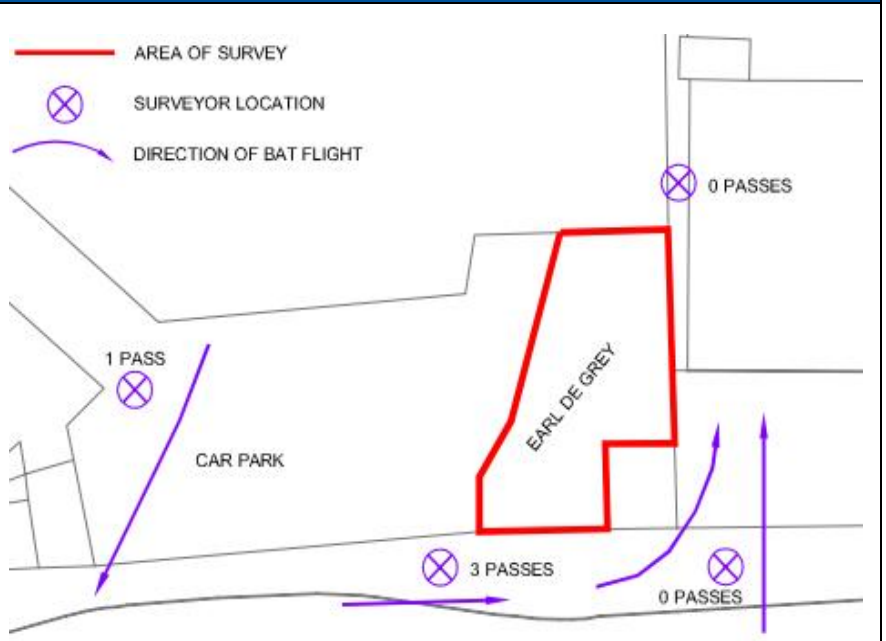
Earl De Grey Re-entry Survey					
Date	Time	Sunrise /sunset	Survey type	Surveyors	Weather
25/09/15	05:10-07:00	07:00	Dawn swarming / re-entry	DW, DR, SH, MC	8ºC, C/C 0%, wind F1-2, dry

Survey results

Summary: no bats emerged from the Earl De Grey (EDG) during the survey. Three common pipistrelles commuted past the EDG unseen. A fourth common pipistrelle commuted across the car park adjacent to the nearby Castle Building.

Time	Species	No of bats	Activity	Plan ref
05:15	C. PIP	1	Flying from west, turning north at corner of building.	
05:37	C. PIP	1	Commuted past EDG flying west to east.	
05:38	C. PIP	1	Flying south to north crossing Castle Street.	
06:43	C. PIP	1	Commuted past Castle Building heading south west at a height of ~4 m.	

Plan

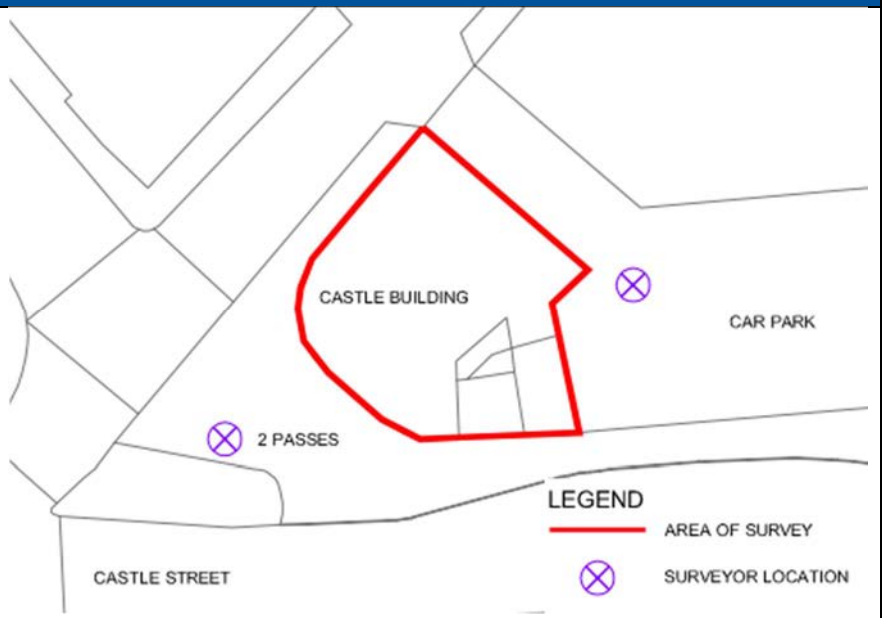


Trinity Burial Ground Dawn Re-entry Survey					
Date	Time	Sunrise/sunset	Survey type	Surveyors	Weather
29/05/15	05.10-07.00	07.00	Dawn swarming / re-entry	DW, MC, SH, JS	16°C, C/C 50%, wind F0, misty

Survey results				
Time	Species	No of bats	Activity	Plan ref
		0	No bats recorded in any part of the burial ground during the survey	

Earl De Grey Emergence Survey					
Date	Time	Sunrise/sunset	Survey type	Surveyors	Weather
28/09/15	18:37-20:30	19:00	Dusk emergence	DW, MC	15°C, C/C 20%, wind F1, dry

Survey results				
Time	Species	No of bats	Activity	Plan ref
		0	No bats recorded in any part of the burial ground during the survey	

Castle Building Emergence Survey						Plan
Date	Time	Sunrise /sunset	Survey type	Surveyors	Weather	
28/09/15	18:37-20:30	19:00	Dusk emergence	DW, MC	15ºC, C/C 20%, wind F1, dry	

Survey results

Summary: no bats emerged from the Castle building (CB) during the survey. Two common pipistrelles commuted past the CB unseen.

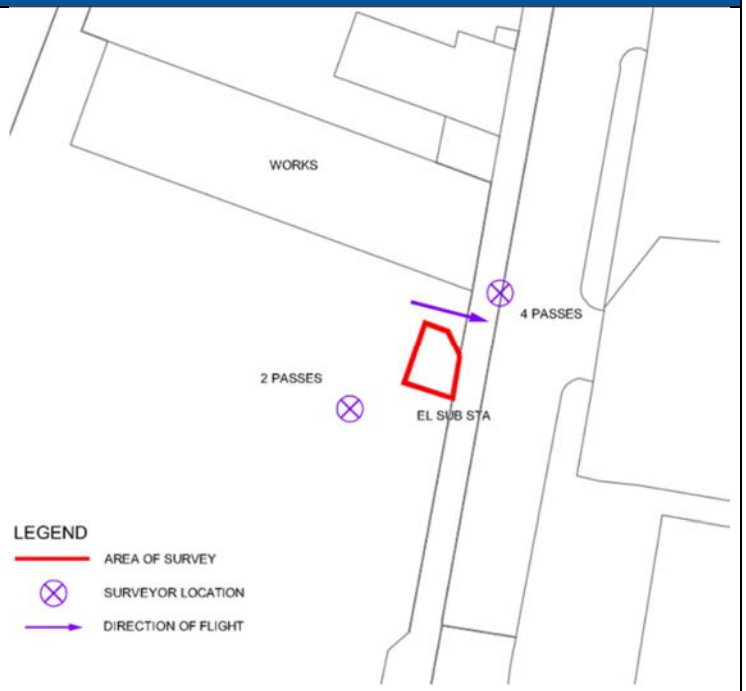
Time	Species	No of bats	Activity	Plan ref
19:28	C. PIP	1	Commuted past Castle building unseen.	
19:39	C. PIP	1	Commuted past Castle building unseen.	

Proposed Compound C Emergence Survey						Plan
Date	Time	Sunrise /sunset	Survey type	Surveyors	Weather	
21/07/16	20:50-22:46	21:16	Dusk emergence	DW, AW	21ºC, C/C 75%, wind F1, dry	

Survey results

Summary: no bats emerged from the Electrical sub-station (ESS) during the survey. Four common pipistrelles commuted past the ESS flying approximately west to east. Two further common pipistrelles commuted past the ESS unseen.

Time	Species	No of bats	Activity	Plan ref
21:41	C. PIP	1	Commuted past south west corner of ESS building unseen.	
21:41	C. PIP	1	Commuted past north east corner of ESS building flying approximately west to east.	
21:44	C. PIP	1	Commuted past north east corner of ESS building flying approximately west to east.	
21:51	C. PIP	1	Commuted past north east corner of ESS building flying approximately west to east.	



21:52	C. PIP	1	Commuted past north east corner of ESS building flying approximately west to east.		
21:53	C. PIP	1	Commuted past south west corner of ESS building unseen.		

Earl De Grey Emergence Survey						Plan
Date	Time	Sunrise /sunset	Survey type	Surveyors	Weather	
24/08/16	19:46-20:55	20:09	Dusk emergence	DW, AW	18ºC, C/C 100%, wind F1, dry at start with rain from 20:46	

Survey results

Summary: no bats emerged from the Electrical sub-station (ESS) during the survey. Four common pipistrelles commuted past the ESS flying approximately west to east. Two further common pipistrelles commuted past the ESS unseen.

Time	Species	No of bats	Activity	Plan ref
21:41	C. PIP	1	Commuted past south west corner of ESS building unseen.	

21:41	C. PIP	1	Commuted past north east corner of ESS building flying approximately west to east.		
21:44	C. PIP	1	Commuted past north east corner of ESS building flying approximately west to east.		
21:51	C. PIP	1	Commuted past north east corner of ESS building flying approximately west to east.		
21:52	C. PIP	1	Commuted past north east corner of ESS building flying approximately west to east.		
21:53	C. PIP	1	Commuted past south west corner of ESS building unseen.		

Castle Building Emergence Survey						Plan
Date	Time	Sunrise /sunset	Survey type	Surveyors	Weather	
14/09/16	19:04-20:12	19:18	Dusk emergence	DW, AW	15ºC, C/C 100%, wind F1, dry	

Survey results

Summary: no bats emerged from the Castle building (CB) during the survey. Two common pipistrelles commuted past the CB unseen.

Time	Species	No of bats	Activity	Plan ref
19:51	C. PIP	1	Commuted past Castle building unseen.	
19:52	C. PIP	1	Commuted past Castle building unseen.	

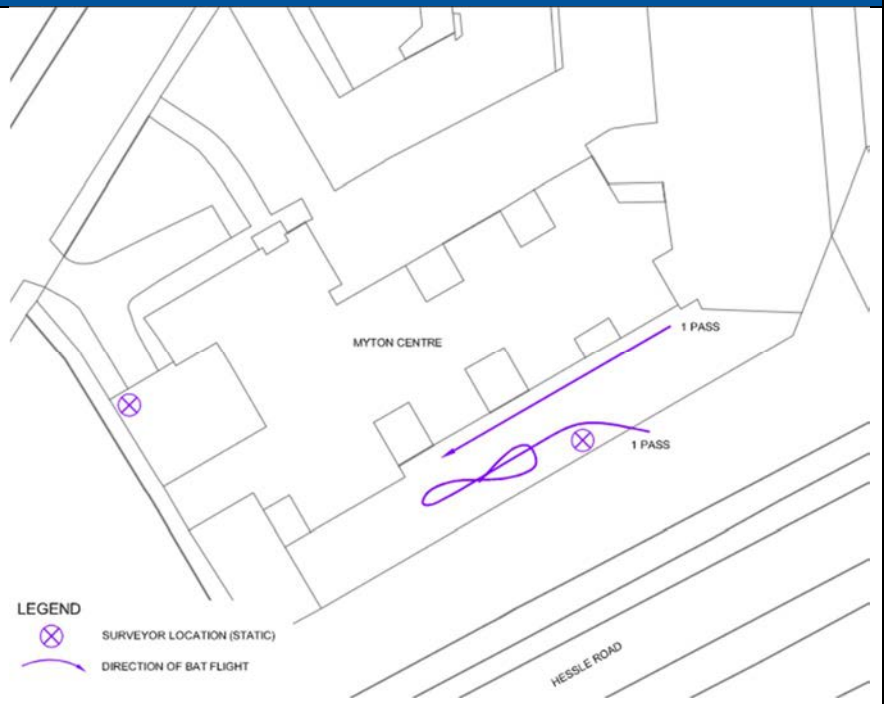
Area for Creation of Open Space (Myton Centre) Emergence Survey					
Date	Time	Sunrise /sunset	Survey type	Surveyors	Weather
28/09/16	18:19-20:06	18:44	Dusk emergence	DW, AW	21ºC, C/C 80%, wind F1, dry

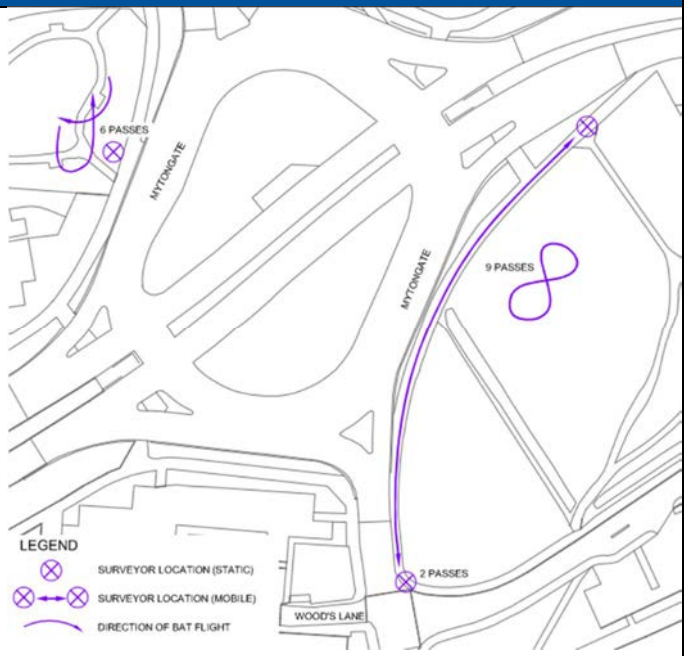
Survey results

Summary: no bats emerged from the Myton Centre (MC) during the survey. One common pipistrelle commuted past the MC flying approximately north east to south west. One further common pipistrelles foraged next to the MC for 19 minutes.

Time	Species	No of bats	Activity	Plan ref
19:09	C. PIP	1	Commuted past the MC flying approximately north east to south west.	
19:10	C. PIP	1	Foraging behaviour along southern aspect of the MC for 19 minutes.	

Plan



Mytongate Junction Commuting Routes Survey						Plan
Date	Time	Sunrise /sunset	Survey type	Surveyors	Weather	
14/09/16	20:19-21:00	19:18	Dusk activity survey	DW, AW	15ºC, C/C 100%, wind F1, dry	

Survey results

Summary: All bats recorded on the north west of the junction were foraging within trees on the roundabout or around the canopies of roadside trees. All bats recorded on the south east of the junction were foraging within, or at the margin of, Trinity Burial Ground. No evidence of bats commuting across the roundabout was discovered.

Time	Species	No of bats	Activity	Plan ref
20:20	C. PIP	1	Commuting and foraging unseen in the park adjacent to the junction.	
20:21	C. PIP	2	Commuting and foraging unseen in the park adjacent to the junction.	
20:21	C. PIP	1	Foraging within Trinity Burial Ground.	
20:22	C. PIP	1	Foraging within Trinity Burial Ground.	
20:29	C. PIP	1	Foraging within Trinity Burial Ground.	

20:36	C. PIP	1	Commuting and foraging unseen in the park adjacent to the junction.		
20:36	C. PIP	1	Foraging within Trinity Burial Ground.		
20:37	C. PIP	1	Foraging within Trinity Burial Ground.		
20:39	C. PIP	1	Commuting and foraging unseen in the park adjacent to the junction.		
20:40	C. PIP	1	Foraging within Trinity Burial Ground.		
20:41	C. PIP	1	Foraging within Trinity Burial Ground.		
20:42	C. PIP	1	Foraging at the edge of Trinity Burial Ground.		
20:43	C. PIP	1	Foraging at the edge of Trinity Burial Ground.		
20:47	C. PIP	1	Foraging within Trinity Burial Ground for two minutes.		
20:52	C. PIP	1	Foraging within Trinity Burial Ground for two minutes.		
20:47	C. PIP	1	Commuting and foraging unseen in the park adjacent to the junction.		
20:52	C. PIP	1	Commuting and foraging unseen in the park adjacent to the junction.		

Trinity Burial Ground Emergence Survey						Plan
Date	Time	Sunrise/sunset	Survey type	Surveyors	Weather	
14/09/17	19:05-20:49	19:19	Dusk emergence	DW, AW, IC, BM	14ºC, C/C 100%, wind F0, dry	

Survey results

Summary: no bats emerged from any of the trees within Trinity Burial Ground (TBG) during the survey. Extensive common pipistrelle commuting and foraging behaviour was observed within TBG.

Time	Species	No of bats	Activity	Plan ref
19:32	C. PIP	1	B – foraging until 19:53. Distant at first, foraging in open eventually	
19:34	C. PIP	1	C – commuting, 2 passes	
19:35	C. PIP	1	A – unseen	
19:37	C. PIP	1	A – unseen	
19:38	C. PIP	2	D – foraging until 19:42, flying just above head height	
19:38	C. PIP	1	C- commuting, 1 pass	
19:39	C. PIP	1	A – faint call detected	
19:40	C. PIP	1	A – foraging in circles until 19:42 at between 2 & 4m height	

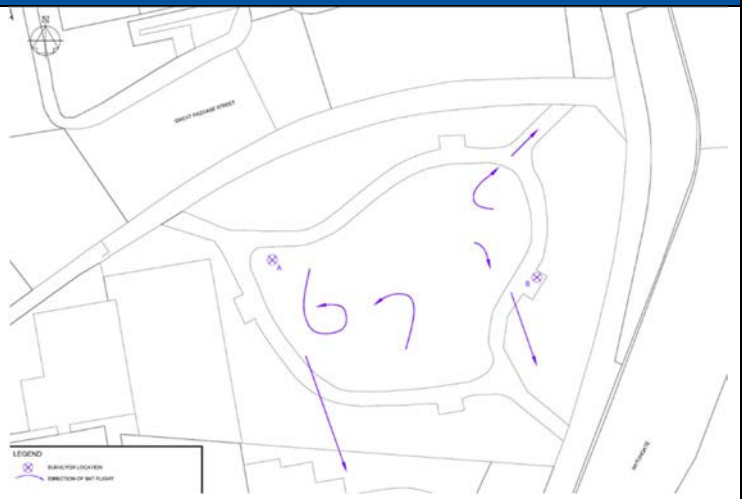
19:40	C. PIP	1	C – foraging, 3 passes		
19:42	C. PIP	1	D – unseen		
19:43	C. PIP	1	A – foraging until 19:45		
19:44	C. PIP	1	D – foraging		
19:44	C. PIP	1	C – commuting, 1 pass		
19:46	C. PIP	1	A – foraging until 19:47		
19:46	C. PIP	1	D – foraging until 19:48, flying at head height and swooping lower		
19:48	C. PIP	1	A – foraging until 19:49		
19:48	C. PIP	1	C – foraging, 3 passes		
19:50	C. PIP	1	D – unseen		
19:51	C. PIP	2	C – foraging, 10 passes. One bat left, other bat continuously foraging for 1 minute		
19:52	C. PIP	1	A - foraging		
19:53	C. PIP	1	A – faint call detected		
19:53	C. PIP	1	D – foraging until 19:57		
19:55	C. PIP	1	A - unseen		
19:58	C. PIP	1	D – foraging until 20:00		

19:58	C. PIP	1	B – brief call detected		
19:59	C. PIP	1	A – faint call detected		
19:59	C. PIP	1	C – 2 passes		
20:02	C. PIP	1	D – foraging, flying low to the ground		
20:04	C. PIP	1	A – faint call detected		
20:04	C. PIP	1	D – commuting, very brief call detected		
20:05	C. PIP	1	D - unseen		
20:06	C. PIP	1	A – brief pass		
20:06	C. PIP	1	C – commuting and foraging, 5 passes		
20:07	C. PIP	1	D – foraging, flying quite high		
20:07	C. PIP	1	B – brief call detected		
20:08	C. PIP	1	A - unseen		
20:08	C. PIP	1	D – foraging, also social calling		
20:11	C. PIP	1	D – unseen, detected continuously until 20:13		
20:13	C. PIP	1	D – social calls heard		
20:13	C. PIP	1	B – brief call detected		
20:13	C. PIP	1	C – foraging, 4 passes		

20:14	C. PIP	1	A – faint call detected		
20:15	C. PIP	1	A - foraging		
20:15	C. PIP	1	D - brief, distant call detected		
20:15	C. PIP	1	B – distant call detected		
20:16	C. PIP	1	D – foraging until 20:18, faint calls at first		
20:17	C. PIP	1	A – faint call detected		
20:17	C. PIP	1	B - foraging		
20:19	C. PIP	1	A – faint call detected		
20:19	C. PIP	1	D – quiet calls detected continuously until 20:20		
20:19	C. PIP	1	C – commuting, 2 passes		
20:20	C. PIP	1	A - foraging		
20:20	C. PIP	1	B – brief call detected		
20:21	C. PIP	1	A - unseen		
20:21	C. PIP	1	D – unseen		
20:22	C. PIP	1	A - unseen		
20:22	C. PIP	2	D – unseen		
20:22	C. PIP	1	C – foraging, 3 passes		

20:24	C. PIP	1	D – unseen		
20:24	C. PIP	1	B - foraging		
20:24	C. PIP	2	C – foraging, 2 passes		
20:25	C. PIP	1	A - unseen		
20:30	C. PIP	1	A - unseen		
20:30	C. PIP	1	D – foraging until 20:39		
20:34	C. PIP	1	A - unseen		
20:35	C. PIP	1	D – social calls heard		
20:37	C. PIP	1	B – brief call detected		
20:37	C. PIP	1	C – foraging, 2 passes		
20:38	C. PIP	1	C – foraging, 3 passes		
20:39	C. PIP	1	A - unseen		
20:39	C. PIP	1	D – social calls heard		
20:39	C. PIP	1	B – on and off site		
20:40	C. PIP	1	A – detected continuously for 1 minute		
20:41	C. PIP	1	D – unseen		
20:42	C. PIP	1	A – several passes		

20:42	C. PIP	1	C – foraging, 9 passes		
20:44	C. PIP	1	B - foraging		
20:45	C. PIP	1	A – faint call detected, 2 passes		
20:45	C. PIP	1	D – foraging continuously for several minutes		
20:47	C. PIP	1	A - unseen		
20:49	C. PIP	2	D – foraging		
20:53	C. PIP	1	D – commuting		
20:54	C. PIP	1	D – unseen		

William Booth House Activity Survey						Plan
Date	Time	Sunrise/sunset	Survey type	Surveyors	Weather	
24/09/17	18:28-20:30	19:00	Activity survey	A, B	15ºC, C/C 100%, wind F1, dry	

Survey results

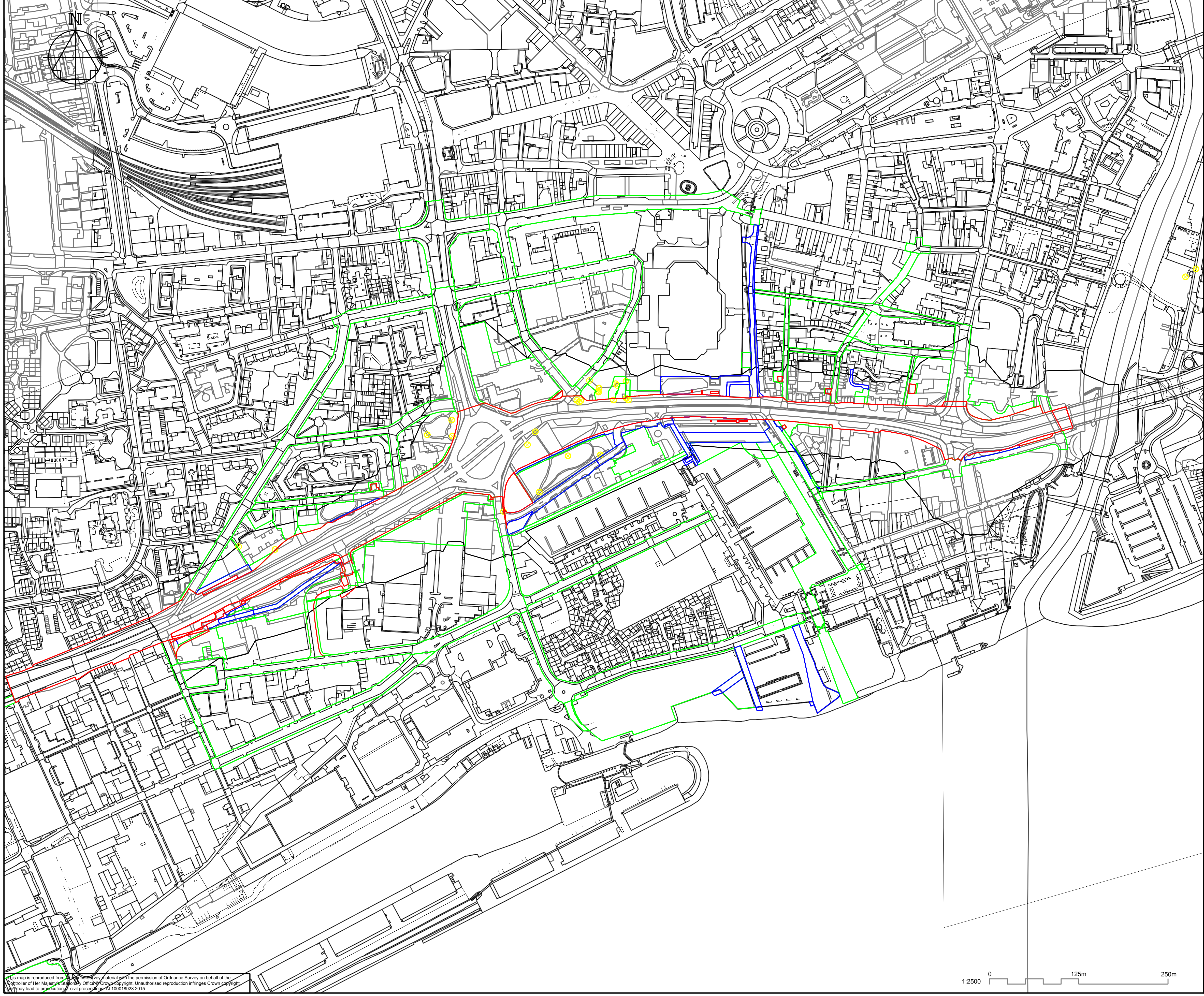
Summary: no bats emerged from the Castle building (CB) during the survey. Five common pipistrelles commuted past the CB unseen.

Time	Species	No of bats	Activity	Plan ref
19:17	C. PIP	3	A – one bat foraging continuously until 19:34. Joined briefly by 2 other bats, one of which was seen leaving site at 19:18 towards Trinity Burial Ground	
19:18	C. PIP	1	B – social calls detected	
19:19	C. PIP	1	B – foraging until 19:20	
19:22	C. PIP	1	B – foraging until 19;25	
19:26	C. PIP	1	B – foraging until 19:34, flying above head height and occasionally swooping lower	
19:35	C. PIP	1	A - unseen	
19:36	C. PIP	1	B – unseen	

19:46	C. PIP	1	B – commuting		
19:49	C. PIP	1	B – unseen		
19:51	C. PIP	1	A – 2 passes		
19:51	C. PIP	1	B – unseen		
19:55	C. PIP	1	A – single pass		
19:56	C. PIP	1	B – unseen		
20:02	C. PIP	1	A – unseen		
20:04	C. PIP	1	A – unseen		
20:04	C. PIP	1	B – very faint, brief pass		
20:07	C. PIP	1	A – unseen		
20:08	C. PIP	1	B – commuting, brief pass		
20:12	C. PIP	1	A – social calls detected		
20:15	C. PIP	1	B – single pass		
20:17	C. PIP	1	A – single pass		
20:25	C. PIP	1	A – single pass		
20:25	C. PIP	1	B – faint, brief pass		
20:27	C. PIP	1	A – 2 passes		

20:27	C. PIP	1	B – unseen		
20:29	C. PIP	1	A – single pass		
20:29	C. PIP	1	B – social calls detected		
20:32	C. PIP	1	A – foraging, 2 feeding buzzes detected		
20:32	C. PIP	1	B – brief pass		

Appendix G: Surveyor locations



Notes

Key to symbols

- PERMANENT LAND TAKE BOUNDARY
- PERMANENT RIGHTS BOUNDARY
- TEMPORARY LAND TAKE BOUNDARY
- SURVEYOR LOCATION

Rev	Date	Amendment Details	Drw'n	Chk'd	App'd
P03	14/09/18	SCHEME BOUNDARY EXTENTS AMENDED	VM	DW	LC
P02	16/08/18	ISSUED FOR HE APPROVAL	VM	DW	LC
P01	31/01/18	ISSUED FOR REVIEW & COMMENT	RE	DW	LC

Mott MacDonald Sweco

Client

highways england

Drawing Status: SHARED

Suitability: S4

Project Title

A63 CASTLE STREET IMPROVEMENTS, HULL

Drawing Title

SURVEYOR LOCATIONS

Scale	Designed	Drawn	Checked	Approved
1:2500	West, Adam	Ebbs, Ray	Wood, Diane	Cottrell, Linsey
Original Size: A1	Date: 31/01/18	Date: 31/01/18	Date: 31/01/18	Date: 31/01/18

Drawing Number

HE PIN | Originator | Volume

514508- MMSJV- VES -

S0 - DR - LE - 200006

Location | Type | Role | Number

Project Ref. No.: 514508

Revision: P03

pw:\\MCCNTSI04.global.arup.com:PW_ARUP_UK_HE\Documents\A63 Castle Street Improvements\04 Mott MacDonald Limited Sweco Limited JV\LE - Landscape and environment - Environmentalist\DR - Drawing\HE514508-MMSJV-VES-S0-DR-LE-200006

Appendix H: Phase 1 habitat maps

N

A

3

ARCO LTD GARAGE

1:1000 0 50m 100m

Notes

Key to symbols

- PERMANENT LAND TAKE BOUNDARY
- PERMANENT RIGHTS BOUNDARY
- TEMPORARY LAND TAKE BOUNDARY
- SPECIES-POOR HEDGEROW
- SPECIES-POOR HEDGEROW AND TREES
- WALL
- FENCE
- BUILDING
- HARDSTANDING
- INTRODUCED SHRUB
- AMENITY GRASSLAND
- TALL RUDERAL
- SCATTERED INTRODUCED SHRUB
- DENSE SCRUB
- SCATTERED SCRUB
- STANDING WATER
- TREE
- TARGET NOTE
- SPECIES POOR GRASSLAND
- SWAMP
- BARE GROUND
- INTERTIDAL BOULDERS / ROCKS

Rev	Date	Amendment Details	Drw'n	Chk'd	App'd
P03	14/09/18	SCHEME BOUNDARY EXTENTS AMENDED	VM	DW	LC
P02	16/08/18	ISSUED FOR HE APPROVAL	VM	DW	LC
P01	31/01/18	ISSUED FOR REVIEW & COMMENT	RE	DW	LC

Mott MacDonald Sweco

Client: highways england

Drawing Status: SHARED

Suitability: S4

Project Title: A63 CASTLE STREET IMPROVEMENTS, HULL

Drawing Title: PHASE 1 HABITAT MAP SHEET 1 OF 3

Scale	Designed	Drawn	Checked	Approved
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Original Size	**Date**	**Date**	**Date**	**Date**
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Drawing Number: HE PIN | Originator | Volume | Location | Type | Role | Number

514508 - MMSJV - VES - S0 - DR - LE - 100001

Project Ref. No.: 514508

Revision: P03

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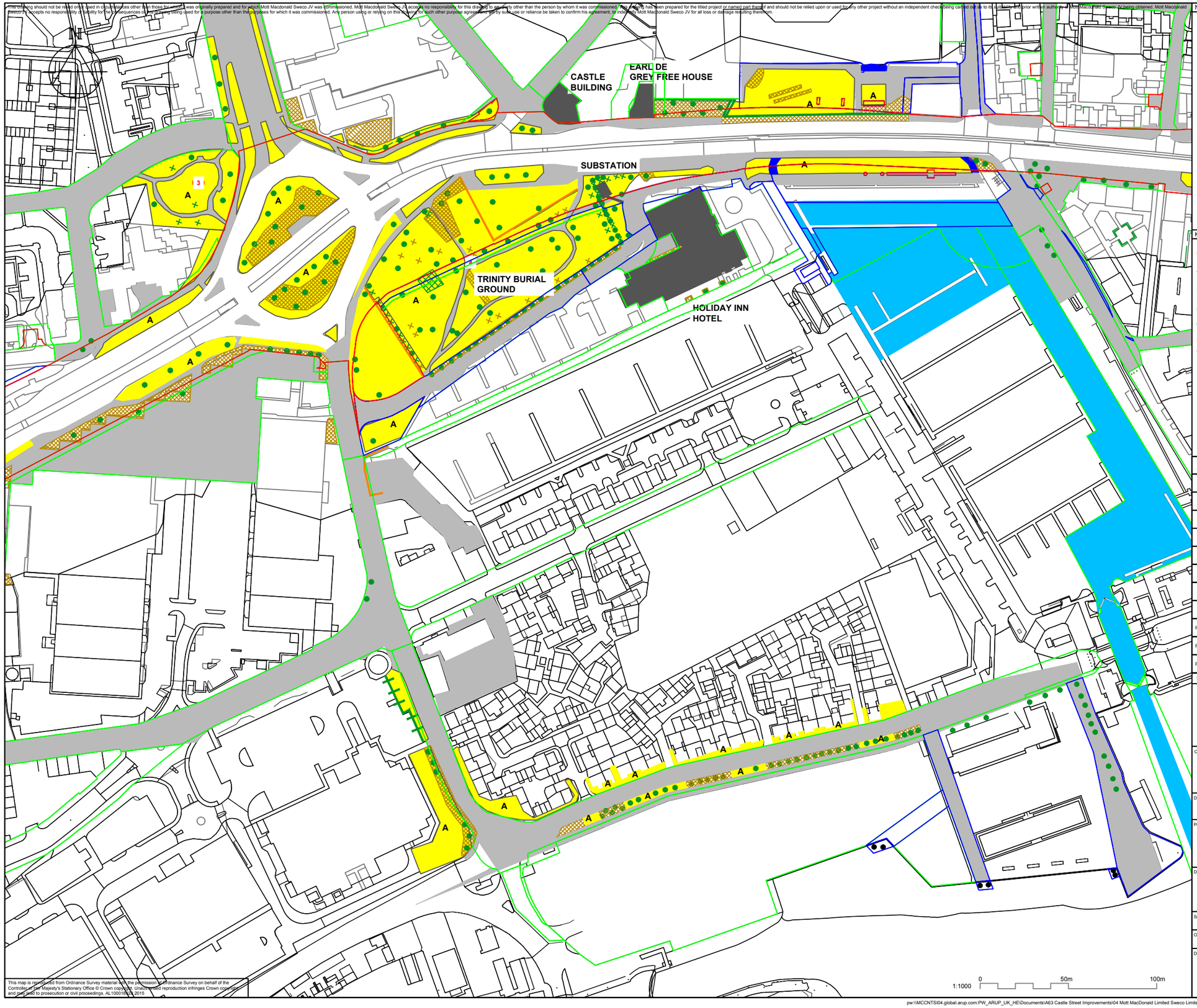

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Key to symbols

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- PERMANENT RIGHTS BOUNDARY
- TEMPORARY LAND TAKE BOUNDARY
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- SPECIES-POOR HEDGEROW AND TREES
- WALL
- FENCE
- BUILDING
- HARDSTANDING
- INTRODUCED SHRUB
- AMENITY GRASSLAND
- TALL RUDERAL
- SCATTERED INTRODUCED SHRUB
- DENSE SCRUB
- SCATTERED SCRUB
- STANDING WATER
- TREE
- TARGET NOTE
- SPECIES POOR GRASSLAND
- SWAMP
- BARE GROUND
- INTERTIDAL BOULDERS / ROCKS

Rev	Date	Amendment Details	Drw'n	Chk'd	App'd
P03	14/09/18	SCHEME BOUNDARY EXTENTS AMENDED	VM	DW	LC
P02	16/08/18	ISSUED FOR HE APPROVAL	VM	DW	LC
P01	31/01/18	ISSUED FOR REVIEW & COMMENT	RE	DW	LC

Mott MacDonald Sweco

Client: highways england

Drawing Status: SHARED

Suitability: S4

Project Title: A63 CASTLE STREET IMPROVEMENTS, HULL

Drawing Title: PHASE 1 HABITAT MAP SHEET 2 OF 3

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Drawing Number: 514508 - MMSJV - VES - S0 - DR - LE - 100002 (HE PIN | Originator | Volume | Location | Type | Role | Number)

Project Ref. No.: 514508

Revision: P03

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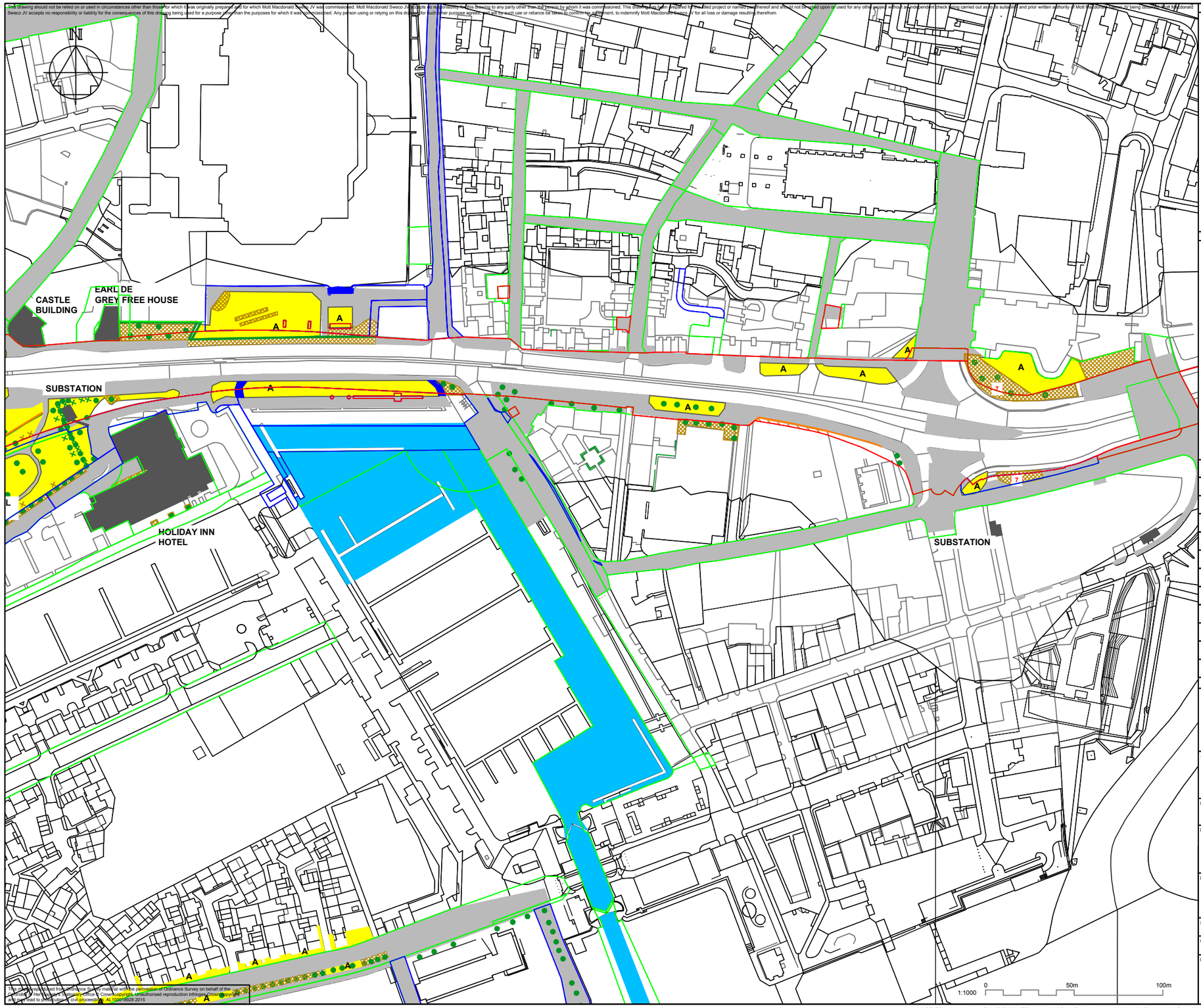

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- SPECIES-POOR HEDGEROW AND TREES
- WALL
- FENCE
- BUILDING
- HARDSTANDING
- INTRODUCED SHRUB
- AMENITY GRASSLAND
- TALL RUDERAL
- SCATTERED INTRODUCED SHRUB
- DENSE SCRUB
- SCATTERED SCRUB
- STANDING WATER
- TREE
- TARGET NOTE
- SPECIES POOR GRASSLAND
- SWAMP
- BARE GROUND
- INTERTIDAL BOULDERS / ROCKS

Rev	Date	Amendment Details	Drw'n	Chk'd	App'd
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P02	16/08/18	ISSUED FOR HE APPROVAL	VM	DW	LC
P01	31/01/18	ISSUED FOR REVIEW & COMMENT	RE	DW	LC

Mott MacDonald Sweco

Client: highways england

Drawing Status: SHARED

Suitability: S4

Project Title: A63 CASTLE STREET IMPROVEMENTS, HULL

Drawing Title: PHASE 1 HABITAT MAP SHEET 3 OF 3

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Project Ref. No.: 514508

Revision: P03

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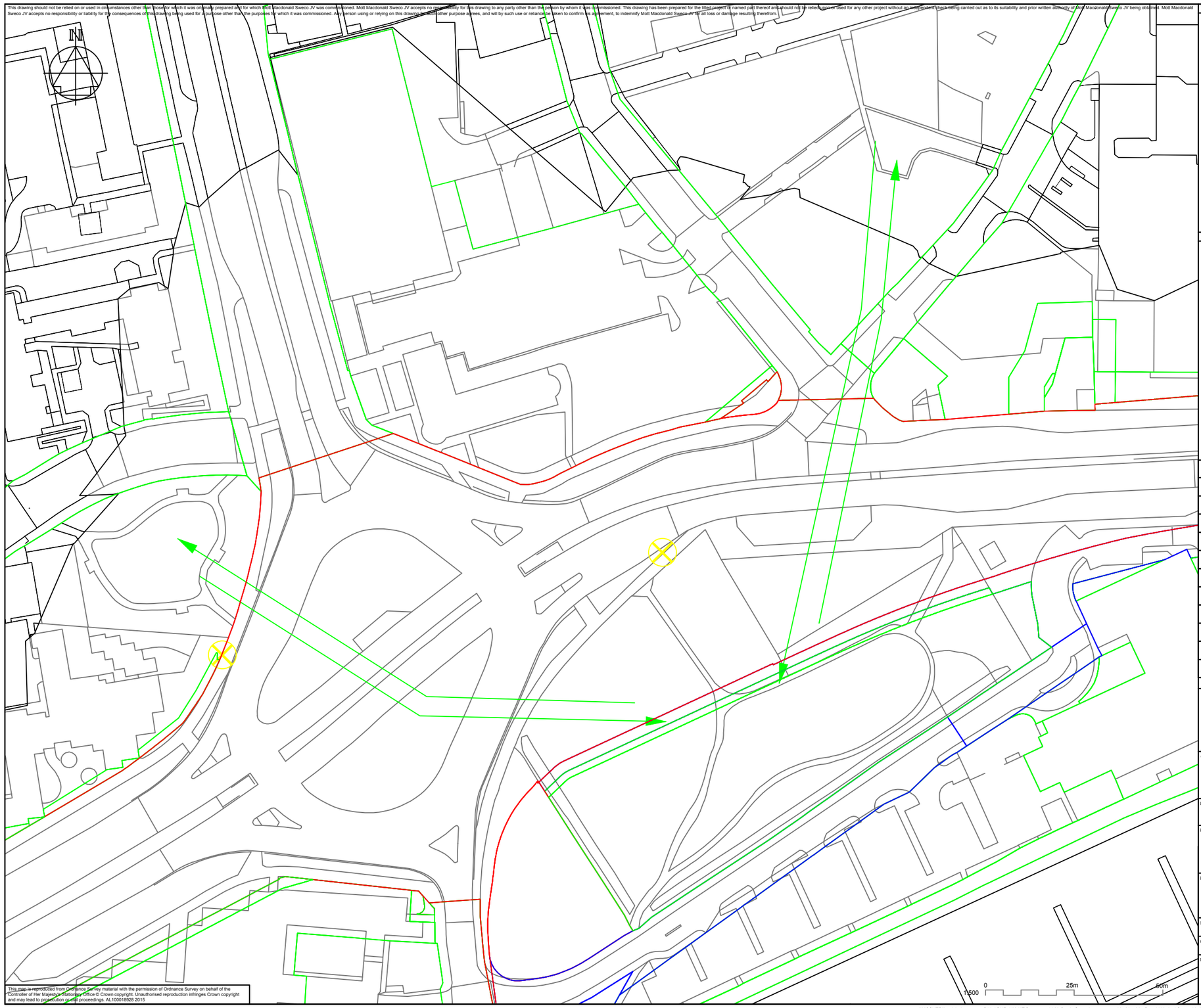
Appendix I: Commuting route survey results maps



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- PERMANENT RIGHTS BOUNDARY
- TEMPORARY LAND TAKE BOUNDARY
- SURVEYOR LOCATION
- COMMON PIPISTRELLE COMMUTING ROUTE (2013)

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P02	16/08/18	ISSUED FOR HE APPROVAL	VM	DW	LC
P01	31/01/18	ISSUED FOR REVIEW & COMMENT	RE	DW	LC

Mott MacDonald Sweco

Client: highways england

Drawing Status: SHARED

Suitability: S4

Project Title: A63 CASTLE STREET IMPROVEMENTS, HULL

Drawing Title: COMMUTING ROUTE SURVEY RESULTS

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(HE PIN | Originator | Volume | Location | Type | Role | Number)

Project Ref. No.: 514508

Revision: P03

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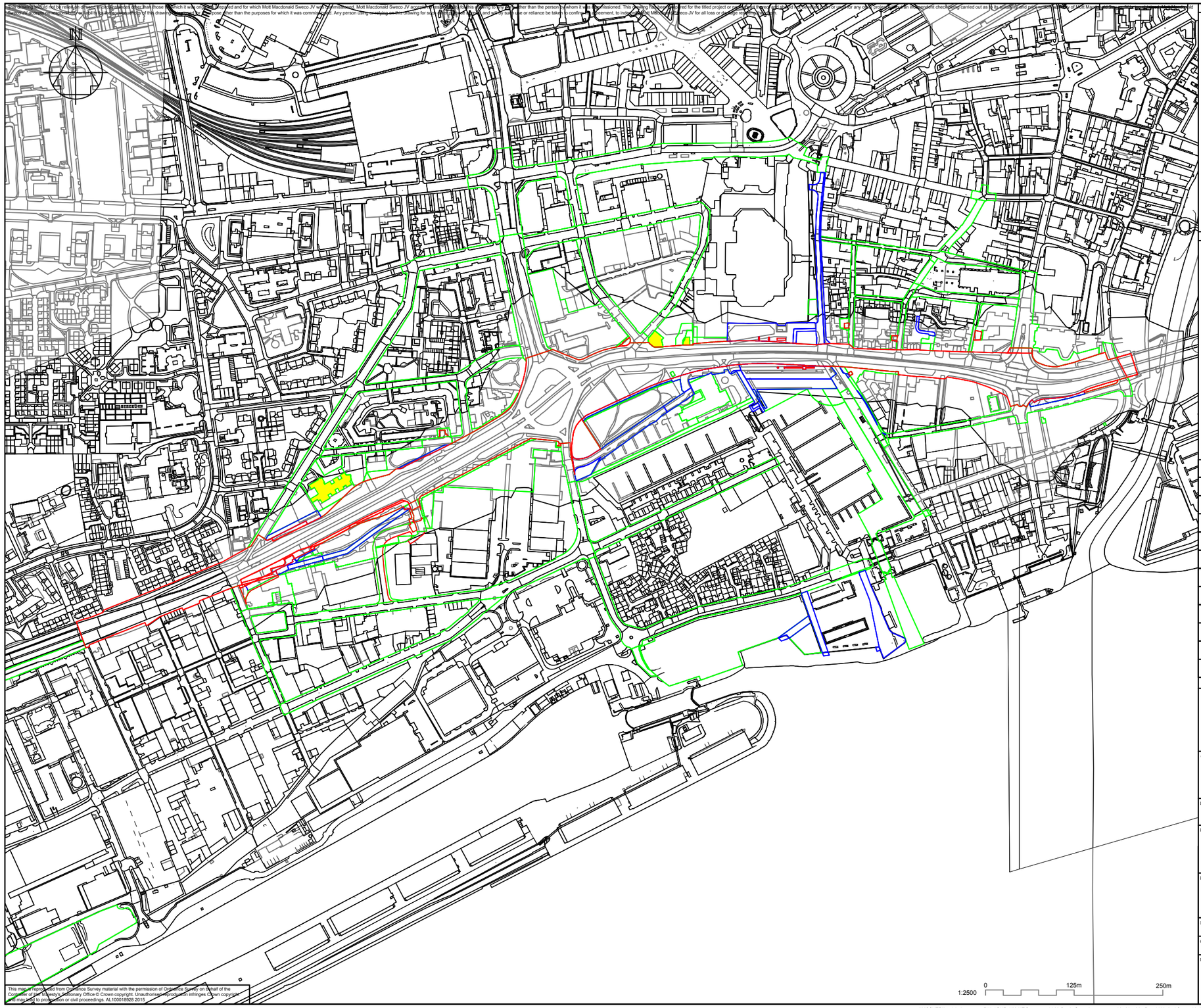
Appendix J: Buildings surveyed for bat presence/absence



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Key to symbols

- PERMANENT LAND TAKE BOUNDARY
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- TEMPORARY LAND TAKE BOUNDARY
- BUILDINGS SURVEYED FOR BAT PRESENCE / ABSENCE

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P02	16/08/18	ISSUED FOR HE APPROVAL	VM	DW	LC
P01	31/01/18	ISSUED FOR REVIEW & COMMENT	RE	DW	LC

Mott MacDonald Sweco

Client: highways england

Drawing Status: SHARED

Suitability: S4

Project Title: A63 CASTLE STREET IMPROVEMENTS, HULL

Drawing Title: BUILDINGS SURVEYED FOR BAT PRESENCE / ABSENCE

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(HE PIN | Originator | Volume | Location | Type | Role | Number)

Project Ref. No.: 514508

Revision: P03

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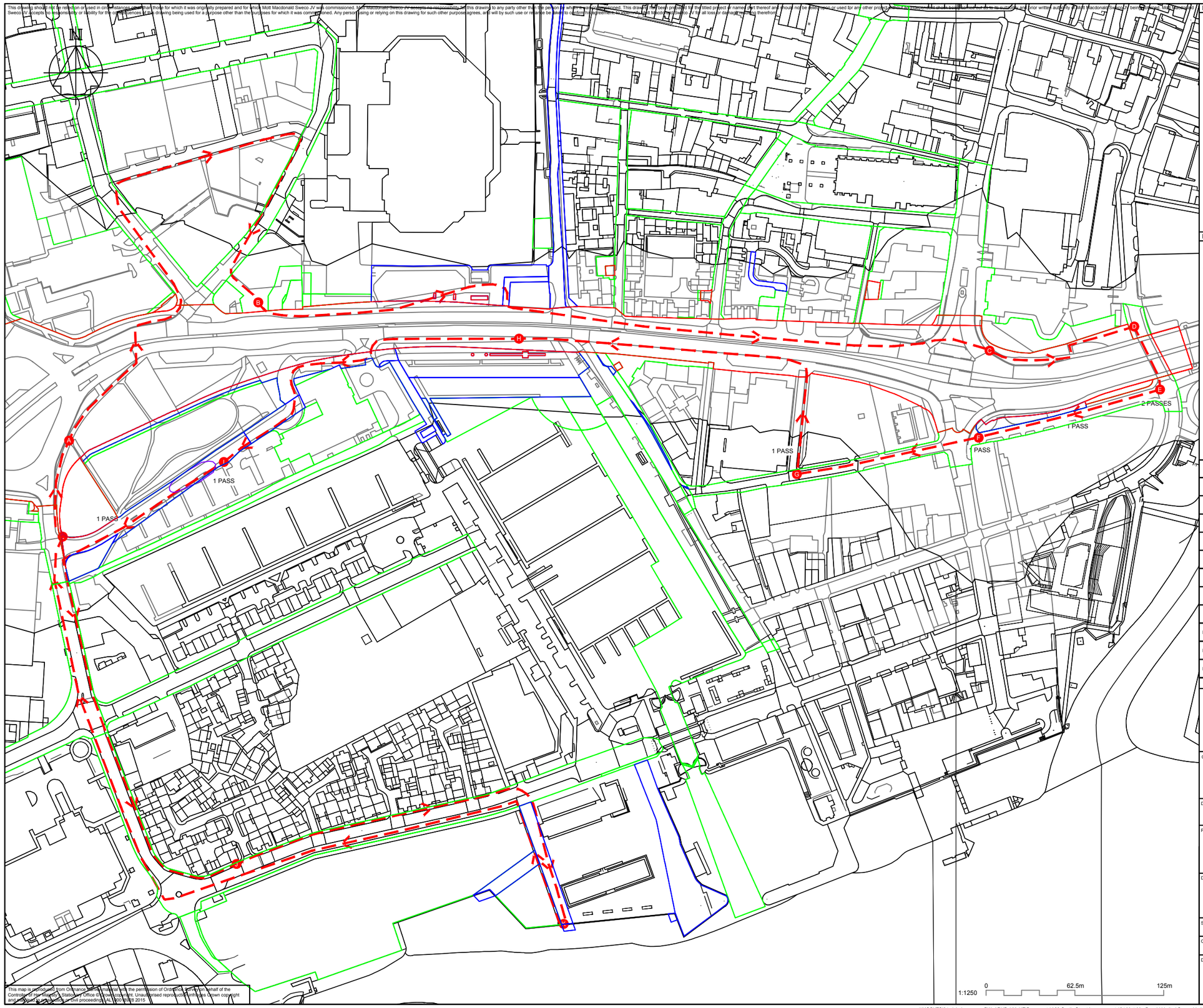
Appendix K: Bat activity survey results



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Notes

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- PERMANENT RIGHTS BOUNDARY
- TEMPORARY LAND TAKE BOUNDARY
- TRANSECT A
- BAT FLIGHT

Rev	Date	Amendment Details	Drw'n	Chk'd	App'd
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P01	31/01/18	ISSUED FOR REVIEW & COMMENT	RE	DW	LC

Mott MacDonald Sweco

Client: highways england

Drawing Status: SHARED

Suitability: S4

Project Title: A63 CASTLE STREET IMPROVEMENTS, HULL

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Revision P03

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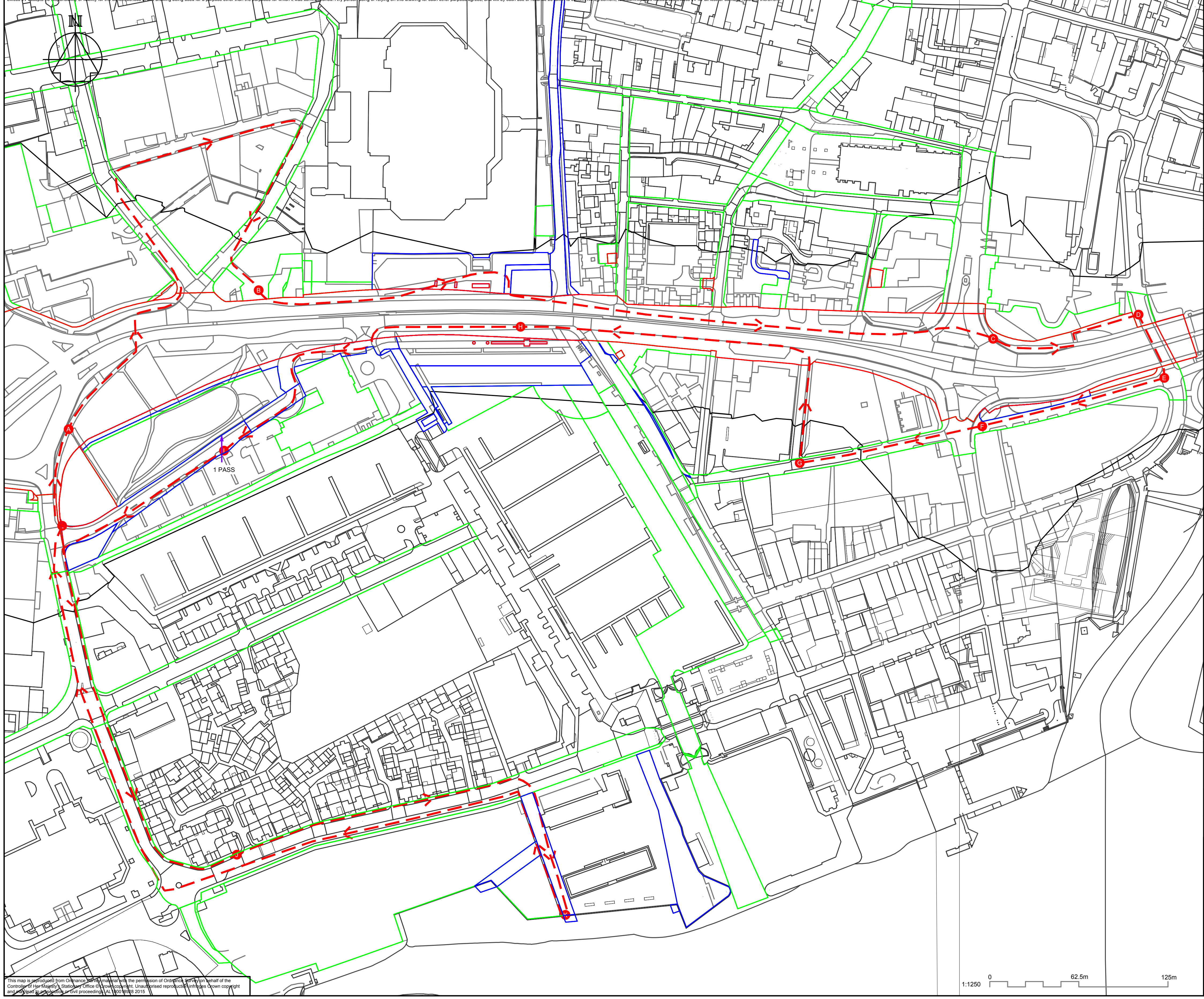

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- TRANSECT A
- BAT FLIGHT

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P01	31/01/18	ISSUED FOR REVIEW & COMMENT	RE	DW	LC

Mott MacDonald Sweco

Client

highways england

Drawing Status: SHARED

Suitability: S4

Project Title

A63 CASTLE STREET IMPROVEMENTS, HULL

Drawing Title

TRANSECT A
04.08.16

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Drawing Number

HE PIN | Originator | Volume

514508- MMSJV- VES -

S0 - DR - LE - 200010

Location | Type | Role | Number

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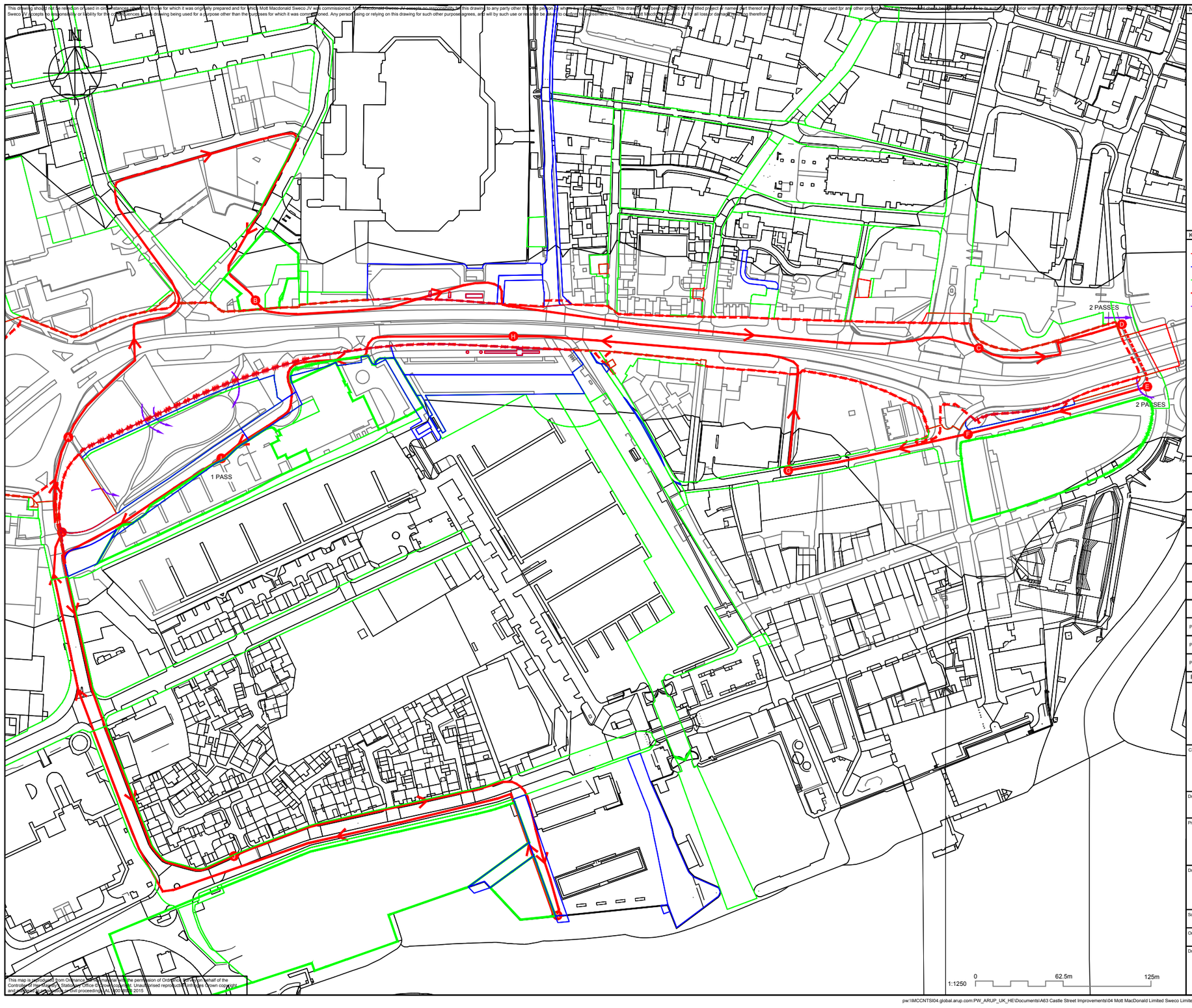
Revision: P03



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Notes

Key to symbols

- PERMANENT LAND TAKE BOUNDARY
- PERMANENT RIGHTS BOUNDARY
- TEMPORARY LAND TAKE BOUNDARY
- TRANSECT A
- BAT FLIGHT

Rev	Date	Amendment Details	Drw'n	Chk'd	App'd
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P02	16/08/18	ISSUED FOR HE APPROVAL	VM	DW	LC
P01	31/01/18	ISSUED FOR REVIEW & COMMENT	RE	DW	LC

Mott MacDonald Sweco

Client: highways england

Drawing Status: SHARED

Suitability: S4

Project Title: A63 CASTLE STREET IMPROVEMENTS, HULL

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Revision P03

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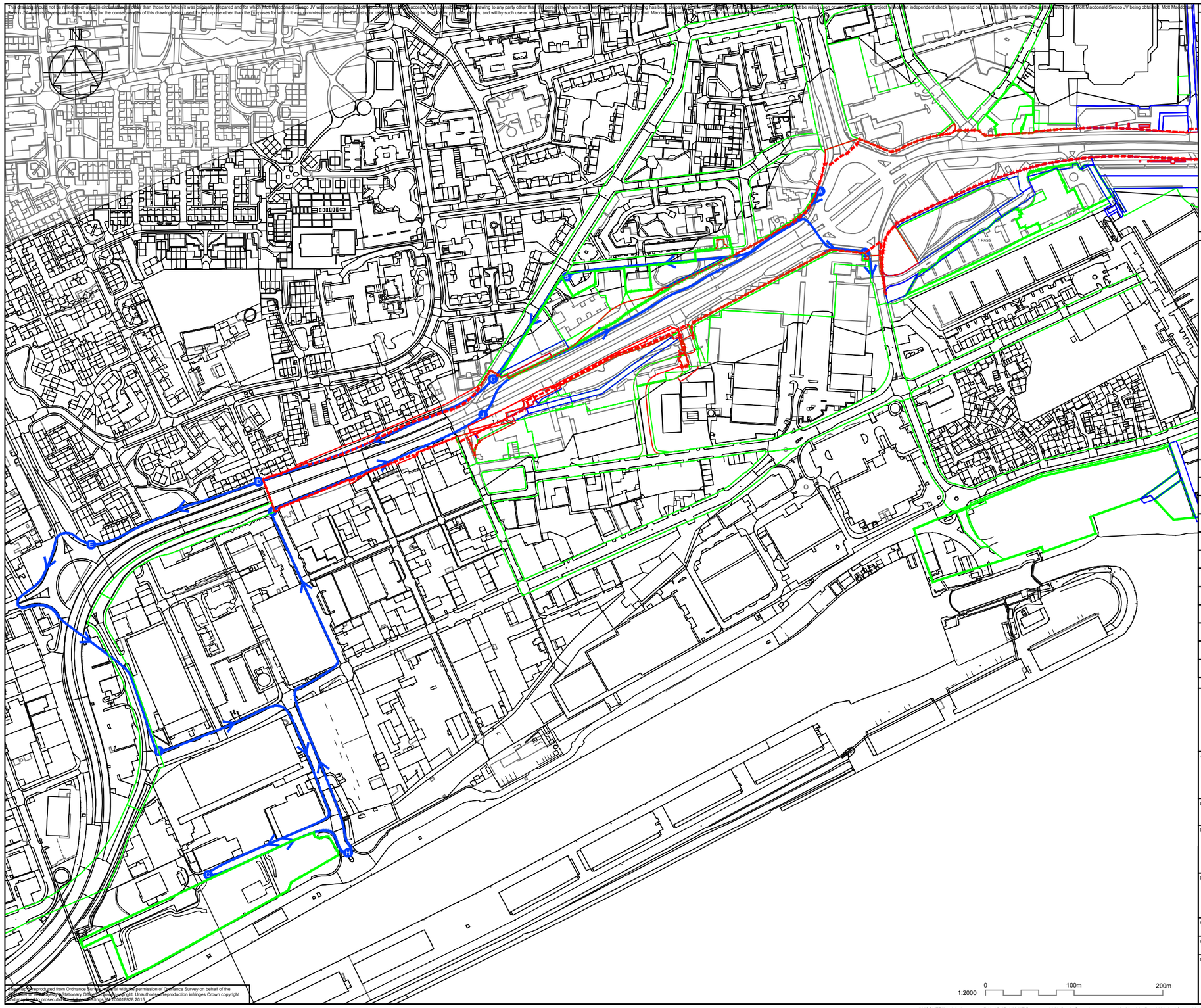

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- TRANSECT B
- BAT FLIGHT
- PERMANENT LAND TAKEN BOUNDARY
- TEMPORARY LAND TAKEN BOUNDARY

Rev	Date	Amendment Details	Drw'n	Chk'd	App'd
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P02	16/08/18	ISSUED FOR HE APPROVAL	VM	DW	LC
P01	31/01/18	ISSUED FOR REVIEW & COMMENT	RE	DW	LC

Mott MacDonald Sweco

Client: highways england

Drawing Status: SHARED

Suitability: S4

Project Title: A63 CASTLE STREET IMPROVEMENTS, HULL

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Revision P03

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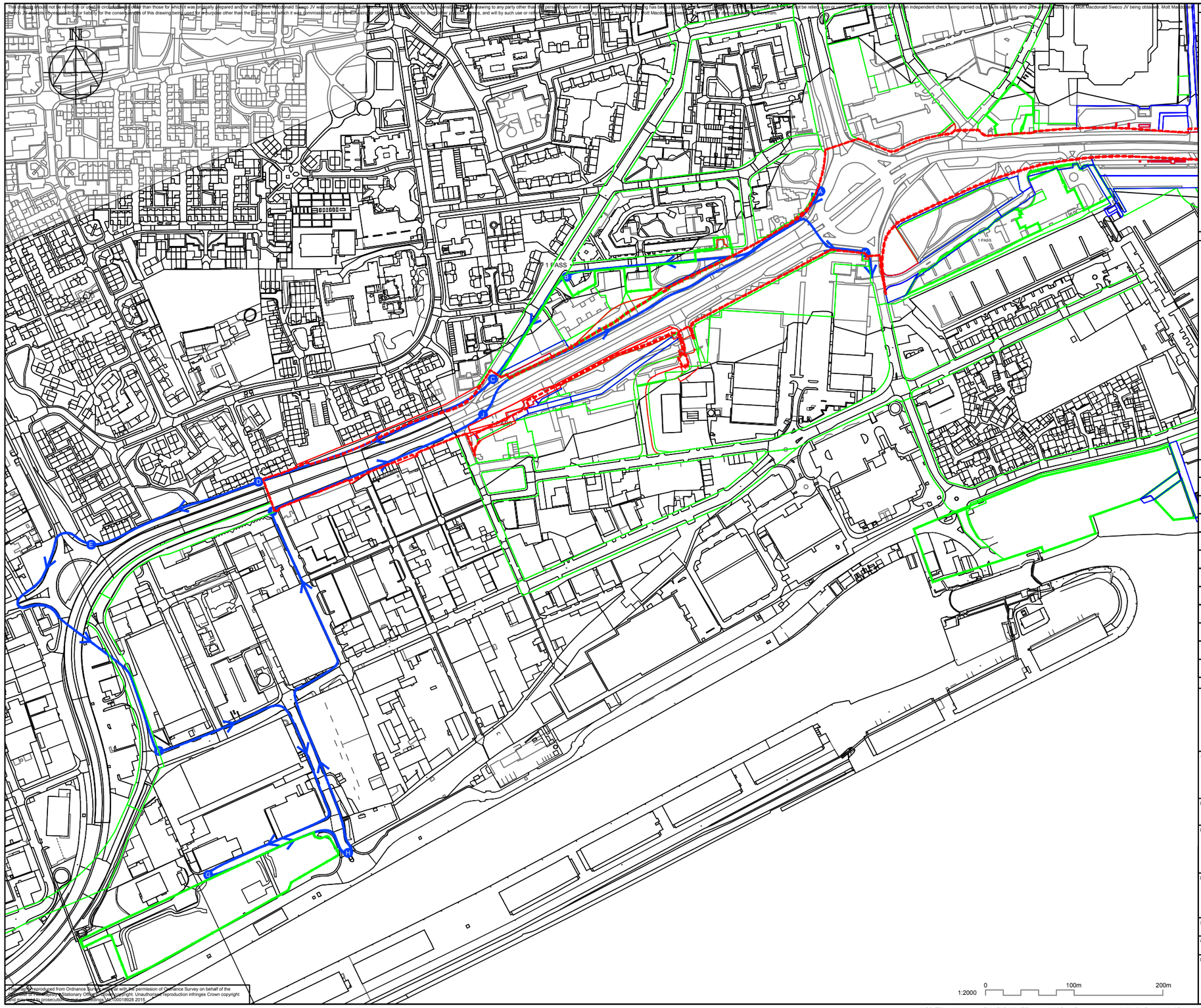

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- BAT FLIGHT
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Mott MacDonald Sweco

Client: highways england

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Revision: P03

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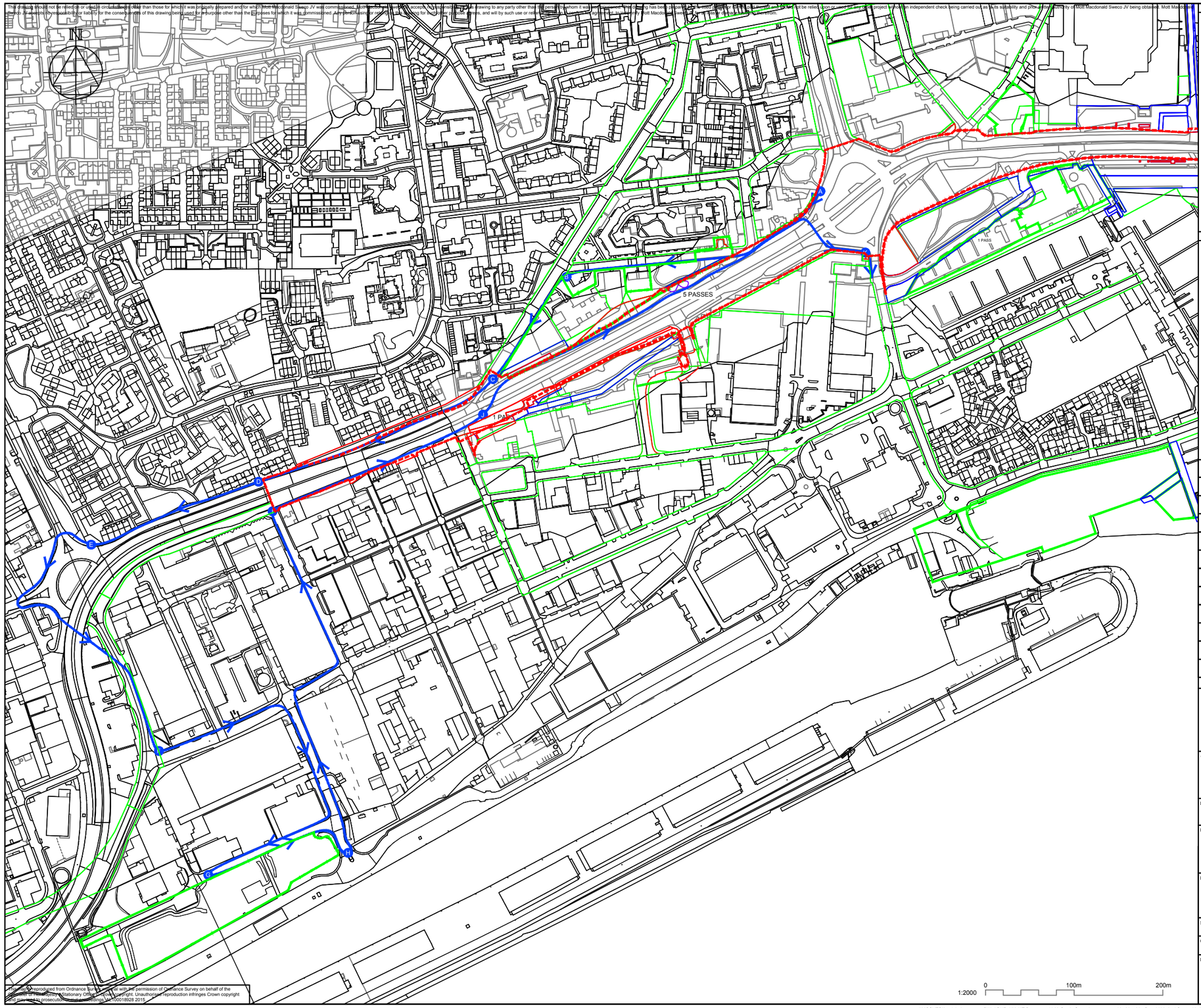

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Key to symbols

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- PERMANENT RIGHTS BOUNDARY
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- TRANSECT B
- BAT FLIGHT
- PERMANENT LAND TAKEN BOUNDARY
- TEMPORARY LAND TAKEN BOUNDARY

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Mott MacDonald Sweco

Client: highways england

Drawing Status: SHARED

Suitability: S4

Project Title: A63 CASTLE STREET IMPROVEMENTS, HULL

Drawing Title: TRANSECT B 10.08.16

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S0 - DR - LE - 200014
Location | Type | Role | Number

Project Ref. No.: 514508

Revision: P03

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A63 Castle Street Improvements, Hull
Environmental Statement

Volume 3 Appendix 10.3

ECOLOGY AND NATURE CONSERVATION – BREEDING BIRDS SURVEY REPORT

TR010016/APP/6.3
HE514508-MMSJV-EBD-S0-RP-LE-000004
6 September 2018

A63 Castle Street Improvements, Hull

Environmental Statement

Appendix 10.3 Breeding bird survey report

Revision Record						
Rev No	**Date**	**Originator**	**Checker**	**Approver**	**Status**	**Suitability**
P01.1	04.01.16	L Armstrong	D Wood	J North	Draft	For review and comment
P01.2	22.01.18	A West	D Wood/K Ross	J McKenna	Draft	For review and comment
P01	31.07.18	D Wood	K Ross	J McKenna	Shared	S4
P02	06.09.18	D Wood	K Ross	J McKenna	Shared	S4

Prepared for:
Highways England
Lateral
8 City Walk
Leeds
LS11 9AT

Prepared by:
Mott MacDonald Sweco JV
Stoneham Place, Stoneham Lane
Southampton, Hampshire
SO50 9NW

Contents

Tables

1. Executive summary

1.1.1 Mott MacDonald Sweco Joint Venture (MMSJV) UK was commissioned by Highways England to undertake a Breeding Bird Survey (BBS) in relation to three proposed temporary site compounds at three discrete sites situated close to the Humber Estuary and A63 Castle Street in Hull, East Riding of Yorkshire. The Scheme includes a road improvement scheme for approximately 1.5km of the A63 Castle Street and the temporary site compounds which may be required to facilitate the works.

1.1.2 The Humber Estuary is afforded the following designations: SAC (Special Area of Conservation); SPA (Special Protection Area); Ramsar (the international treaty for the conservation and sustainable use of wetlands) and SSSI (Site of Special Scientific Interest). All designations share the same boundary in the Humber Estuary.

1.1.3 The survey was completed to identify existing breeding bird territories at or near the proposed compounds, referred to as Site C Tower Street Wharf (north and south) (now removed from the Scheme); Site G Livingstone Road and Site D Wellington Street Island Wharf, to assess whether the proposed works have the potential to adversely affect breeding species of birds identified. Site C has since been removed from the Scheme. The survey also included an assessment of the extent and quality of the immediate and neighbouring habitat as well as non-breeding summer bird assemblages associated with these habitats.

1.1.4 One of the bird species observed during the surveys was a species that the Humber Estuary SPA is designated for, namely mallard. This species was observed on the mudflats adjacent to the site. The surveys have shown that the numbers of designated site target bird species were low during the breeding bird season, particularly with respect to waders and wildfowl. The estuary mudflats adjacent to the three sites are predominantly used by gulls during summer and small numbers of wildfowl and waders comprising mainly mallard and turnstone.

1.1.5 Works would have the potential to disturb species of summer breeding passerine or wader and wildfowl assemblages further out in the estuary. The potential impacts of the Scheme on the designated sites have been assessed within a separate Assessment of Implications on European Sites report, in accordance with the Habitat Regulations 2017. See document reference TR010016/APP/6.13.

1.1.6 Four wintering bird surveys are required to assess whether target bird species use Sites G and D for roosting or adjacent exposed mudflats, sand bars or shingle for foraging. The surveys should include observations during both high and low tide and completed between November – March in any year. A minimum of four surveys should be undertaken at ideally one per month by a competent ornithologist.

1.1.7 The timing of vegetation clearance is dependent on the results of the wintering bird surveys, but should be undertaken under the supervision of an ecologist.

2. Introduction

2.1 Background

2.1.1 MMSJV was commissioned by Highways England to undertake a Breeding Bird Survey (BBS) in relation to three proposed temporary site compounds at three discrete sites situated close to the Humber Estuary and A63 Castle Street in Hull, East Riding of Yorkshire. Proposals include a road improvement scheme for approximately 1.5km of the A63 Castle Street and the temporary site compounds may be required to facilitate the works.

2.1.2 The Humber Estuary is afforded the following designations: SAC (Special Area of Conservation); SPA (Special Protection Area); Ramsar (the international treaty for the conservation and sustainable use of wetlands) and SSSI (Site of Special Scientific Interest. Locations of the potential site compounds and the designated sites are provided in Appendix A: Compound site locations.

2.1.3 The Humber is the second largest coastal plain estuary in the UK, and the largest coastal plain estuary on the east coast of Britain. The Humber Estuary SAC extends to 36,657 hectares, with the SPA covering 37,630 hectares and the Ramsar 37,988 hectares. All designations share the same boundary in the Humber Estuary.

2.1.4 The estuary contains a number of habitats listed in Annex 1 of the Habitats Directive which are the primary reason for its designation as a SAC. These include: Atlantic salt meadows, shallow submerged sandbanks, partially covered mudflats and sandbanks, glasswort (*Salicornia*) beds and coastal lagoons. Extensive intertidal mudflats which are not covered at low tide are also of primary importance. Significant species include river lamprey *Lampetra fluviatilis* and sea lamprey *Petromyzon marinus*. Other Annex 1 habitats which are present as a qualifying feature, but are not primary reasons for site selection include: Fixed dunes, dunes with sea buckthorn *Hippophae rhamnoides*, dunes with marram grass *Ammophila arenaria* and embryonic shifting dunes. The presence of grey seals *Halichoerus grypus* is another qualifying feature.

2.1.5 The Humber Estuary is designated as a SPA for a range of bird species which are listed on Annex 1 of the Conservation of Wild Birds Directive, the estuary is of exceptionally high quality and importance as defined by Article 4.1 qualification (79/409/EEC). The site supports very significant populations of bittern *Botaurus stellaris*, golden plover *Pluvialis apricaria*, avocet *Recurvirostra avosetta*, marsh harrier *Circus aeruginosus*, bar tailed godwit *Limosa lapponica*, ruff *Philomachus pugnax* and little tern *Sternula albifrons*, which breed and overwinter on the estuary. Important migratory species include knot *Calidris canutus*, dunlin *Calidris alpina*, black tailed godwit *Limosa limosa*, redshank *Tringa totanus* and *shelduck Tadorna tadorna*.

2.1.6 The estuary is designated as a wetland of international importance under the Ramsar convention as it meets several of the qualifying criteria set out in the convention. The site is a representative example of a near-natural estuary with the following component habitats: dune systems and humid dune slacks, estuarine waters, intertidal mud and sand flats, saltmarshes, and good examples of four of the five physiographic types of saline brackish/saline lagoons.

2.1.7 The Humber Estuary is designated as a SSSI as it has a series of nationally important habitats. These are the estuary itself (with its component habitats of intertidal mudflats and sandflats and coastal saltmarsh) and the associated saline lagoons, sand dunes and standing waters.

2.1.8 The estuary supports nationally important numbers of 22 wintering waterfowl and nine passage waders, and a nationally important assemblage of breeding birds of lowland open waters and their margins. It is also nationally important for a breeding colony of grey seals, river lamprey and sea lamprey, a vascular plant assemblage and an invertebrate assemblage.

2.1.9 Highways England seeks to improve approximately 1.5km of the A63 from Ropery Street, to the Market Place/Queen Street junctions. Upgrading this section of the A63 will reduce congestion, improve access to the port, city centre and nearby leisure facilities, and increase safety for road users and the local community. Several potential temporary construction site compounds, accommodation works and recovery options have been selected to facilitate the works. Sites D Wellington Street Island Wharf and Site G Livingstone Road are located adjacent to the north coast of the Humber Estuary. Site C Tower Street Wharf (north and south) is adjacent to the River Hull SNCI (Site of Nature Conservation Interest) which flows into the Humber Estuary approximately 85m to the south of it. In the Preliminary Ecological Appraisal (PEA) undertaken by MMSJV in 2016 (MMSJV, 2016) these potential compound sites were found to contain habitats potentially suitable to support foraging, roosting and ground-nesting waterfowl that the Humber Estuary is designated for. Breeding and wintering bird surveys were recommended on these sites to establish the birds' presence/likely absence and use of the site compounds and the adjacent designated sites. The survey results will also inform the AIES. Full Ordnance Survey Grid Reference: Site G - TA 03526 25629; Site D - TA 09591 28055 (Appendix A: Site Compound Locations).

2.2 Previous ecological survey

2.2.1 Ecological survey reports that are relevant to the area are summarised in Table 1: Previous ecological reports 1 below.

Table 1: Previous ecological reports

Report	Date	Author	Key Evaluation Results
Environmental Survey	2003	Smeeden Foreman	Identification of principal ecological receptors.
An Environmental Building Assessment, Bat Emergence and Dawn Swarming Survey for Castle Buildings, Quay West	2005	WSP 2005	Presence of a single common pipistrelle bat roosting behind a boarded-up window in the Castle Building.
Phase 1 Ecological Survey, A63 Castle Street, Hull, Ecological Assessment Stage 2. Report Reference 06588242.501 Rev B0	2007	Golder Associates	Presence of non-statutory site of nature conservation importance (Trinity Burial Ground SNCI).
A63 Improvements – Hull, Environmental Assessment Report (Options Identification Stage). Report Reference W11189/VAA/03	2008	Pell Frischmann	Overall limited impact for the scheme with no significant differences in ecological impact between scheme options.
Kingston-upon-Hull Open Space Assessment. Sites of Nature Conservation Importance (SNCI).	October 2008	Penny Anderson Associates	Audit of habitats and species within Trinity Burial Ground SNCI.
Environmental Scoping Report (Options Selection Stage) W11189/T13/01	2009	Pell Frischmann	No significant differences in ecological impact between scheme options.
Initial Screening Report for Appropriate Assessment (options selection stage). W11189/T13/06	2010	Pell Frischmann	Initial Scheme screening of potential impacts to European protected site. Drainage design needed before final assessment can be completed.
Scheme Assessment Report (W11189/T11/05)	2010	Pell Frischmann	Overground scheme option has less impact on wildlife and biodiversity.
Preliminary Ecological Appraisal (PEA) to support ES chapter 10.	2016	MMSJV	Identification of ecological receptors.

2.3 Survey and report aims and objectives

2.3.1 The purpose of the bird surveys undertaken by MMSJV was to inform the assessment of whether the proposed site activities have the potential to disturb breeding or foraging estuarine and inland avifauna associated with the designated sites identified within the earlier PEA report[1].

[1] Mott MacDonald Sweco Joint Venture (2016) Preliminary Ecological Appraisal.

3. Methodology

3.1 Desk study

3.1.1 The desk study involved a search for statutory and non-statutory designated wildlife sites and historical records of avifauna within a 2km radius of the Scheme. A search for internationally statutory designated sites was made within a 20km radius of the site. The following sources of information were used:

- Multi-Agency Geographical Information for the Countryside (MAGIC) website (http://magic.defra.gov.uk.
- Previous ecological survey reports detailed in Table 10.1 were reviewed for background information.

3.1.2 The records were checked against species included in the UK Biodiversity Action Plan (UKBAP) JNCC, 2012[2] and Hull Local Biodiversity Action Plan (LBAP) Hull Biodiversity Partnership 2008[3].

3.1.3 The North and East Yorkshire Ecological Data Centre (NEYEDC) provided biological records within a 2km search radius of Ordnance Survey grid reference: TA 094 283 on 21 January 2016. This grid reference was the central point of works area at the time of the records request and is subject to change. However, in the event of any changes, this is not considered a constraint under current proposals for this Scheme as the records of target bird species and associated surrounding habitat in relation to site locations can be confidently assessed.

3.2 Breeding bird survey

3.2.1 The BBS followed broadly the survey methodology within Bibby *et al* (2000)[4] and British Trust of Ornithology *et al* (2016)[5]. The survey was completed to identify existing breeding bird territories at or near the proposed compounds, Sites C, D and G to see if the proposed works had the potential to adversely affect successful breeding species of birds identified. The survey also included an assessment of the extent and quality of the immediate and neighbouring habitat as well as non-breeding summer bird assemblages associated with these habitats. A field search for all bird species identified as part of a PEA desk study completed by MMSJV

[2] Joint Nature Conservation Committee. (2012). *The Post UK 2010 Biodiversity Framework (*UKBAP) Available online at: http://jncc.defra.gov.uk/page-6189

[3] Hull Biodiversity Partnership (2008). Hull Biodiversity Action Plan Available online at: http://www.hull.ac.uk/HBP/ActionPlan/

[4] Bibby, C., Burgess, N., Hill, D and Mustoe, S. (2000). Bird Census Techniques. 2nd Edition. Academic Press. ISBN: 9780120958313.

[5] British Trust of Ornithology, Joint Nature Conservancy Committee and the Royal Society for the Protection of Birds. (2016). Breeding Bird Survey Methodology https://www.bto.org.

2016, was used as baseline information for this report in order to assess the potential for the proposed works to disturb such bird assemblages and/or associated habitats.

3.2.2 Four surveys were carried out on the potential compound sites which contain habitat suitable to support bird species associated with the Humber Estuary and either lie adjacent to it or the River Hull. They are referred to as Sites G and D (Appendix A: Site compound locations).

3.2.3 The surveys were undertaken when song output for most species is at its peak. Each survey comprised a late afternoon visit followed by a morning visit with two surveys at high tide and two at low tide for each site. As both sites are coastal and close to estuarine habitat, high tide surveys were carried out to see if birds also used the sites for roosting or foraging. Low tide surveys were undertaken on all three sites and focused on bird foraging potential on exposed mud, sand or shingle habitat that was adjacent to each site when the tide was out.

3.2.4 All sites were walked along a pre-determined route at a steady pace and all birds seen or heard were recorded. The surveyor stopped at various vantage points along transects to observe potential breeding behaviour (Appendix B: Breeding bird survey results).

3.2.5 At Site G an adjacent area of shingle beach, although outside the boundary of Site G was also included in the survey and a separate short transect was carried out as this section of coast could not be seen from a vantage point in Site G due to the contour of the land. It was considered to be close enough to Site G (50m at its nearest point) to warrant assessment and was visited as part of the survey.

3.2.6 The surveys were carried out at the appropriate time of year during the bird breeding season and in favourable weather conditions. The details are given in Table 2: Survey number, date, time, tide condition and temperature before and after the surveys.

Table 2: Survey number, date, time, tide condition and temperature before and after the surveys

Survey number	Date	Time	Tide	Temp °C	Site visited
1	26/05/2016	PM	High	15 - 15	C & D
1	27/05/2016	AM	High	12 - 14	C, G & D
2	06/06/2016	PM	High	14 - 14	C, G & D
2	07/06/2016	AM	High	20 - 20	C, G & D
3	13/06/2016	PM	Low	16 - 15	C, G & D
3	14/06/2016	AM	Low	14 - 15	C, G & D
4	29/06/2016	PM	Low	18 - 16	C, G & D
4	30/06/2016	AM	Low	12 - 16	C, G & D

3.2.7 The likelihood of breeding pairs/territories being present was assessed using the following criteria:

- Confirmed breeding – singing male(s) present on at least two survey visits, or other direct evidence such as a nest being found or adults observed carrying food.
- Probably breeding – singing male present on only one survey visit, or other direct evidence such as the presence of recently fledged young.
- Possibly breeding – no singing males heard, but birds observed in suitable breeding habitat for the species.
- Not breeding – birds observed but not considered to be breeding, as suitable habitat for the species is considered to be lacking.

3.2.8 Every part of the sites was surveyed and the approximate location of every bird seen or heard was plotted on individual visit maps. Only the main sightings were plotted to reduce clutter and loss of clarity in the recording during map production.

3.2.9 Breeding bird survey results plans (Appendix B: Breeding bird survey results) include: Scheme site boundary; bird species; behaviour observed; location of active nests; transect route; direction walked by the surveyor. Target Notes (TN) are also provided on the breeding bird survey results plans to indicate the location of any important features within each site.

3.2.10 Legislation afforded to birds and habitats can be found in Appendix C: Legislative framework. Photographs of the sites along with descriptions of features with corresponding TN's, where required, are in Appendix D: Photographs.

3.2.11 All taxon mentioned in the text shall be referred to by the common name followed by their Latin/scientific name and shall be referred to by their abbreviated Latin/scientific name thereafter unless mentioned within a table where both names shall be provided.

3.3 Limitations

3.3.1 There were no limitations to the methodology or survey.

3.3.2 Since the surveys were carried out, Site C has been removed from the list of potential compounds. The results for this site have been left in the report to give a fuller picture of bird activity in the vicinity of the proposed works.

4. Results

4.1 Desk study

Statutory designated sites

4.1.1 NEYEDC provided four records of statutory designated areas within a 2km radius of OS grid reference: TA 094 283.

The Humber Estuary SAC

4.1.2 The estuary contains a number of habitats listed in Annex 1 of the Habitats Directive which are the primary reason for its designation as a Special Area of Conservation (SAC). These include: Atlantic salt meadows; shallow submerged sandbanks; partially covered mudflats; sandbanks; glasswort beds and coastal lagoons. Extensive intertidal mudflats which are not covered at low tide are also of primary importance. Significant species include river lamprey and sea lamprey.

The Humber Estuary SPA

4.1.3 The Humber Estuary is designated as a Special Protection Area (SPA) for a range of bird species which are designated on Annex 1 of the Wild Birds directive. The site supports very significant populations of: bittern; golden plover, avocet, marsh harrier, bar tailed godwit, ruff, and little tern which breed and overwinter on the estuary. Important migratory species include knot, dunlin, black tailed godwit, redshank and shelduck.

The Humber Estuary Ramsar

4.1.4 The estuary is a representative example of a near-natural estuarine conditions with the following component habitats: dune systems; humid dune slacks; estuarine waters; intertidal mud; sand flats; saltmarshes, and coastal brackish/saline lagoons. The area is important for nonbreeding wildfowl with 5 year peak mean at 1996/97-2000/2001 of 153,934. The estuary supports a breeding colony of grey seals and natterjack toad *Bufo calamita*. The Humber Estuary Ramsar site supports a waterfowl assemblage of international importance and twelve bird species populations occur at international importance levels. The Humber Estuary acts as an important migration route for both river lamprey and sea lamprey between coastal waters and their spawning areas.

The Humber Estuary SSSI

4.1.5 The Humber Estuary is designated as a Site of Special Scientific Interest (SSSI) as it has a series of nationally important habitats. These are the estuary itself (with its component habitats of intertidal mudflats and sandflats and coastal saltmarsh) and the associated saline lagoons, sand dunes and standing waters. The estuary supports nationally important numbers of 22 wintering wildfowl and nine passage

waders, and a nationally important assemblage of breeding birds of lowland open waters and their margins. It is also nationally important for a breeding colony of grey seals, river lamprey and sea lamprey, a vascular plant assemblage and an invertebrate assemblage.

Non-statutory designated sites

4.1.6 NEYEDC provided 17 records of non-statutory designated Sites for Nature Conservation Interest (SNCIs) within a 2km radius of OS grid reference: TA 094 283. Only one of these has the potential to be negatively affected by the Scheme. Trinity Burial Ground SNCI is located within the Scheme footprint and supports a 17th century burial ground of archaeological importance as well as supporting 0.8 hectares of mature deciduous trees, OS grid reference: TA 09447 28364.

4.2 Bird conservation status

4.2.1 The conservation status of all regularly occurring British birds has been analysed in co-operation with the leading governmental and non-governmental conservation organisations, including the Royal Society for the Protection of Birds (RSPB), British Trust for Ornithology (BTO) and Birdlife International Birds of Conservation Concern 4 (BoCC 4, Eaton *et al*., 2015)[6]. The basis of species ongoing population trends are assigned to one of three lists of conservation concern. These are the specific Red, Amber and Green lists for England.

4.2.2 Birds in the red and amber lists will be subject to at least one of the relevant factors listed below.

4.2.3 Red list criteria

Globally threatened:

- Historical population decline in UK during 1800–1995.
- Severe (at least 50%) decline in UK breeding population over last 25 years, or longer-term period (the entire period used for assessments since the first Birds of Conservation Concern 1 (BoCC 1) review, starting in 1969).
- Severe (at least 50%) contraction of UK breeding range over last 25 years, or the longer-term period.

4.2.4 Amber list criteria

[6] Eaton, M. Aebischer, N. Brown, A. Hearn, R. Leigh, L. Musgrove, A. Noble, D. Stroud, D. Gregory, R. (2015). *Birds of Conservation Concern 4*. The population status of birds in the UK, Channel Islands and the Isle of Man.

Species with unfavourable conservation status in Europe (SPEC = Species of European Conservation Concern):

- Historical population decline during 1800–1995, but recovering; population size has more than doubled over last 25 years.
- Moderate (25-49%) decline in UK breeding population over last 25 years, or the longer-term period.
- Moderate (25-49%) contraction of UK breeding range over last 25 years, or the longer-term period.
- Moderate (25-49%) decline in UK non-breeding population over last 25 years, or the longer-term period.
- Rare breeder; 1–300 breeding pairs in UK.
- Rare non-breeders; less than 900 individuals.
- Localised; at least 50% of UK breeding or non-breeding population in 10 or fewer sites, but not applied to rare breeders or non-breeders.
- Internationally important; at least 20% of European breeding or non-breeding population in UK (NW European and East Atlantic Flyway populations used for non-breeding wildfowl and waders respectively).

4.2.5 Green list

Species that occur regularly in the UK but do not qualify under any or the above Criteria:

- Although the lists confer no legal status in themselves, they are useful in evaluating the conservation significance of bird assemblages and for assessing the potential significance of impacts and informing appropriate levels of mitigation with respect to bird populations. Species which do not breed in the UK or do not winter in significant numbers are not listed on any of the Red, Amber or Green Lists, neither are introduced species[7].

4.2.6 NEYEDC provided records of 15 protected/notable bird species within the area of search. The records are presented in Table 3: Bird records received from NEYEDC.

[7] Royal Society for the Protection of Birds (2016). Available online at: https://www.rspb.org.uk/discoverandenjoynature/discoverandlearn/birdguide/status_explained.aspx

Table 3: Bird records received from NEYEDC

Scientific name	Common name	Designation	Date recorded	Number of records	Direction & distance from site (m)
Anas platyrhynchos	Mallard	BoCC Amber	2008	5	0.3km SE
Carduelis cannabina	Common linnet	UKBAP, LBAP	2008	1	1.5km SE
Chroicocephalus ridibundus	Black-headed gull	BoCC Amber	2014	1	1.9km NW
Larus argentatus	Herring gull	UKBAP, BoCC Red	2008	1	1.9km NW
Motacilla cinerea	Grey wagtail	BoCC Red	2013	2	1.7km NW
Passer domesticus	House sparrow	UKBAP, LBAP, BoCC Red	2008	8	1km NW
Passer montanus	Tree sparrow	UKBAP, LBAP, BoCC Red	2009	Not recorded	Not recorded
Perdix perdix	Grey partridge	UKBAP, BoCC Red	2011	Not recorded	Not recorded
Prunella modularis	Hedge accentor	UKBAP	2008	4	On site
Scolopax rusticola	Woodcock	BoCC Red	2010	Not recorded	Not recorded
Sturnus vulgaris	Common starling	UKBAP, BoCC Red	2014	12	929m NE
Turdus philomelos	Song Thrush	UKBAP, LBAP, BoCC Red	2008	4	948m NE
Turdus pilaris	Fieldfare	BoCC Red	2010	Not recorded	Not recorded
Turdus viscivorus	Mistle Thrush	BoCC Red	2008	Not recorded	Not recorded

4.2.7 NEYEDC also returned dated records for Eurasian sparrow hawk *Accipiter nisus*, common sandpiper *Actitis hypoleucos*, northern pintail *Anas acuta*, northern shoveler *Anas clypeata*, Eurasian teal *Anas crecca*, Eurasian wigeon *Anas Penelope*, mallard *Anas platyrhyncho*, gadwall *Anas strepera*, greater white-fronted goose *Anser albifrons subsp. Albifrons*, greylag goose *Anser anser*, greater scaup *Aythya fuligula*, bohemian waxwing *Bombycilla garrulus*, brent goose *Branta bernicla subsp. Bernicla*, common goldeneye *Bucephala clangula*, purple sandpiper *Calidris maritima*, long-tailed duck *Clangula hyemalis*, tundra swan *Cygnus columbianus*, whooper swan *Cygnus cygnus*, peregrine falcon *Falco peregrinus*, black-tailed godwit, common scoter *Melanitta nigra*, Eurasian curlew *Numenius arquata*, bearded tit *Panurus biarmicus*, ruff, avocet, little tern and northern lapwing *Vanellus vanellus*.

4.3 Breeding bird survey

4.3.1 Site C (now removed from Scheme) – This site is approximately 150m x 50m and is currently used as a car park. The site is situated in an urban area adjacent to the River Hull which has a small amount (10m) of exposed intertidal mud along its banks during low tide. Terrestrial habitats within the site include: hard standing; amenity and semi improved grassland; tall ruderal and scattered scrub, ephemeral/short perennial (Appendix D: Photographs. Photographs 1 – 3). A total of eight species of birds were counted during all four surveys at Site C. The site is located at Ordnance Survey (OS) grid reference: TA 10300 28583.

4.3.2 Site D - This site is approximately 240m x 80m. A small portion of the site, at the western end, is currently used as a car park. The remainder of the site shows no sign of current use. The site is situated in an urban area adjacent to the River Humber which has limited exposed intertidal mud, rocks and boulders along its banks during low tide. Terrestrial habitats within the site include: bare ground; ephemeral/short perennial; dense scrub; scattered broad-leaved trees; tall ruderal and scattered scrub (Appendix D: Photographs. Photographs 4 – 6). A total of twelve species of birds were counted during all four surveys at Site C. The site is located at Ordnance Survey (OS) grid reference: TA 09584 28052.

4.3.3 Site G - This site is approximately 150m x 50m and is currently used as a car park. The site is situated in an urban and commercial area at the confluence of the Fleet Drain and River Humber. Exposed mud borders the west and south perimeters of the site during low tide. Terrestrial habitats include: bare ground; amenity grassland; tall ruderal; scattered scrub; and ephemeral/short perennial. The site also contains three buildings. Photographs 7 – 12. A total of fifteen species of birds were counted during all four surveys at Site C. The site is located at Ordnance Survey (OS) grid reference: TA 10300 28583.

4.3.4 A total of 16 species of birds were counted during all four surveys within Sites C and D. Table 4: Common and scientific name of birds and breeding status recorded at Sites C, D and G below, shows each bird species recorded at each site during all four surveys combined with their common and Latin/scientific name. *** indicates confirmed breeding, ** probably breeding, * possibly breeding.

Table 4: Common and scientific name of birds and breeding status recorded at Sites C, D and G

Latin name	Common name	Site C	Site D	Site G
Anas platyrhynchos	Mallard	✓		✓
Ardea cinerea	Grey heron			✓
Arenaria interpres	Turnstone			✓
Carduelis cannabina	Linnet		✓	✓***
Cardiulis carduelis	Goldfinch		✓*	✓**
Carduelis chloris	Greenfinch	✓*		

Columba livia	Feral pigeon/rock dove	✓		
Columba polumbus	Wood pigeon	✓	✓	✓
Corvus corone	Carrion crow		✓	
Erithacus rubecula	Robin		✓*	
Falco tinnunculus	Kestrel			✓
Larus argentatus	Herring gull	✓	✓	✓
Larus fuscus	Lesser black backed gull			✓
Larus marinus	Great black backed gull		✓	
Larus ridibundus	Black headed gull		✓	✓
Numenius arquata	Curlew			✓
Passer domesticus	House sparrow		✓	✓
Prunella modularis	Dunnock	✓**	✓**	✓**
Sturnus vulgaris	Starling		✓	✓
Sylvia communis	Whitethroat			✓ ***
Turdus merula	Blackbird		✓**	
Turdus philomelos	Song thrush	✓		

4.4 Field observation results

4.4.1 The main bird species behaviour observed over the survey period is summarised below together with the BTO species codes (emboldened) used in the survey results plans (Appendix B) and in this Section[8].

Grey Heron *Ardea cinerea* ***H.***

4.4.2 Not breeding. Observed on one occasion on a neighbouring mud flat 170m NE of the SE boundary of Site G Photo 13. No suitable breeding habitat is present on any of the sites for this species.

Mallard *Anas platyrhynchos* ***MA***

4.4.3 Not breeding. Two to four birds observed at Site C during four surveys and Site G over three surveys. Could potentially breed at Site G in scrub around the eastern and southern boundaries at Site G, TN 2.

4.4.4 Only male mallards observed during the surveys (Appendix D: Photographs. Photograph 11). The estuary is known for supporting a large population of mallard during winter. The mallard is listed as a priority species within the LBAP for Hull and is Amber listed due to unfavourable conservation status.

[8] BTO Species Codes (nd). Available online at: https://www.bto.org/sites/default/files/u16/downloads/forms_instructions/bto_bird_species_codes.pdf

Kestrel *Falco tinnunculus* ***K***

4.4.5 Not breeding. Observed once flying around Site G moving west to east then north. No breeding habitat on any of the sites.

Turnstone *Arenaria interpres* ***TT***

4.4.6 Not breeding. Observed roosting on rocks at strand line at Site G on one occasion. The bird was in non-breeding plumage either over summering or on passage. The bird flew south west and followed twelve further turnstones going to roost on the south side of the estuary on the west side of the Humber Bridge where habitat is more varies and of greater extent. Does not generally breed in the UK. The estuary supports large population assemblages during winter.

Black-headed gull *Larus ridibundus* ***BH***

4.4.7 Not breeding. Observed at Sites D and G during all four surveys. Birds observed either passing directly over or adjacent to the site and heading to or from roosting areas or foraging. No suitable breeding habitat on any of the sites. Amber listed due to unfavourable conservation status.

Lesser black-backed gull *Larus fuscus* ***LB***

4.4.8 Not breeding. Observed at Site G on two occasions flying close to the sites southern boundary. No suitable breeding habitat on any of the sites.

Herring gull *Larus argentatus* ***HG***

4.4.9 Not breeding. Observed at all three sites during all four surveys either flying directly over or adjacent to each site.

4.4.10 Potential breeding territory adjacent to Sites C, D and G is present on commercial, industrial and residential buildings immediately adjacent to the sites. Listed as Amber due to unfavourable conservation status.

Great black backed gull *Larus marinus* ***GB***

4.4.11 Not breeding. Approximately 35 birds were observed resting on a sand bar 400m south of Site D. No suitable breeding habitat on any of the sites.

Feral pigeon/rock dove *Columba livia* ***FP***

4.4.12 Not breeding. Observed on three occasions at Site C either flying directly over or adjacent to the site. A small derelict building located at Site C (Appendix B: Breeding bird survey results. Target Note 2) provides suitable nesting habitat but is currently used by vagrants so is subject to disturbance. One pair was observed nesting around the anchor of a disused ship stored as part of a museum exhibit, this is located on the opposite side of the River Hull to Site C. Not territorial.

Wood pigeon *Columba palumbus* ***WP***

4.4.13 Observed at all three sites either flying over or foraging on the ground. No display flights or territorial calling heard but territories may still be present on any of the sites due to moderate food availability. No suitable nesting habitat on any of the sites but street trees adjacent to Site D (Appendix B: Breeding bird survey results. Site D, TN 2) are suitable for nesting.

Dunnock *Prunella modularis* ***D***

4.4.14 Probably breeding. One singing male observed at Site C in a suitable nesting habitat i.e. scrub on the north side of a public footbridge (Appendix B: Breeding bird survey results. Site C, TN 1). One suspected territory held at Site C.

4.4.15 Probably breeding. Two birds seen foraging on Site D on two occasions near suitable breeding habitat. At least one territory held.

4.4.16 Probably breeding. Male heard singing on two occasions at Site G but on one occasion unsure if two individual males were present or if this was the same bird. Suitable breeding habitat present. At least one territory identified at Site G. Site clearance activities have the potential to disturb nesting dunnock. Listed as Amber due to unfavourable conservation status and listed as a priority species within the UKBAP.

Robin *Erithacus rubecula* ***R***

4.4.17 Probably breeding. One singing male seen and heard singing at the northern boundary of Site D just outside the site near amenity planted hedgerows and street trees. Suitable nesting habitat in scrubby areas at Site D and one territory identified near the north boundary of this site (Appendix B: Breeding bird survey results. Site D, TN 3).

Song thrush *Turdus philomelos* ***ST***

4.4.18 Not breeding. One male heard singing on two separate occasions in an area of introduced and native shrubs near Site C 60m SE of the south eastern boundary and is probably breeding in this area. No suitable nesting habitat currently on site. The song thrush is red listed and a priority species within the LBAP for Hull and the UKBAP.

Whitethroat *Sylvia communis* ***WH***

4.4.19 Confirmed breeding. Male bird seen and heard singing on three occasions at Site G in scrub at the sites southern boundary. Bird seen with food entering scrub on three occasions in suitable nesting habitat 20m of the sites E boundary, refer to right arrow on TN 2, Site G. One territory identified.

Greenfinch *Carduelis chloris* ***GR***

4.4.20 Possibly breeding. Male bird heard singing at Site C in scrub north of the footbridge and seen flying south and landing on tall ruderal stems south of the footbridge. Greenfinch juveniles with adults seen on one occasion near footbridge at Site C and flying south across the site. Breeding habitat considered to be poor north of footbridge (Appendix B: Breeding bird survey results. Site C, TN 2). This species is semi colonial and becomes very mobile once chicks have fledged so the breeding site may be in the wider area.

Goldfinch *Carduelis carduelis* ***GO***

4.4.21 Not breeding. A male bird was observed singing on ruderal stem on one occasion at Site C with poor nesting habitat north of the footbridge and not thought to be breeding on Site.

4.4.22 Possibly breeding. Suitable breeding habitat exists at Site D in street trees on the eastern boundary of the site where a male bird was heard calling and flying to street trees on the eastern boundary but no nest observed. May make use of these trees in the near future.

4.4.23 Probably breeding at site G as a single male observed singing on two occasions near suitable breeding habitat near the north eastern site boundary near scrub. One territory held. Site clearance activities have the potential to disturb nesting goldfinch at Site G.

Linnet *Carduelis cannabina* ***LI***

4.4.24 Confirmed breeding. Female observed carrying food on one occasion to an area of scrub 15 m north east of the north eastern boundary of Site G. Two males seen during all four surveys either foraging in the centre of the site on the ground and on one occasion this was a male accompanying a female foraging off the nest. Males also heard singing at the north eastern and south eastern site boundaries the latter where a bird was seen entering scrub on three occasions. Two nests confirmed at Site G. Two territories held.

House sparrow *Passer domesticus* ***HS***

4.4.25 Not breeding. Adults with juveniles observed at Site D foraging in grassland at the central site area. Probably nesting in neighbouring houses on the opposite side of Wellington Road to the north. One territory suspected at Site D. No suitable breeding habitat on Site D.

Curlew *Numenius arquata* ***CU***

4.4.26 Not breeding. Observed foraging on exposed mud flat 120m north east of the south eastern boundary of Site G. No suitable breeding habitat at any of the sites. No territories identified.

House sparrow *Passer domesticus* ***HS***

4.4.27 Not breeding. Adults with juveniles observed at Site D foraging in grassland at the central site area. Probably nesting in neighbouring houses on opposite side of Wellington Road to the north. One territory suspected at Site D.

4.4.28 A single male bird was observed at Site G singing on a pre-fabricated building roof near the site and flying east and continuing to sing on a second roof top. One territory suspected at Site G. No suitable breeding habitat on Sites D and G.

Starling *Sturnus vulgaris* ***SG***

4.4.29 A starling family was observed at Site D with at least ten birds foraging on the ground in grassland. There were possibly two family groups within these ten birds, as three adults identified. No suitable nesting habitat at Site D. Not generally territorial. A second family was observed at Site G foraging on the ground with eight birds present comprising six juveniles and two adult birds. No suitable nesting habitat on site.

Carrion crow *Corvus corone* ***C***

4.4.30 Not breeding. Observed flying over Site D. No suitable habitat present. No territory identified as only one pass observed over Site D.

4.4.31 Summary of findings

4.4.32 Table 5: Breeding status, species, site and total breeding status' observed, provides a summary of the results of the breeding bird surveys and includes: breeding status, species, corresponding site and the number of each species displaying a particular breeding status observed at each site.

Table 5: Breeding status, species, site and total breeding status' observed

Breeding bird status recorded at Site C, D and G		
Breeding status	**Species with corresponding site**	**Total number of species**
Confirmed breeding	Linnet (G), whitethroat (G)	2
Probably breeding	Blackbird (D), dunnock (C, D and G), goldfinch (G)	3
Possibly breeding	Robin (D), goldfinch (D) greenfinch (C)	3
Non-breeding Corresponding site not given, see summary of observations above for locations.	Grey heron, mallard, kestrel, turnstone, black headed, lesser black-backed gull, herring gull, great black backed gull, feral pigeon, wood pigeon, song thrush, curlew, house sparrow, starling, carrion crow.	15

4.4.33 A total of ten territories of seven bird species were identified or suspected of being held over the Sites C, D and G throughout the survey period.

4.4.34 Two active nests of linnet were confirmed present on Site G just off the sites north eastern and south eastern boundaries with a possible third at the southern central

boundary area. This bird is red listed and included in the UKBAP and LBAP so is need of national and local conservation action. One active common whitethroat nest was also confirmed in scrub near the eastern boundary of Site G and UKBAP dunnock and goldfinch were also probably breeding.

4.4.35 Blackbird and dunnock are probably breeding in scrub near the northern boundary of Site D with other nesting habitat also available on this site (Appendix B: Breeding bird survey results. Site D, TN 1-3). Robin and goldfinch are possibly breeding at Site D with suitable habitat at TN 1-3 (Appendix B: Breeding bird survey results. Site D, TN 1-3).

4.4.36 Dunnock is possibly breeding at Site C with suitable habitat north of the footbridge (Appendix B: Breeding bird survey results. Site C, TN 2). Greenfinch is possibly breeding.

5. Conclusions and recommendations

5.1 Statutory designated sites

5.1.1 Two of the bird species observed during the surveys were species for which the Humber Estuary SPA is designated. Curlew was recorded in Site G on the adjacent mudflats and mallard was recorded on sites C and G on the adjacent mudflats. The surveys have shown that the numbers of target bird species are low during summer particularly with respect to waders and wildfowl. The estuary mudflats adjacent to the three sites were predominantly used by gulls during the surveys with small numbers of wildfowl and waders comprising mainly mallard and turnstone.

5.1.2 The Humber Estuary SAC, Ramsar, SPA, and SSSI Sites and the River Hull tributary which are adjacent to the proposed compound sites may be disturbed by noise or vibration depending upon work activities. Noise and vibration disturbance caused by the breakup of concrete and/or pile driving would have the potential to disturb species of summer breeding and over wintering passerine or wader and wildfowl assemblages further out in the estuary. Further negative impact may also result from chemical spillage or other deposits of various particulates such as cement dust entering the River Humber directly, it's nearby tributaries or through ground water. The potential impacts of the Scheme on the designated sites have been assessed within a separate Assessment of Implications on European Sites report, in accordance with the Habitat Regulations 2017.

5.1.3 Chemical and/or dust deposits may also have a negative impact upon marine invertebrate and plant assemblages which a large proportion of the target bird species identified in Sections 2.1.4-7 require for foraging.

5.2 Impacts to bird species observed

5.2.1 A number of observed species could potentially be disturbed by the proposed works. Site clearance activities at Sites C, D and G have the potential to disturb nesting birds. Works such as pile driving near Site D have the potential to disturb foraging great black-backed gull.

5.3 Further work required

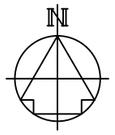
5.3.1 Four wintering bird surveys are required to assess whether target bird species use Sites C, D and G for roosting or adjacent exposed mudflats, sand bars or shingle for foraging. The surveys should include observations during both high and low tide and completed between November – March in any year. A minimum of four surveys should be undertaken at ideally one per month by a competent ornithologist.

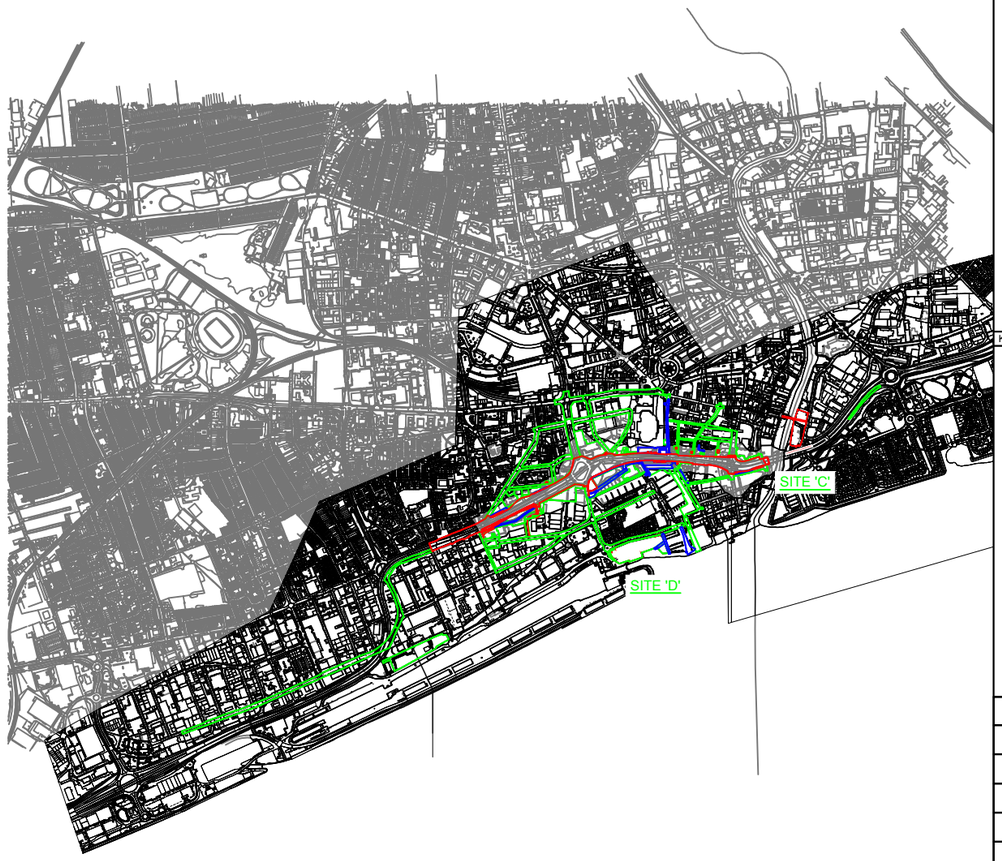
5.3.2 The timing of vegetation clearance is dependent on the results of the wintering bird surveys, but should be undertaken under the supervision of an ecologist who

should check vegetation for active nests prior to clearance works commencing and identify any areas that should be avoided. Any active nests found must remain in situ, with a buffer of undisturbed vegetation, until all the young have fledged.

5.3.3 This report will remain valid for a period of two years from the date of the last survey, June 2016.

Appendix A: Site compound locations





SITE 'G'

Notes

Key to symbols

PERMANENT LAND TAKE BOUNDARY
PERMANENT RIGHTS BOUNDARY
TEMPORARY LAND TAKE BOUNDARY

Rev	Date	Amendment Details	Drw'n	Chk'd	App'd
P02		ISSUED FOR HE REVIEW	VM	DW	LC
P01	31/01/18	ISSUED FOR REVIEW & COMMENT	RE	DW	LC

Mott MacDonald Sweco

Client: highways england

Drawing Status: SHARED

Suitability: S4

Project Title: A63 CASTLE STREET IMPROVEMENTS, HULL

Drawing Title: COMPOUND LOCATIONS

Scale	Designed	Drawn	Checked	Approved
1:12500	West, Adam	Ebbs, Ray	Wood, Diane	Cottrell, Linsey
Original Size: A1	Date: 31/01/18	Date: 31/01/18	Date: 31/01/18	Date: 31/01/18

Drawing Number: HE PIN | Originator | Volume
514508 - MMSJV - VES -
S0 - DR - LE - 300001
Location | Type | Role | Number

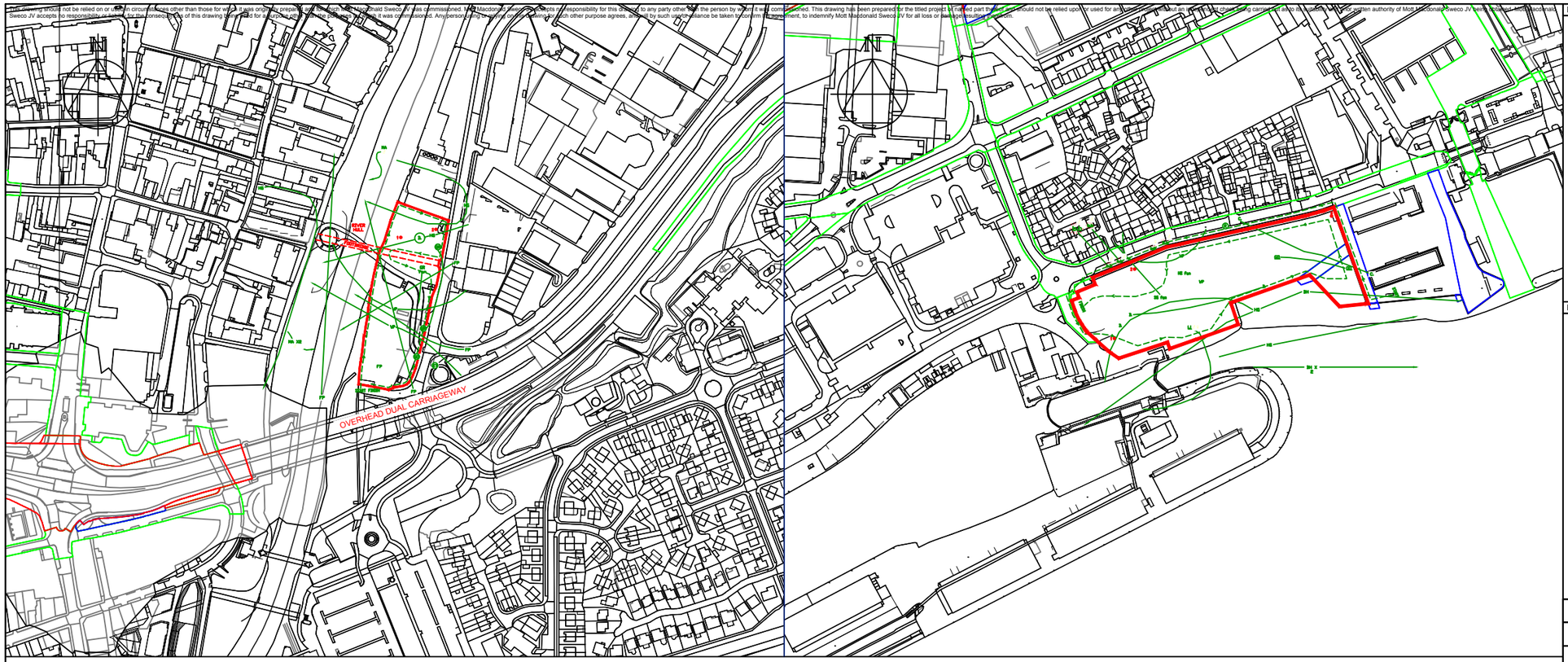
Project Ref. No.: 514508

Revision: P02

1:12500 0 625m 1250m

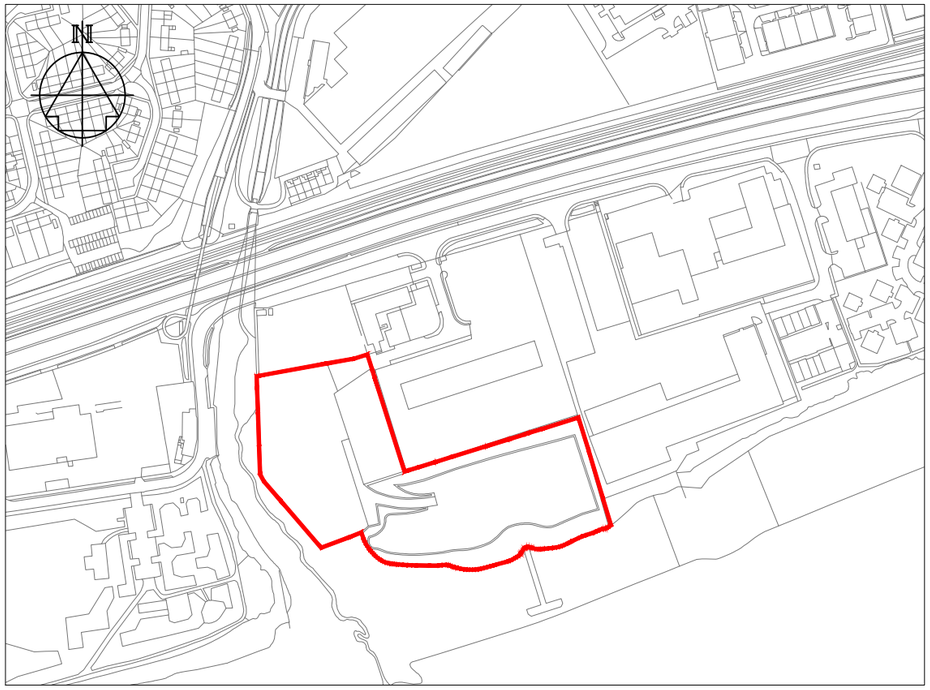
pw:\\MCCNTSII04.global.arup.com:PW_ARUP_UK_HE\Documents\A63 Castle Street Improvements\04 Mott MacDonald Limited Sweco Limited JV\LE - Landscape and environment - Environmentalist\DR - Drawing\HE514508-MMSJV-VES-S0-DR-LE-300001

Appendix B: Breeding bird survey results



BREEDING BIRD SURVEY SITE 'C'

BREEDING BIRD SURVEY SITE 'D'



BREEDING BIRD SURVEY SITE 'G'

LEGEND

- SURVEYORS TRANSECT ROUTE
- TARGET NOTE

BIRD ACTIVITIES

- SG fam — JUVENILE BIRDS WITH PARENT`S IN ATTENDANCE
- HS — BIRD CALLING
- BIRD IN SONG
- AGGRESSIVE ENCOUNTER BETWEEN TWO BIRDS
- *LI — OCCUPIED NEST
- LI Food — BIRD CARRYING FOOD

MOVEMENT OF BIRDS

- -SG— — BIRD SEEN ONLY IN FLIGHT
- TT— — BIRD STATIC THEN FLYING
- WP——WP — BIRD MOVING BETWEEN TWO PLACES. SOLID LINE INDICATES IT WAS DEFINITELY THE SAME BIRD
- D.—--D. — A QUESTIONED MARK SOLID LINE INDICATES REGISTRATIONS. PROBABLY RELATE TO SAME BIRD.
- MA MA — WHEN THERE IS NO LINE ADJOINING THE REGISTRATIONS, THIS INDICATES THAT THESE BIRDS ARE DIFFERENT.
- -WP—WP — BIRD SEEN ONLY IN FLIGHT AND THEN LANDING
- —WP — BIRD FLYING IN AND LANDING (FIRST SEEN IN FLIGHT)

1:2000 0 100m 200m

Notes

Key to symbols

- PERMANENT LAND TAKE BOUNDARY
- PERMANENT RIGHTS BOUNDARY
- TEMPORARY LAND TAKE BOUNDARY

Rev	Date	Amendment Details	Drw'n	Chk'd	App'd
P03	14/09/18	SCHEME BOUNDARY EXTENTS AMENDED	VM	DW	LC
P02	16/08/18	ISSUED FOR HE APPROVAL	VM	DW	LC
P01	31/01/18	ISSUED FOR REVIEW & COMMENT	RE	DW	LC

Mott MacDonald Sweco

Client: highways england

Drawing Status: SHARED

Suitability: S4

Project Title: A63 CASTLE STREET IMPROVEMENTS, HULL

Drawing Title: BREEDING BIRD SURVEY SITE 'C', 'D' AND SITE 'G'

Scale	Designed	Drawn	Checked	Approved
1:2000	West, Adam	Ebbs, Ray	Wood, Diane	Cottrell, Linsey
Original Size: A1	Date: 31/01/18	Date: 31/01/18	Date: 31/01/18	Date: 31/01/18

Drawing Number: HE PIN | Originator | Volume: 514508 - MMSJV - VES - S0 - DR - LE - 300002 (Location | Type | Role | Number)

Project Ref. No.: 514508

Revision: P03

pw:\\MCCNTSI04.global.arup.com:PW_ARUP_UK_HE\Documents\A63 Castle Street Improvements\04 Mott MacDonald Limited Sweco Limited JVLE - Landscape and environment - Environmentalist\DR - Drawing\HE514508-MMSJV-VES-S0-DR-LE-300002

Appendix C: Legislative framework

Legislation

This legal information is presented in summary form and is intended for general guidance only. It is recommended the original documentation is referred to for detailed and definitive information.

Birds are afforded various levels of protection and levels of conservation status on a species by species basis, with the inclusion of a number of species on the following legislation:

- Wildlife and Countryside Act 1981 (as amended) [Department of the Environment (1981)]
- EC Birds Directive (79/409/EEC)
- Natural Environment and Rural Communities Act 2006 – Section 41
- The most significant general legislation for British birds lies within Part 1 of the Wildlife and Countryside Act 1981 (as amended). Under current legislation it is an offence to:
- Kill, injure or take any wild bird
- Take, damage or destroy the nest of any wild bird while that nest is in use or being built
- Take or destroy an egg of any wild bird

In addition, Schedule 1 of the Act lists a number of species which are protected by special penalties at all times.

Council Directive 2009/147/EC on the conservation of wild birds (the 'Birds Directive') provides for the conservation and management of all wild bird species naturally occurring in the European Union, their nests, eggs and habitats. The Birds Directive bans activities that directly threaten birds (e.g. deliberate killing and destruction of nests and young), regulates hunting of selected species, bans non-selective and large scale killing of birds, and promotes research for bird conservation and management. Article 4(4) of the Birds Directive requires that member states "should strive to avoid pollution or deterioration of habitats." The Conservation of Habitats and Species Regulations 2017 provide a fuller transposition of the Birds Directive into English law. Regulation 8 introduces a new Regulation 9A to the Habitats Regulations for duties of appropriate authorities in relation to wild bird habitat. Regulation 9A(3) addresses the transposition of Article 2 of the Birds Directive, while Regulation 9A(8), requiring competent authorities to "use all reasonable endeavours" to "avoid any pollution or deterioration of habitats of wild birds."

Annex 1 of the EC Birds Directive also lists rare and vulnerable species of wild birds that are subject to special conservation measures.

In addition to statutory protection, some bird species have been identified within key documents as species of conservation concern.

- UK Biodiversity Action Plan (1995) lists of globally threatened or declining species
- Local Biodiversity Action Plan (Humberside 2010)
- Eaton et al. (2015) Birds of Conservation Concern (2015) The population status of birds in the United Kingdom, Channel Islands and Isle of Man

The UK Biodiversity Action Plan (UKBAP) (2007) lists 59 bird species as priority species requiring conservation action, and consequently action plans have been developed for the conservation of these species.

The Humberside Biodiversity Action Plan (HBAP 2010) lists 8 bird species as priority species requiring conservation action.

Some birds are classified according to their conservation status, such as their inclusion on the Red and Amber lists of Birds of Conservation Concern (BoCC) in the UK (Eaton et al 2015).

- Red List species are those whose breeding population or range is rapidly declining (50% or more in the last 25 years), recently or historically, and those of global conservation concern.
- Amber List species are those whose breeding population is in moderate decline (25 – 49% in the last 25 years), rare breeders, internationally important and localised species and those of unfavourable conservation status in Europe.
- Green List (low conservation concern) species fulfil none of the above criteria.

National Planning Policy Framework

The NPPF outlines government planning policies and how they should be applied within local authorities. The framework places an emphasis on sustainable development, encouraging the re-use of land that has previously been developed over using land that has a higher environmental value and by minimising impacts on biodiversity. The NPPF states that developments should aim to conserve or enhance biodiversity and encourages opportunities to incorporate biodiversity in and around developments.

Biodiversity Action Plans

The original objective of the UK Biodiversity Action Plan (UKBAP) was to fulfil the requirements of the Rio Convention on Biological Diversity in 1992, to which the UK is a signatory. A list of national priority species and habitats has been produced with specific

action plans defining the measures consider necessary to ensure their conservation. Regional and local BAPs have also been developed for species/habitats of nature conservation importance both regionally and locally.

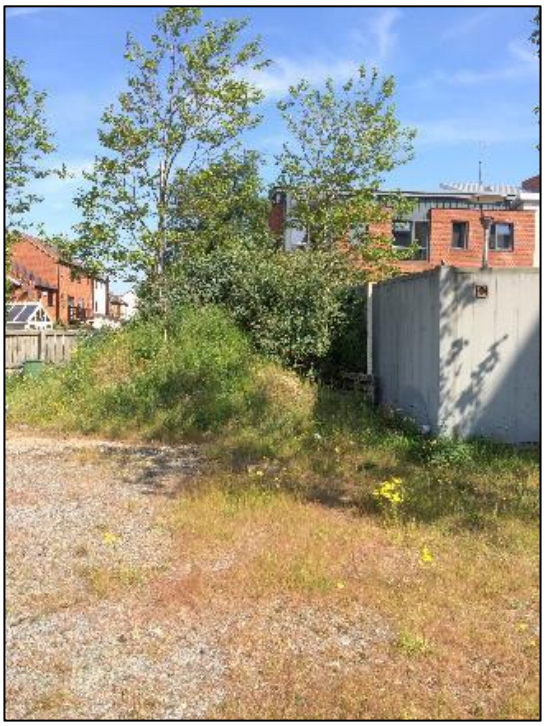
Local Structure Plans

County, District and Local Councils have Structure Plans and other policy documents that include targets and policies which aim to maintain and enhance biodiversity through the planning system.

Appendix D: Photographs

Photograph No.	Notes	Photograph
1	Site C (now removed from the Scheme) Facing NE across the site which is currently used as a car park and comprises mainly hard standing with a small grass bank. This photo is taken from a footbridge which runs across the River Hull (right and out of shot).	
2	Site C (now removed from the Scheme) Facing SE toward an area of ephemeral/short perennial and ruderal species. Dunnock heard singing in here on two occasions in suitable nesting habitat. Territory suspected, TN 1.	

Photograph No.	Notes	Photograph
3	Site C (now removed from the Scheme) Facing NE toward a derelict building in the NE corner of the site. Potential bird nesting habitat for: feral pigeon; blackbird; dunnock; robin. This building is subject to disturbance due to the presence of vagrants reducing nesting potential. TN 2.	
4	Site D Facing NE across the site's central area. Blackbird territory identified with two males observed showing aggressive behaviour at the site's western boundary on Wellington Road (left and out of shot).	

Photograph No.	Notes	Photograph
5	Site D Facing N toward a small area of spoil overgrown with various grass species, and scrub. Potential for blackbird, or robin to breed in this area. TN 3.	
6	Site D Facing north west toward spoil heaps overgrown with scrub and tall ruderal. Blackbird possibly nesting in this area as male and female seen either singing nearby or flying in to this area respectively during two of the surveys. Two males showing aggression on the boundary of this area suggesting territory boundary is Wellington Road which runs between the site and neighbouring gardens. TN 2.	

Photograph No.	Notes	Photograph
7	Site C (now removed from the Scheme) Exposed mud at low tide. Site C car park area (left). Occupied residential and commercial premises (right) and boat access means this area is highly disturbed. Only four mallard and one coot seen foraging on water, the coot well off Site up river.	
8	Site D Facing SE towards exposed mud near Site D. Again around 60m exposed mud at low tide and not linear in shape and in small semi circular sections in this immediate area, hatched line. Lots of disturbance by walkers and vehicles in this area. Sand bar approximately 400m south of this pier supports various gulls and will support waders and wildfowl in winter.	

A63 Castle Street Improvements, Hull
Environmental Statement

Volume 3 Appendix 10.4

ECOLOGY AND NATURE CONSERVATION – WINTERING BIRD SURVEYS

TR010016/APP/6.3
HE514508-MMSJV-EBD-S0-RP-LE-000005
6 September 2018

A63 Castle Street Improvements, Hull

Environmental Statement

Appendix 10.4 Wintering bird report

Revision Record						
Rev No	**Date**	**Originator**	**Checker**	**Approver**	**Status**	**Suitability**
P01.1	29.01.18	L Armstrong	D Wood/A West	K Ross	Draft	For review and comment
P01	31.07.18	D Wood	K Ross	J McKenna	Shared	S4
P02	06.09.18	D Wood	K Ross	J McKenna	Shared	S4

Prepared for:
Highways England
Lateral
8 City Walk
Leeds
LS11 9AT

Prepared by:
Mott MacDonald Sweco JV
Stoneham Place, Stoneham Lane
Southampton, Hampshire
SO50 9NW

Contents

Tables

1. Introduction

1.1 Wintering bird surveys

1.1.1 The principal author of the following report was David Gash, Ecological Consultant for Access Ecology Ltd.

1.1.2 Access Ecology Ltd was commissioned on January 2017 by SWECO to undertake ecological survey works at the locations listed within Table 1: Site location details and shown in Appendix A – Compound site locations.

Table 1: Site location details

Site address	Grid reference (Approximate site centroid)
Site C, Tower Street, Hull	TA10270 28593
Site D, Wellington Street Island Wharf, Hull	TA09497 28013
Site G, Livingstone Road, Hull	TA03401 25709
Site R, Neptune Street, Hull	TA08732 27675

1.2 Background to survey

1.2.1 This report details the results of winter bird surveys undertaken by David Gash of Access Ecology, in January and February 2017 at four sites located in Hull, East Riding of Yorkshire. The site details and approximate site centroid are included above in Table 1 – Site location details. Site C comprises a car park and scrub, Site D grassland and scrub, Site G industrial works and Site R grassland and scrub. The sites are bounded by hedgerows, walls, wire fences, the River Hull, Fleet Drain and The Humber Estuary. Site C at Tower Street has now been removed from the Scheme, but the results have been left in this report to provide a wider assessment of bird activity around the Scheme.

1.2.2 The A63 dual carriageway Hessle Road/Clive Sullivan Way runs from east to west, in close proximity to all four sites. It is to the north of Sites D, G and R and to the south of Site C. The River Hull is immediately to the west of Site C, running from north to south. Fleet Drain is immediately to the west of the Site G, also running from north to south. The Humber Estuary is located immediately to the south of sites D, G and R. Site R is also situated immediately to the north of the Albert Dock.

1.2.3 All four sites are located in close proximity to the Humber Estuary, which is a Special Protection Area (SPA), Special Area of Conservation (SAC), Site of Special Scientific Interest (SSSI) and RAMSAR site.

1.2.4 The survey was commissioned to collect winter bird data for each of the four sites and their immediate surroundings.

1.3 Survey validity

1.3.1 The results of this report are considered to be valid up to two years of the date of publication.

2. Planning policy and legislation

2.1 Introduction

2.1.1 This legal information is presented in summary form and is intended for general guidance only. It is recommended the original documentation is referred to for detailed and definitive information.

2.1.2 Birds are afforded various levels of protection and levels of conservation status on a species by species basis, with the inclusion of a number of species on the following legislation:

- Wildlife and Countryside Act 1981 (as amended) [Department of the Environment (1981)]
- EC Birds Directive (79/409/EEC)
- Natural Environment and Rural Communities Act 2006 – Section 41

2.1.3 The most significant general legislation for British birds lies within Part 1 of the Wildlife and Countryside Act 1981 (as amended). Under current legislation it is an offence to:

- Kill, injure or take any wild bird
- Take, damage or destroy the nest of any wild bird while that nest is in use or being built
- Take or destroy an egg of any wild bird

2.1.4 In addition, Schedule 1 of the Act lists a number of species which are protected by special penalties at all times.

2.1.5 Council Directive 2009/147/EC on the conservation of wild birds (the 'Birds Directive') provides for the conservation and management of all wild bird species naturally occurring in the European Union, their nests, eggs and habitats. The Birds Directive bans activities that directly threaten birds (e.g. deliberate killing and destruction of nests and young), regulates hunting of selected species, bans non-selective and large scale killing of birds, and promotes research for bird conservation and management. Article 4(4) of the Birds Directive requires that member states "should strive to avoid pollution or deterioration of habitats." The Conservation of Habitats and Species Regulations 2017 provide a fuller transposition of the Birds Directive into English law. Regulation 8 introduces a new Regulation 9A to the Habitats Regulations for duties of appropriate authorities in relation to wild bird habitat. Regulation 9A(3) addresses the transposition of Article 2 of the Birds Directive, while Regulation 9A(8), requiring competent authorities to "use all reasonable endeavours" to "avoid any pollution or deterioration of habitats of wild birds."

2.1.6 Annex 1 of the EC Birds Directive also lists rare and vulnerable species of wild birds that are subject to special conservation measures.

2.1.7 In addition to statutory protection, some bird species have been identified within key documents as species of conservation concern as follows:

- UK Biodiversity Action Plan (1995) lists of globally threatened or declining species
- Local Biodiversity Action Plan (Humberside 2010)
- Eaton *et al*. (2015) Birds of Conservation Concern (2015)[1] The population status of birds in the United Kingdom, Channel Islands and Isle of Man.

2.1.8 The UK Biodiversity Action Plan (UKBAP) (2007) lists 59 bird species as priority species requiring conservation action, and consequently action plans have been developed for the conservation of these species.

2.1.9 The Humberside Biodiversity Action Plan (HBAP 2010) lists 8 bird species as priority species requiring conservation action.

2.1.10 Some birds are classified according to their conservation status, such as their inclusion on the Red and Amber lists of Birds of Conservation Concern (BoCC) in the UK (Eaton *et al,* 2015).

- Red List species are those whose breeding population or range is rapidly declining (50% or more in the last 25 years), recently or historically, and those of global conservation concern.
- Amber List species are those whose breeding population is in moderate decline (25 – 49% in the last 25 years), rare breeders, internationally important and localised species and those of unfavourable conservation status in Europe.
- Green List (low conservation concern) species fulfil none of the above criteria.

2.2 National Planning Policy Framework

2.2.1 The NPPF outlines government planning policies and how they should be applied within local authorities. The framework places an emphasis on sustainable development, encouraging the re-use of land that has previously been developed over using land that has a higher environmental value and by minimising impacts on biodiversity. The NPPF states that developments should aim to conserve or

[1] Eaton M, Aebischer N, Brown A, Hearn R, Lock L, Musgrove A, Noble D, Stroud D and Gregory R (2015) *Birds of Conservation Concern 4: the population status of birds in the United Kingdom, Channel Islands and the Isle of Man*. British Birds 108, pp 708 -746.

enhance biodiversity and encourages opportunities to incorporate biodiversity in and around developments.

2.3 Biodiversity Action Plans

2.3.1 The original objective of the UK Biodiversity Action Plan (UKBAP) was to fulfil the requirements of the Rio Convention on Biological Diversity in 1992, to which the UK is a signatory. A list of national priority species and habitats has been produced with specific action plans defining the measures consider necessary to ensure their conservation. Regional and local BAPs have also been developed for species/habitats of nature conservation importance both regionally and locally.

2.4 Local Structure Plans

2.4.1 County, District and Local Councils have Structure Plans and other policy documents that include targets and policies which aim to maintain and enhance biodiversity through the planning system.

3. Methodology

3.1 Desk top study

3.1.1 A data search was carried out using Magic.defra.gov.uk for all statutory and non-statutory protected sites.

3.2 Field survey

3.2.1 Survey design, methodology, fieldwork and assessment has been carried out in accordance with standard guidance Bibby *et al*. 1992[2] and Gilbert *et al.* 1998[3].

3.2.2 During survey visits predetermined transect routes were walked at a slow pace so that all birds can be located, identified and recorded using standard British Trust for Ornithology (BTO) notation. Also, one vantage point (VP) was located and a period of 85 minutes was spent recording bird activity in the viewable areas of Sites C, D and R. Binoculars were used throughout to scan the open for the presence of birds. All species are identified by their common name followed by their Latin equivalent. Bird species are listed with their BTO Code and their Conservation Status[4], UK Biodiversity Action Plan Species (UKBAP) and Humberside Biodiversity Action Plan Species (HBAP) are also identified. All birds that were observed during the surveys were recorded including passing individuals and species on migration.

3.2.3 Two surveys per month were undertaken over the winter season from January 2017 to February 2017. Further details are given in the below Table 2a: Survey dates and information: Site C Tower Street; Table 2b: Survey dates and information: Site D Wellington Street Island Wharf; Table 2c: Survey dates and information Site G Livingstone Road; and Table 2d: Survey dates and information: Site R Neptune Street. Information obtained from the surveys will help towards building a picture of the general use of the site and its surroundings by all bird species during the non-breeding months.

Table 2a: Survey dates and information: Site C Tower Street

Date	Hours	Surveyors	Weather conditions
16-01-2017	2	1	5 SW /Cloud 8/8ths / Dry 4 ºC
25-01-2017	2	1	5 SW / Mist 8/8ths / Dry 2 ºC
08-02-2017	2	1	5 E/Cloud 8/8ths/Light Showers 4 ºC
22-02-2017	2	1	15 W / Cloud 5/8ths / Dry 10 ºC

[2] Bibby, C.J., N.D. Burgess & D.A. Hill (1992): Bird Census Techniques. London: Academic Press

[3] Gilbert *et. al.* (1998) Bird Monitoring Methods. RSPB. Sandy

[4] The UK's birds can be split in to three categories of conservation importance - red, amber and green. Red is the highest conservation priority, with species needing urgent action. Amber is the next most critical group, followed by green.

Table 2b: Survey dates and information: Site D Wellington Street Island Wharf

Date	Hours	Surveyors	Weather conditions
16-01-2017	2	1	5 SW / Cloud 8/8ths / Light Rain 4 ºC
25-01-2017	2	1	5 SW / Hazy Sunshine, Cloud 4/8ths / Dry 2 ºC
08-02-2017	2	1	5 E / Cloud 8/8ths/Light Showers 4 ºC
22-02-2017	2	1	20 W / Cloud 4/8ths / Dry 10 ºC

Table 2c: Survey dates and information: Site G Livingstone Road

Date	Hours	Surveyors	Weather conditions
16-01-2017	2	1	5 SW /Cloud 8/8ths / Light Drizzle 5 ºC
25-01-2017	2	1	5 SW /Cloud 8/8ths / Dry 3 ºC
08-02-2017	2	1	5 E /Cloud 8/8ths /Light Drizzle 4 ºC
22-02-2017	2	1	10 W / Cloud 3/8ths / Dry 8 ºC

Table 2d: Survey dates and information: Site R Neptune Street

Date	Hours	Surveyors	Weather conditions
16-01-2017	2	1	5 SW /Cloud 8/8ths / Light Rain 4 ºC
25-01-2017	2	1	5 SW / Sun 0/8ths / Dry 4 ºC
08-02-2017	2	1	5 E/Cloud 8/8ths/Light Showers 4 ºC
22-02-2017	2	1	20 W / Cloud 4/8ths / Dry 11 ºC

4. Results

4.1 Desktop study

4.1.1 The magic.defra.gov.uk website revealed the following sites of interest within close proximity to the four survey sites:

The Humber Estuary SAC/SPA/Ramsar/SSSI Sites

4.1.2 This is a wetland habitat of international importance under the EU Habitats Directive and Birds Directive Legislation. These directives are implemented under The Conservation of Habitats and Species Regulation 2017.

The Humber Bridge Country Park LNR

4.1.1 The Local Nature Reserve is approximately 20 hectares in size and supports woodland, meadows, ponds and cliffs.

4.2 Field Survey

Site C Tower Street

4.2.1 During the winter bird survey period 17 species were recorded.

- 1 Red, UKBAP & NERC S41 listed
- 6 Amber listed
- 9 Green listed

4.2.2 Maps showing bird activity during each visit are included in Appendix B: Wintering bird survey results.

Table 3.1: Site C results

Species	Scientific name	BTO Code	Number of birds		Conservation status
			Jan	Feb	
Carrion Crow	*Corvus corone*	C	2	4	Green
Goldfinch	*Carduelis carduelis*	GO	13	5	Green
Pied Wagtail	*Motacilla alba*	PW		1	Green
Black-headed Gull	*Larus ridibundus*	BH	108	206	Amber
Herring Gull	*Larus argentatus*	HG	33	22	Red, UKBAP, NERC S41.

Species	Scientific name	BTO Code	Number of birds		Conservation status
			Jan	Feb	
Common Gull	*Larus canus*	CM	3	11	Amber
Lesser Black Backed Gull	*Larus fuscus*	LB		1	Amber
Wood Pigeon	*Columba palumbus*	WP	2	1	Green
Feral Pigeon	*Columba livia*	FP	4	27	No status
Wren	*Troglodytes troglodytes*	WR	2	1	Green
Robin	*Erithacus rubecula*	R.	2	2	Green
Blackbird	*Turdus merula*	B.	2	2	Green
Mallard Duck	*Anas platyrhynchos*	MA		2	Amber
Redshank	*Tringa totanus*	RK	10	10	Amber
Grey Plover	*Pluvialis squatarola*	GV	5		Amber
Moorhen	*Gallinula chloropus*	MH		2	Green
Cormorant	*Phalacrocorax carbo*	CA		1	Green

Winter Species Accounts 2017: Site C Tower Street

- **Carrion Crow** (*Corvus corone*): scrub/woodland/industrial; **(Green)**; Up to four adult birds were recorded at various locations around the site, during the survey period;
- **Goldfinch** (*Carduelis carduelis*): scrubland / woodland; **(Green)**; up to thirteen adult birds were recorded flying over the site, during the survey period;
- **Pied Wagtail** (*Motacilla alba*): industrial landscape; **(Green)**; a single adult bird was noted flying over the site, during the 22nd February survey;
- **Black Headed Gull** (*Larus ridibundus*): farmland / wetland / industrial; **(Amber)**; up to fourteen adult and juvenile birds were noted on the mudbanks of the River Hull, immediately to the west of the site, during the 22nd February visit; up to two hundred and six birds were recorded flying over and around the site during the January and February surveys;

- **Herring Gull** (*Larus argentatus*): wetland / farmland/ industrial; **(Red, UKBAP, NERC S41)**; up to thirty-three adult and juvenile birds were noted flying over and around the site, during the surveys; a single juvenile bird was recorded on the mudbanks of the River Hull, immediately to the west of the site, during the 22nd February survey;

- **Common Gull** (*Larus canus*): wetland / farmland/ industrial; **(Amber)**; up to eleven birds were observed flying over the site, during the January and February surveys;

- **Lesser Black Back Gull** (*Larus fuscus*): wetland / farmland/ industrial; **(Amber)**; a single bird was observed flying over the site, during the 22nd February survey;

- **Feral Pigeon** (*Columba livia*): industrial landscape; **(no status)**; up to twenty seven birds were observed, throughout the survey period, flying over, around and perched on the walls and buildings located within the industrial landscape located around the site;

- **Wren** (*Troglodytes troglodytes*): farmland / woodland / industrial landscape; **(Green)**; up to two adult birds were noted in the scrub on the north of the site; alarm calling, during the survey period;

- **Robin** (*Erithacus rubecula*): woodland / scrub / industrial area; **(Green)**; up to two adult birds were seen and heard calling at various locations on the site, during the surveys;

- **Blackbird** (*Turdus merula*): woodland / scrub / hedgerows; **(Green)**; up to two adult birds were recorded at various locations throughout the site during the survey period;

- **Mallard Duck** (*Anasertha platyrhynchos*); wetland; **(Amber)**; a pair of adult birds were seen on the River Hull, immediately to the west of the site, during the 22nd February visit;

- **Redshank** (*Tringa totanus*); wetland; **(Amber)**; up to ten birds were seen and heard feeding on the mudbanks of the River Hull, immediately to the west of the site, during the January and February surveys;

- **Grey Plover** (*Pluvialis squatarola*); wetland; **(Amber)**; up to five adult birds were seen feeding on the mudbanks of the River Hull, immediately to the west of the site, during the January visits;

- **Moorhen** (*Gallinula chloropus*); wetland; **(Green)**; two adult birds were seen and heard calling on the River Hull and mudbanks, immediately to the west of the site, during the 8th February survey;

- **Cormorant** (*Phalacrocorax carbo*); wetland; **(Green)**; a single adult bird was recorded flying from north to south, over the site, during the 8th February survey;

Site D Wellington Street Island Wharf

4.2.3 During the winter bird survey period 24 species were recorded.

- 3 Red, UKBAP, NERC S41 listed,
- 1 Amber, UKBAP, NERC S41 listed.
- 6 Amber listed
- 13 Green listed

4.2.4 Maps showing bird activity during each visit are included in Appendix B: Wintering bird survey results.

Table 3.2: Site D results

Species	Scientific name	BTO Code	Number of birds		Conservation status
			Jan	Feb	
Carrion Crow	Corvus corone	C	4	3	Green
Greenfinch	Carduellis chloris	GR	2	1	Green
Goldfinch	Carduellis carduellis	GO	71	63	Green
Collared Dove	Streptopelia decaocto	CD	1		Green
Blue Tit	Parus caeruleus	BT	4	4	Green
Great Tit	Parus major	GT		2	Green
Pied Wagtail	Motacilla alba	PW	8		Green
Magpie	Pica pica	MG	1	4	Green
Meadow Pipet	Anthus pretensis	MP	8	3	Amber
Black Headed Gull	Larus ridibundus	BH	69	199	Amber
Herring Gull	Larus argentatus	HG	32	33	Red, UKBAP, NERC S41
Lesser Black Backed Gull	Larus fuscus	LB	6	4	Amber
Common Gull	Larus canus	CM	5	10	Amber
Wood Pigeon	Columba palumbus	WP	7	59	Green
Stock Dove	Columba oenas	SD		1	Amber

Species	Scientific name	BTO Code	Number of birds		Conservation status
			Jan	Feb	
Feral Pigeon	Columba livia	FP	2		No status
Wren	Troglodytes troglodytes	WR	1	3	Green
Dunnock	Prunella modularis	D.	3	2	Amber, UKBAP, NERC S41
Robin	Erithacus rubecula	R.	3	4	Green
Blackbird	Turdus merula	B.	9	13	Green
Mallard Duck	Anas platyrhynchos	MA		8	Amber
Starling	Sturnus vulgaris	SG	12	24	Red, UKBAP, NERC S41
House Sparrow	Passer domesticus	HS	18	19	Red, UKBAP, NERC S41
Cormorant	Phalacrocorax carbo	CA	1		Green

Winter Species Accounts 2017: Site D Wellington Street West

- **Carrion Crow** (*Corvus corone*): scrub/woodland/industrial; **(Green)**; Up to four adult birds were recorded at various locations around the site, during the survey period;
- **Greenfinch** (*Carduelis chloris*): scrubland / industrial; **(Green)**; up to two adult male bird was observed, calling from the trees on the north of the site, during the January and February surveys
- **Goldfinch** (*Carduelis carduelis*): scrubland / woodland; **(Green)**; up to 71 birds were recorded at various locations throughout the site, during the survey period;
- **Collared Dove**; (*Streptopelia decaocto*): industrial/scrubland; **(Green)**; a single adult male bird was seen and heard calling, from the trees on the north of the site, during the 16th January survey;
- **Blue Tit**: (*Parus caeruleus*): woodland / scrub / urban; **(Green)**; up to four adult birds were seen and heard singing and calling, at various locations throughout the site, during the January and February surveys;
- **Great Tit**: (*Parus major*): woodland / scrubland; **(Green)**; up to two adult birds were seen and heard at several locations on the site, during the 8th February visit;

- **Pied Wagtail** (*Motacilla alba*): industrial landscape; **(Green)**; up to eight birds were noted calling, flying around and feeding on the ground at various locations throughout the site, during the 16th January survey;

- **Magpie** (*Pica pica*); woodland / urban; **(Green)**; Up to four adult birds were found across the site either foraging or flying around, within variable habitats, during the survey period;

- **Meadow Pipet** (*Anthus pretensis*); grassland / heathland; **(Amber)**; up to eight birds were recorded feeding in the grassland on the east of the site, during the survey period;

- **Black Headed Gull** (*Larus ridibundus*): farmland / wetland / industrial; **(Amber)**; up to one hundred and ninety-nine birds were noted flying over and around the site during the January and February surveys; several birds were noted feeding in the grassland on the east of the site, during the same surveys;

- **Lesser Black Backed Gull** (*Larus fuscus*): wetland / farmland/ industrial; **(Amber)**; up to six adult and juvenile birds were observed flying over and around the site, during the January and February surveys;

- **Common Gull** (*Larus canus*): wetland / farmland/ industrial; **(Amber)**; up to ten adult and juvenile birds were observed flying over and around the site, during the January and February surveys;

- **Wood Pigeon** (*Columba palumbus*): scrubland / woodland / industrial landscape; **(Green)**; up to fifty-nine birds were observed flying over and around the site, as well as feeding on the grassland, on the east of the site, during survey period;

- **Stock Dove** (*Columba oenas*): farmland / woodland; **(Amber)**; a single adult bird was recorded feeding on the grassland on the east of the site, during the 22nd February survey;

- **Feral Pigeon** (*Columba livia*): industrial landscape; **(No Status)**; two birds were observed, flying over the centre of the site, during the 25th January visit;

- **Wren** (*Troglodytes troglodytes*): farmland / woodland / industrial landscape; **(Green)**; up to three birds were noted at various locations throughout the site; singing/alarm calling, during the survey period;

- **Dunnock** (*Prunella modularis*): hedgerows / woodland; **(Amber, UKBAP, NERC S41)**; up to three adult birds were seen and heard singing/calling at various locations on the site, during the January and February surveys;

- **Robin** (*Erithacus rubecula*): woodland / scrub / industrial area; **(Green)**; up to four single male birds were heard singing/calling at various locations on the site, during the January and February surveys;
- **Blackbird** (*Turdus merula*): woodland / scrub / hedgerows; **(Green)**; up to thirteen adult birds were recorded at various locations throughout the site during the survey period;
- **Mallard Duck** (*Anas platyrhynchos*); wetland; **(Amber)**; up to eight adult birds were seen flying over and around the site, during the February surveys;
- **Starling** (*Sturnus vulgaris*); urban/scrubland; **(Red, UKBAP, NERC S41)**; up to twenty four adult birds were noted, flying over and around, and at various locations around the site, during the January and February surveys;
- **House Sparrow** (*Passer domesticus*); scrubland/urban/rural; **(Red, UKBAP, NERC S41)**; up to nineteen adult birds were seen and heard calling at various locations around the site, during the January and February surveys;
- **Cormorant** (*Phalacrocorax carbo*); wetland; **(Green)**; a single adult bird was recorded flying from east to west, over the site, during the 16th January survey.

Site G Livingstone Road

4.2.5 During the winter bird survey period 24 species were recorded.

- 2 Red, UKBAP, NERC S41 listed.
- 2 Red, UKBAP, HBAP, NERC S41 listed.
- 2 Amber, UKBAP, NERC S41 listed.
- 11 Amber listed.
- 6 Green listed.

4.2.6 Maps showing bird activity during each visit are included in Appendix G.3.

Table 3.3: Site G results

Species	Scientific name	BTO Code	Number of birds		Conservation status
			Jan	Feb	
Stock Dove	*Columba oenas*	SD	1	4	Amber
Carrion Crow	*Corvus corone*	C	4	6	Green
Linnet	*Carduellis canabina*	LI	1	2	Red, UKBAP, HBAP, NERC S41

Species	Scientific name	BTO Code	Number of birds		Conservation status
			Jan	Feb	
Song Thrush	*Turdus philomelos*	ST		1	Red, UKBAP, HBAP, NERC S41
Black Headed Gull	*Larus ridibundus*	BH	234	235	Amber
Herring Gull	*Larus argentatus*	HG	107	20	Red, UKBAP, NERC S41
Lesser Black Backed Gull	*Larus fuscus*	LB	1	3	Amber
Common Gull	*Larus canus*	CM	4	4	Amber
Feral Pigeon	*Columba livia*	FP	4	16	No Status
Dunnock	*Prunella modularis*	D	1	2	Amber, UKBAP, NERC S41
Robin	*Erithacus rebecula*	R	2		Green
Blackbird	*Turdus merula*	B	3	1	Green
Blue Tit	*Cyanisitis caeruleus*	BT		4	Green
Goldfinch	*Carduelis carduelis*	GO		3	Green
Bullfinch	*Pyrrhula pyrrhula*	BF		1	Amber
Greenfinch	*Carduelis chloris*	GR		6	Green
Starling	*Sturnus vulgaris*	SG		1	Red, UKBAP, NERC S41
Redshank	*Tringa totanus*	RK	17	23	Amber
Grey Plover	*Pluvialis squatarola*	GV	C15+	8	Amber
Knot	*Calidris canuta*	KN	14	2	Amber
Curlew	*Numenius arquata*	CU	1	1	Amber, UKBAP, NERC S41
Pink Footed Goose	*Anser brachyryhncus*	PG	C100+		Amber
Oystercatcher	*Haematopus ostralagus*	OC		11	Amber
Mallard Duck	*Anas Platyrhynchos*	MA		2	Amber

Winter Species Accounts 2017: Site G – Livingstone Road

- **Stock Dove** (*Columba oanas*); *rural/industrial landscape*; **(Amber);** up to four adult birds were recorded flying over the site, during the January and February surveys;

- **Carrion Crow** (*Corvus corone*): *scrub/woodland/industrial*; **(Green);** Up to six adult birds were recorded at various locations around the site, during the survey period;

- **Linnet;** (*Carduelis cannabina*): *industrial/scrubland*; **(Red, UKBAP, HBAP, NERC S41);** up to two adult birds were recorded flying over the site, during the survey visits;

- **Song Thrush**: (*Turdus philomelos*): *woodland/scrub;* **(Red, UKBAP, HBAP, NERC S41);** a single adult male bird was heard singing in the south west corner of the site, during the 8th February survey;

- **Black Headed Gull** (*Larus ridibundus*): *farmland / wetland / industrial;* **(Amber);** up to thirty five birds were recorded on the mudbank/foreshore, located immediately to the south of the site, during the January and February surveys; up to two hundred and thirty five birds, adults and juveniles, were noted flying over and around the site during the same survey period;

- **Herring Gull** (*Larus argentatus*): *wetland / farmland/ industrial;* **(Red, UKBAP, NERC S41);** up to one hundred and seven adult and juvenile birds were noted flying over and around the site, during the January and February surveys;

- **Lesser Black Back Gull** (*Larus fuscus*): *wetland / farmland/ industrial;* **(Amber)**; up to three single birds were observed flying over the site, during the October and January surveys;

- **Common Gull** (*Larus canus*): *wetland / farmland/ industrial;* **(Amber);** up to four birds were observed flying over the site, during the January and February surveys;

- **Feral Pigeon** (*Columba livia*): *industrial landscape*; **(No Status);** up to sixteen birds were observed, throughout the survey period, flying over, around and perched on the buildings located within the industrial landscape located on the site;

- **Dunnock** (*Prunella modularis*): hedgerows */ industrial / woodland;* **(Amber, UKBAP, NERC S41);** up to two birds were recorded on the west of the site, during the January and February surveys;

- **Robin** (*Erithacus rubecula*): *woodland / scrub / industrial area;* **(Green);** up to two single male birds were heard singing at various locations on the site, during the January surveys;

- **Blackbird** (*Turdus merula*): *woodland / scrub / hedgerows;* **(Green);** up to three adult birds were recorded at various locations on the site during the survey period;

- **Blue Tit** (*Carduelis spinus*); *woodland;* **(Green);** up to four birds were seen and heard, flying over the site, during the February 22nd visit;
- **Goldfinch** (*Carduelis carduelis*); **(Green);** scrubland; up to three birds were noted, flying over the site, during the February 22nd survey;
- **Bullfinch** (*Pyrrhula pyrrhula); heathland / scrub;* **(Amber);** a single adult male bird was seen and heard calling and flying over the site, during the February 22nd survey;
- **Greenfinch** (*Carduelis chloris*); *woodland;* **(Green);** six adult birds were seen and heard calling and flying from west to east over the site, during the February 22nd survey;
- **Starling** (*Sturnus vulgaris*); urban / rural / industrial / *woodland;* **(Red, UKBAP, NERC S41);** a single bird was seen and heard flying over the site, during the 22nd February survey;
- **Redshank** (*Tringa totanus*); wetland*;* **(Amber);** up to twenty three birds were seen and heard feeding on the mudbanks of the Fleet Drain and Humber Estuary, immediately to the west and south of the site, during the January and February surveys;
- **Grey Plover** (*Pluvialis squatarola*); wetland; **(Amber);** up to fifteen plus adult birds were seen feeding on the mudbanks of the Fleet Drain and Humber Estuary, immediately to the west and south of the site, during the January and February visits;
- **Knot** (*Calidris canuta*); wetland*;* **(Amber);** up to fourteen adult birds were seen feeding on the mudbanks of the Fleet Drain and Humber Estuary, immediately to the west and south of the site, during the January and February surveys;
- **Curlew** (*Numenius arquata*); *wetland;* **(Amber, UKBAP, NERC S41);** a single adult bird was seen feeding on the mudbanks of the Fleet Drain and Humber Estuary, immediately to the west and south of the site, during the 16th January and 22nd February surveys;
- **Pink Footed Goose** (*Anser brachyrhyncus*); *wetland;* **(Amber);** up to 100 plus birds were seen and heard calling and flying from east to west, along the River Humber, immediately to the south of the site, during the 16th January visit;
- **Oystercatcher** (*Haemotopus ostralagus*); wetland*;* **(Amber);** up to eleven adult and juvenile birds were seen feeding on the mudbanks of the Fleet Drain and Humber Estuary, immediately to the west and south of the site, during the February surveys;

- **Mallard Duck** (*Anas platyrhynchos*); *wetland;* **(Amber);** a pair of adult birds were recorded flying from west to east, over the north of the site, during the 8th February visit.

Site R Neptune Street

4.2.7 During the winter bird survey period 23 species were recorded.

- 3 Annex 1, WCA (1981) listed.1 Red, UKBAP, NERC S41 listed
- 2 Red, UKBAP, HBAP, NERC S41
- 1 Red, WCA (1981) listed 1 Amber
- UKBAP, NERC S41 listed
- 10 Amber listed
- 6 Green listed.

Maps showing bird activity during each visit are included in Appendix B: Wintering bird survey results.

Table 3.4: Site R results

Species	Scientific name	BTO Code	Number of birds		Conservation status
			Jan	Feb	
Carrion Crow	*Corvus corone*	C	14	1	Green
Goldfinch	*Carduellis carduellis*	GO	21	6	Green
Linnet	*Carduellis canabina*	LI	3	2	Red, UKBAP, HBAP, NERC S41
Peregrine Falcon	*Falco peregrinus*	PE	1		Annex 1, WCA (1981)
Song Thrush	*Turdus philomelos*	ST	1	2	Red, UKBAP, HBAP, NERC S41
Redwing	*Turdus iliacus*	RE	3		Red, WCA (1981)
Blue Tit	*Parus caeruleus*	BT	4		Green
Pied Wagtail	*Motacilla alba*	PW	2	2	Green
Magpie	*Pica pica*	MG	1		Green
Kestrel	*Falco tinnunculus*	K		2	Amber
Meadow Pipet	*Anthus pretensis*	MP	4	1	Amber
Black Headed Gull	*Larus ridibundus*	BH	118	124	Amber
Herring Gull	*Larus argentatus*	HG	65	80	Red, UKBAP, NERC S41

Species	Scientific name	BTO Code	Number of birds		Conservation status
			Jan	Feb	
Lesser Black Backed Gull	*Larus fuscus*	LB	2	3	Amber
Common Gull	*Larus canus*	CM	6	8	Amber
Wood Pigeon	*Columba palumbus*	WP		8	Green
Feral Pigeon	*Columba livia*	FP	C440+	77	No Status
Wren	*Troglodytes troglodytes*	WR	3	4	Green
Dunnock	*Prunella modularis*	D	4	6	Amber, UKBAP, NERC S41
Robin	*Erithacus rubecula*	R	2	3	Green
Blackbird	*Turdus merula*	B	4	4	Green
Mallard Duck	*Anas platyrhynchos*	MA		2	Amber
Cormorant	*Phalacrocorax carbo*			2	Green

Winter Species Accounts 2017: Site R Neptune Street

- **Carrion Crow** (*Corvus corone*): scrub/woodland/industrial; **(Green)**; Up to fourteen birds were recorded at various locations, and flying over and around the site, during the survey period;
- **Goldfinch** (*Carduelis carduelis*): scrubland / woodland; **(Green)**; up to twenty one birds were recorded at various locations, and flying over and around the site, during the survey period;
- **Linnet**; (*Carduelis cannabina*): industrial/scrubland; **(Red, UKBAP, HBAP, NERC S41)**; up to three birds were recorded flying over the site, during the survey period;
- **Peregrine Falcon;** (*Falco peregrinus*); scrub/woodland/urban/rural; **(Green, Annex 1, WCA (1981)**; a single adult bird was recorded flying over the site, from north to south, during the 25th January visit;
- **Song Thrush**: (*Turdus philomelos*): woodland/scrub; **(Red, UKBAP, HBAP, NERC S41)**; single birds were seen and heard singing/calling at various locations around the site, during the January and February surveys;
- **Redwing**: (*Turdus iliacus*): **(Red, WCA (1981))**: woodland / scrub; three adult birds were observed feeding in the grassland on the centre of the site, during the 25th January survey;

- **Blue Tit:** (*Parus caeruleus*): woodland / scrub / urban; **(Green)**; up to four birds were seen and heard singing and calling, at various locations throughout the site, during the 16th January visit;

- **Pied Wagtail** (*Motacilla alba*): industrial landscape; **(Green)**; up to two adult birds were noted calling, flying around and perched on the wall edging the north east of the site, during the period of the surveys;

- **Magpie** (*Pica pica*); woodland / urban; **(Green)**; a single adult bird was seen and heard, on the west of the site, during the 16th January survey;

- **Kestrel** (*Falco tinnunculus*): farmland / grassland; **(Amber)**; A single adult bird was noted flying over and around the grassland on the centre of the site, hunting for food/prey, during the February surveys;

- **Meadow Pipet** (*Anthus pretensis*); grassland / heathland; **(Amber)**; up to four birds were recorded in the grassland on the west and centre of the site, during the survey period;

- **Black Headed Gull** (*Larus ridibundus*): farmland / wetland / industrial; **(Amber)**; up to one hundred and twenty-four birds were noted flying over and around the site, during the January and February surveys;

- **Herring Gull** (*Larus argentatus*): wetland / farmland/ industrial; **(Red, UKBAP, NERC S41)**; up to eighty adult and juvenile birds were observed flying over and around the site, during the January and February surveys;

- **Lesser Black Back Gull** (*Larus fuscus*): wetland / farmland/ industrial; **(Amber)**; up to three single birds were observed flying over and around the site, during the January and February surveys;

- **Common Gull** (*Larus canus*): wetland / farmland/ industrial; **(Amber)**; up to eight birds were observed flying over and around the site, during the February surveys;

- **Wood Pigeon** (*Columba palumbus*): scrubland / woodland / industrial landscape; **(Green)**; up to eight birds were observed at various locations around the site, during the February surveys;

- **Feral Pigeon** (*Columba livia*): industrial landscape; **(No Status)**; up to four hundred and forty birds were recorded, throughout the survey period, flying over, around and perched on the buildings located within the industrial landscape located near the site;

- **Wren** (*Troglodytes troglodytes*): farmland / woodland / industrial landscape; **(Green)**; up to four birds were noted at various locations throughout the site; singing/alarm calling, during the survey period;

- **Dunnock** (*Prunella modularis*): hedgerows / woodland; **(Amber, UKBAP, NERC S41)**; up to six birds were recorded at various locations on the site, during the January and February surveys;

- **Robin** (*Erithacus rubecula*): woodland / scrub / industrial area; **(Green)**; up to three single male birds were heard singing/calling at various locations on the site, during the January and February visits;

- **Blackbird** (*Turdus merula*): woodland / scrub / hedgerows; **(Green)**; up to six birds were recorded at various locations throughout the site during the survey period;

- **Mallard Duck** (*Anas platyrhynchos*); wetland; **(Amber)**; a pair of adult birds were seen flying over the site, during the 22nd February survey;

- **Cormorant** (*Phalacrocorax carbo*); **(Green)**; wetland; single birds were noted flying over the site during the February surveys;

5. Ecological constraints and recommendations for mitigation

5.1 Wintering bird surveys

5.1.1 The details of the proposed works at each site are not currently known, therefore the recommendations below cover general development at the sites.

5.1.2 Ensure that any industrial run off from the developments proposed for the respective sites are not toxic or likely to cause significant pollution to the Humber Estuary, River Hull or Fleet Drain. Appropriate measures need to be taken to ensure that the correct drainage channels are put into place and that checks for pollutants are carried out by the appropriate authorities.

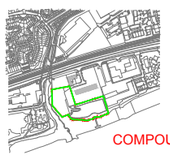
5.1.3 Where physically possible and environmentally appropriate, a reedbed could be planted on the mudbank in close proximity to the entrance to the run-off channel mentioned in paragraph 5.1.2 above. The effect of this being to filter through any such pollutants deemed to be bio degradable and that can be dealt with by natural environmental filters.

5.1.4 To lessen the effect of disturbance on the species of wading birds and the like feeding on the mudbanks of the Humber Estuary, River Hull and Fleet Drain, hoardings should be erected to block the development from view and reduce noise emissions.

5.1.5 Noise emissions during construction and post-works should be kept to a minimum to lessen the effect on the species of birds feeding on the mudbanks of the Humber Estuary, River Hull and Fleet Drain.

5.1.6 It is recommended that regular bird surveys are carried out at the sites when the developments are taking place in order to monitor the species of birds present and to record the effects of any noise or sight pollution. If it is found that the noise and sight levels/pollution are having a significant effect upon the wading bird population, then changes/alterations can be put into place, in order to make these levels more acceptable/below the required limit.

Appendix A: Site compound locations


COMPOUND 'G'

Notes

Key to symbols

- PERMANENT LAND TAKE BOUNDARY
- PERMANENT RIGHTS BOUNDARY
- TEMPORARY LAND TAKE BOUNDARY

Rev	Date	Amendment Details	Drw'n	Chk'd	App'd
P03	14/09/18	SCHEME BOUNDARY EXTENTS AMENDED	VM	DW	LC
P02	16/08/18	ISSUED FOR HE APPROVAL	VM	DW	LC
P01	31/01/18	ISSUED FOR REVIEW & COMMENT	RE	DW	LC

Mott MacDonald Sweco

Client: highways england

Drawing Status: SHARED

Suitability: S4

Project Title: A63 CASTLE STREET IMPROVEMENTS, HULL

Drawing Title: WINTERING BIRD SURVEY COMPOUND SITE LOCATIONS

Scale	Designed	Drawn	Checked	Approved
1:12500	West, Adam	Ebbs, Ray	Wood, Diane	Cottrell, Linsey
Original Size: A1	Date: 31/01/18	Date: 31/01/18	Date: 31/01/18	Date: 31/01/18

Drawing Number: HE PIN 514508 - Originator MMSJV - Volume VES - Location S0 - Type DR - Role LE - Number 400001

Project Ref. No.: 514508

Revision: P03

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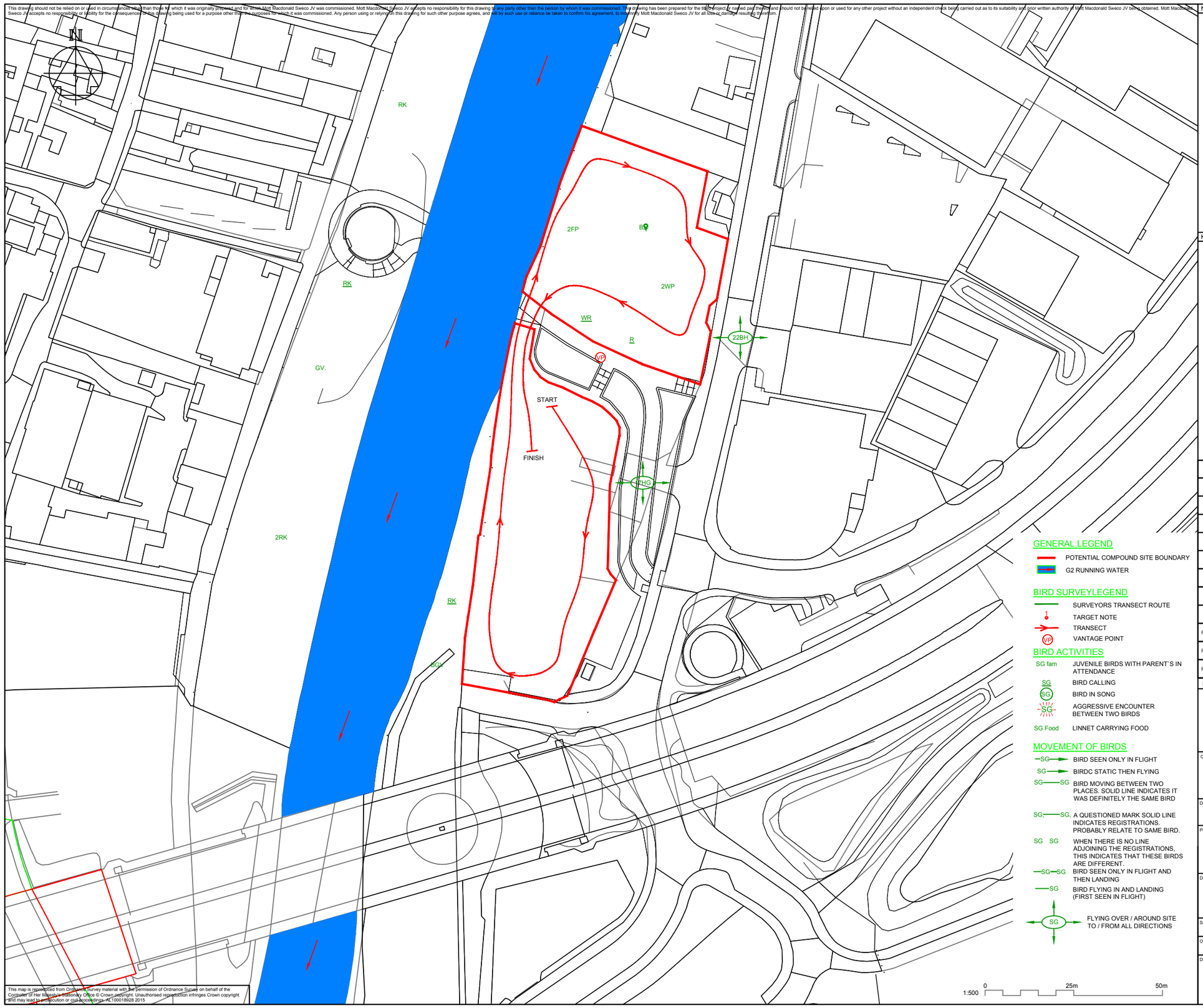
pw:\\MCCNTSI04.global.arup.com:PW_ARUP_UK_HE\Documents\A63 Castle Street Improvements\04 Mott MacDonald Limited Sweco Limited JV\LE - Landscape and environment - Environmentalist\DR - Drawing\HE514508-MMSJV-VES-S0-DR-LE-400001

Appendix B: Wintering bird survey results



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GENERAL LEGEND

- POTENTIAL COMPOUND SITE BOUNDARY
- G2 RUNNING WATER

BIRD SURVEYLEGEND

- SURVEYORS TRANSECT ROUTE
- TARGET NOTE
- TRANSECT
- VP VANTAGE POINT

BIRD ACTIVITIES

- SG fam — JUVENILE BIRDS WITH PARENT`S IN ATTENDANCE
- SG — BIRD CALLING
- (SG) — BIRD IN SONG
- -SG- — AGGRESSIVE ENCOUNTER BETWEEN TWO BIRDS
- SG Food — LINNET CARRYING FOOD

MOVEMENT OF BIRDS

- —SG→ BIRD SEEN ONLY IN FLIGHT
- SG→ BIRDC STATIC THEN FLYING
- SG——SG BIRD MOVING BETWEEN TWO PLACES. SOLID LINE INDICATES IT WAS DEFINITELY THE SAME BIRD
- SG;——SG, A QUESTIONED MARK SOLID LINE INDICATES REGISTRATIONS. PROBABLY RELATE TO SAME BIRD.
- SG SG WHEN THERE IS NO LINE ADJOINING THE REGISTRATIONS, THIS INDICATES THAT THESE BIRDS ARE DIFFERENT.
- —SG—SG BIRD SEEN ONLY IN FLIGHT AND THEN LANDING
- —SG BIRD FLYING IN AND LANDING (FIRST SEEN IN FLIGHT)
- (SG) FLYING OVER / AROUND SITE TO / FROM ALL DIRECTIONS

Notes

Key to symbols

- PERMANENT LAND TAKE BOUNDARY
- PERMANENT RIGHTS BOUNDARY
- TEMPORARY LAND TAKE BOUNDARY

Rev	Date	Amendment Details	Drw'n	Chk'd	App'd
P03	14/09/18	SCHEME BOUNDARY EXTENTS AMENDED	VM	DW	LC
P02	16/08/18	ISSUED FOR HE APPROVAL	VM	DW	LC
P01	31/01/18	ISSUED FOR REVIEW & COMMENT	RE	DW	LC

Mott MacDonald Sweco

Client: highways england

Drawing Status: SHARED

Suitability: S4

Project Title: A63 CASTLE STREET IMPROVEMENTS, HULL

Drawing Title: WINTERING BIRD SURVEY SITE COMPOUND 'C' 16 JANUARY 2017 NORTH AND SOUTH

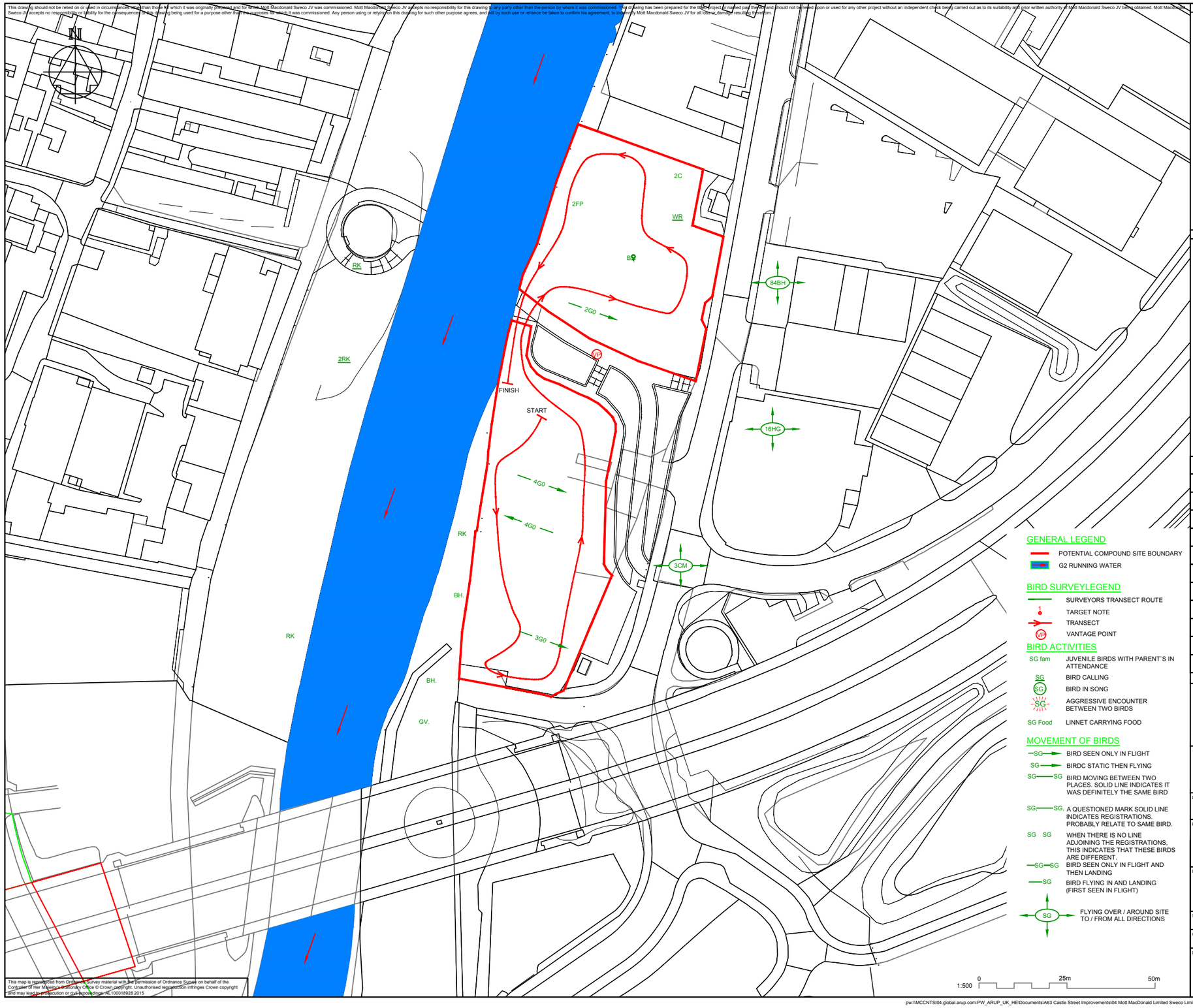
Scale	Designed	Drawn	Checked	Approved
1:500	West, Adam	Ebbs, Ray	Wood, Diane	Cottrell, Linsey
Original Size A1	Date 31/01/18	Date 31/01/18	Date 31/01/18	Date 31/01/18

Drawing Number: HE PIN | Originator | Volume: 514508 - MMSJV - VES -
Location | Type | Role | Number: S0 - DR - LE - 400002

Project Ref. No.: 514508

Revision: P03

pw:\\MCCNTSI04.global.arup.com:PW_ARUP_UK_HE\Documents\A63 Castle Street Improvements\04 Mott MacDonald Limited Sweco Limited JV\LE - Landscape and environment - Environmentalist\DR - Drawing\HE514508-MMSJV-VES-S0-DR-LE-400002



GENERAL LEGEND

- POTENTIAL COMPOUND SITE BOUNDARY
- G2 RUNNING WATER

BIRD SURVEYLEGEND

- SURVEYORS TRANSECT ROUTE
- TARGET NOTE
- TRANSECT
- VANTAGE POINT

BIRD ACTIVITIES

- SG fam — JUVENILE BIRDS WITH PARENT`S IN ATTENDANCE
- SG — BIRD CALLING
- (SG) — BIRD IN SONG
- -SG- — AGGRESSIVE ENCOUNTER BETWEEN TWO BIRDS
- SG Food — LINNET CARRYING FOOD

MOVEMENT OF BIRDS

- SG → — BIRD SEEN ONLY IN FLIGHT
- SG → — BIRDC STATIC THEN FLYING
- SG—SG — BIRD MOVING BETWEEN TWO PLACES. SOLID LINE INDICATES IT WAS DEFINITELY THE SAME BIRD
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- SG—SG — BIRD SEEN ONLY IN FLIGHT AND THEN LANDING
- SG — BIRD FLYING IN AND LANDING (FIRST SEEN IN FLIGHT)
- SG — FLYING OVER / AROUND SITE TO / FROM ALL DIRECTIONS

1:500 0 25m 50m

Notes

Key to symbols

- PERMANENT LAND TAKE BOUNDARY
- PERMANENT RIGHTS BOUNDARY
- TEMPORARY LAND TAKE BOUNDARY

Rev	Date	Amendment Details	Drw'n	Chk'd	App'd
P03	14/09/18	SCHEME BOUNDARY EXTENTS AMENDED	VM	DW	LC
P02	16/08/18	ISSUED FOR HE APPROVAL	VM	DW	LC
P01	31/01/18	ISSUED FOR REVIEW & COMMENT	RE	DW	LC

Mott MacDonald Sweco

Client: highways england

Drawing Status: SHARED

Suitability: S4

Project Title: A63 CASTLE STREET IMPROVEMENTS, HULL

Drawing Title: WINTERING BIRD SURVEY SITE COMPOUND 'C' 25 JANUARY 2017

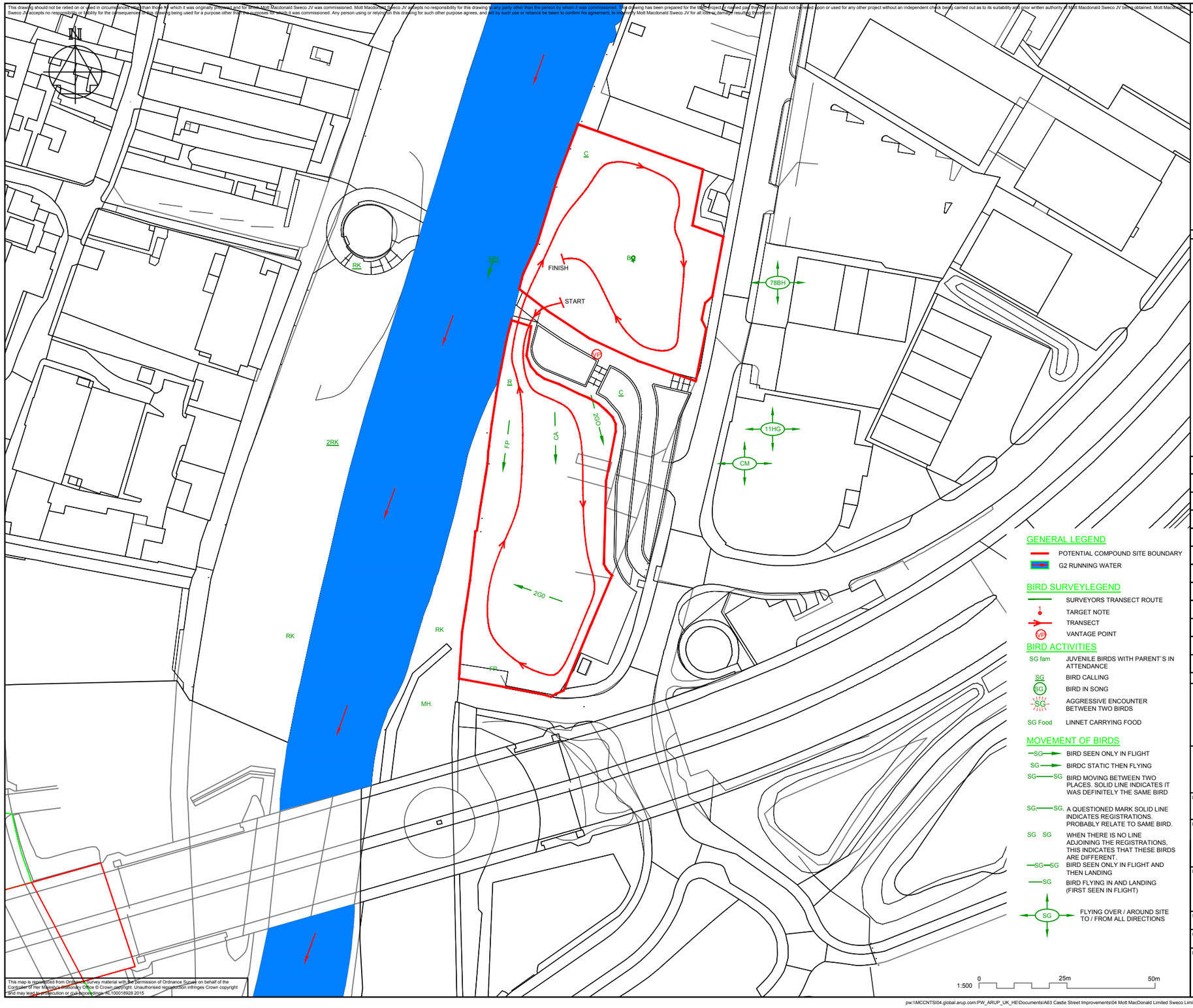
Scale	Designed	Drawn	Checked	Approved
1:500	West, Adam	Ebbs, Ray	Wood, Diane	Cottrell, Linsey
Original Size: A1	Date: 31/01/18	Date: 31/01/18	Date: 31/01/18	Date: 31/01/18

Drawing Number: HE PIN | Originator | Volume
514508 - MMSJV - VES -
S0 - DR - LE - 400003
Location | Type | Role | Number

Project Ref. No.: 514508

Revision: P03

pw:\\MCCNTSI04.global.arup.com:PW_ARUP_UK_HE\Documents\A63 Castle Street Improvements\04 Mott MacDonald Limited Sweco Limited JV\LE - Landscape and environment - Environmentalist\DR - Drawing\HE514508-MMSJV-VES-S0-DR-LE-400003



GENERAL LEGEND

- POTENTIAL COMPOUND SITE BOUNDARY
- G2 RUNNING WATER

BIRD SURVEYLEGEND

- SURVEYORS TRANSECT ROUTE
- TARGET NOTE
- TRANSECT
- VANTAGE POINT

BIRD ACTIVITIES

- SG fam — JUVENILE BIRDS WITH PARENT`S IN ATTENDANCE
- SG — BIRD CALLING
- SG — BIRD IN SONG
- SG — AGGRESSIVE ENCOUNTER BETWEEN TWO BIRDS
- SG Food — LINNET CARRYING FOOD

MOVEMENT OF BIRDS

- SG → — BIRD SEEN ONLY IN FLIGHT
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- SG SG — WHEN THERE IS NO LINE ADJOINING THE REGISTRATIONS, THIS INDICATES THAT THESE BIRDS ARE DIFFERENT.
- SG — SG — BIRD SEEN ONLY IN FLIGHT AND THEN LANDING
- SG — BIRD FLYING IN AND LANDING (FIRST SEEN IN FLIGHT)
- SG — FLYING OVER / AROUND SITE TO / FROM ALL DIRECTIONS

1:500 0 25m 50m

Notes

Key to symbols

- PERMANENT LAND TAKE BOUNDARY
- PERMANENT RIGHTS BOUNDARY
- TEMPORARY LAND TAKE BOUNDARY

Rev	Date	Amendment Details	Drw'n	Chk'd	App'd
P03	14/09/18	SCHEME BOUNDARY EXTENTS AMENDED	VM	DW	LC
P02	16/08/18	ISSUED FOR HE APPROVAL	VM	DW	LC
P01	31/01/18	ISSUED FOR REVIEW & COMMENT	RE	DW	LC

Mott MacDonald Sweco

Client: highways england

Drawing Status: SHARED

Suitability: S4

Project Title: A63 CASTLE STREET IMPROVEMENTS, HULL

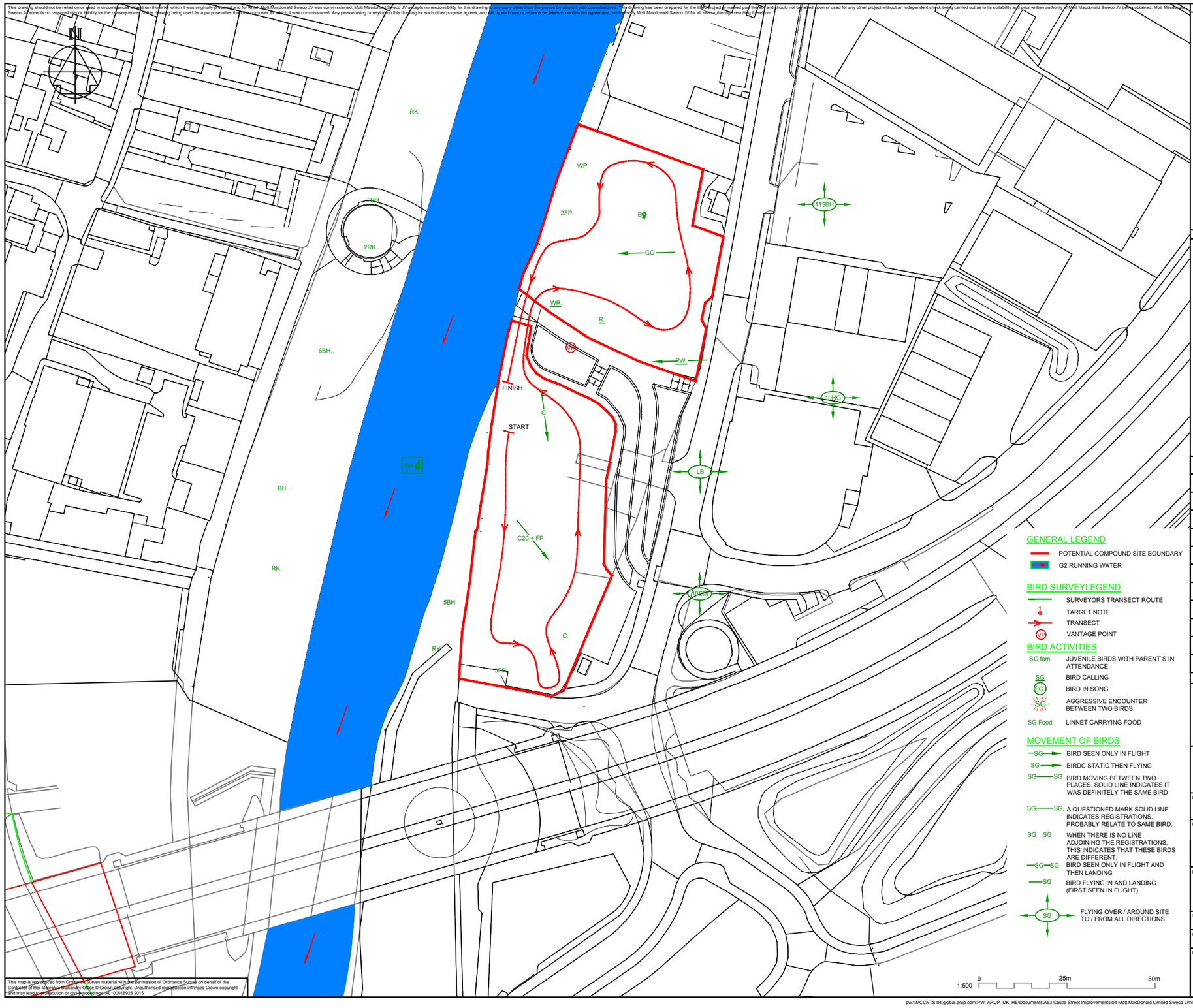
Drawing Title: WINTERING BIRD SURVEY SITE COMPOUND 'C' 8 FEBRUARY 2017

Scale	Designed	Drawn	Checked	Approved
1:500	West, Adam	Ebbs, Ray	Wood, Diane	Cottrell, Linsey
Original Size: A1	Date: 31/01/18	Date: 31/01/18	Date: 31/01/18	Date: 31/01/18

Drawing Number: HE PIN | Originator | Volume: 514508 - MMSJV - VES -
Location | Type | Role | Number: S0 - DR - LE - 400004

Project Ref. No.: 514508

Revision: P03



GENERAL LEGEND

- POTENTIAL COMPOUND SITE BOUNDARY
- G2 RUNNING WATER

BIRD SURVEYLEGEND

- SURVEYORS TRANSECT ROUTE
- TARGET NOTE
- TRANSECT
- VP VANTAGE POINT

BIRD ACTIVITIES

- SG fam — JUVENILE BIRDS WITH PARENT`S IN ATTENDANCE
- SG — BIRD CALLING
- (SG) — BIRD IN SONG
- -SG- — AGGRESSIVE ENCOUNTER BETWEEN TWO BIRDS
- SG Food — LINNET CARRYING FOOD

MOVEMENT OF BIRDS

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- SG — BIRD FLYING IN AND LANDING (FIRST SEEN IN FLIGHT)
- SG — FLYING OVER / AROUND SITE TO / FROM ALL DIRECTIONS

1:500 0 25m 50m

Notes

Key to symbols

Rev	Date	Amendment Details	Drw'n	Chk'd	App'd
P03	14/09/18	SCHEME BOUNDARY EXTENTS AMENDED	VM	DW	LC
P02	16/08/18	ISSUED FOR HE APPROVAL	VM	DW	LC
P01	31/01/18	ISSUED FOR REVIEW & COMMENT	RE	DW	LC

Mott MacDonald Sweco

Client: highways england

Drawing Status: SHARED

Suitability: S4

Project Title: A63 CASTLE STREET IMPROVEMENTS, HULL

Drawing Title: WINTERING BIRD SURVEY SITE COMPOUND 'C' 22 FEBRUARY 2017

Scale	Designed	Drawn	Checked	Approved
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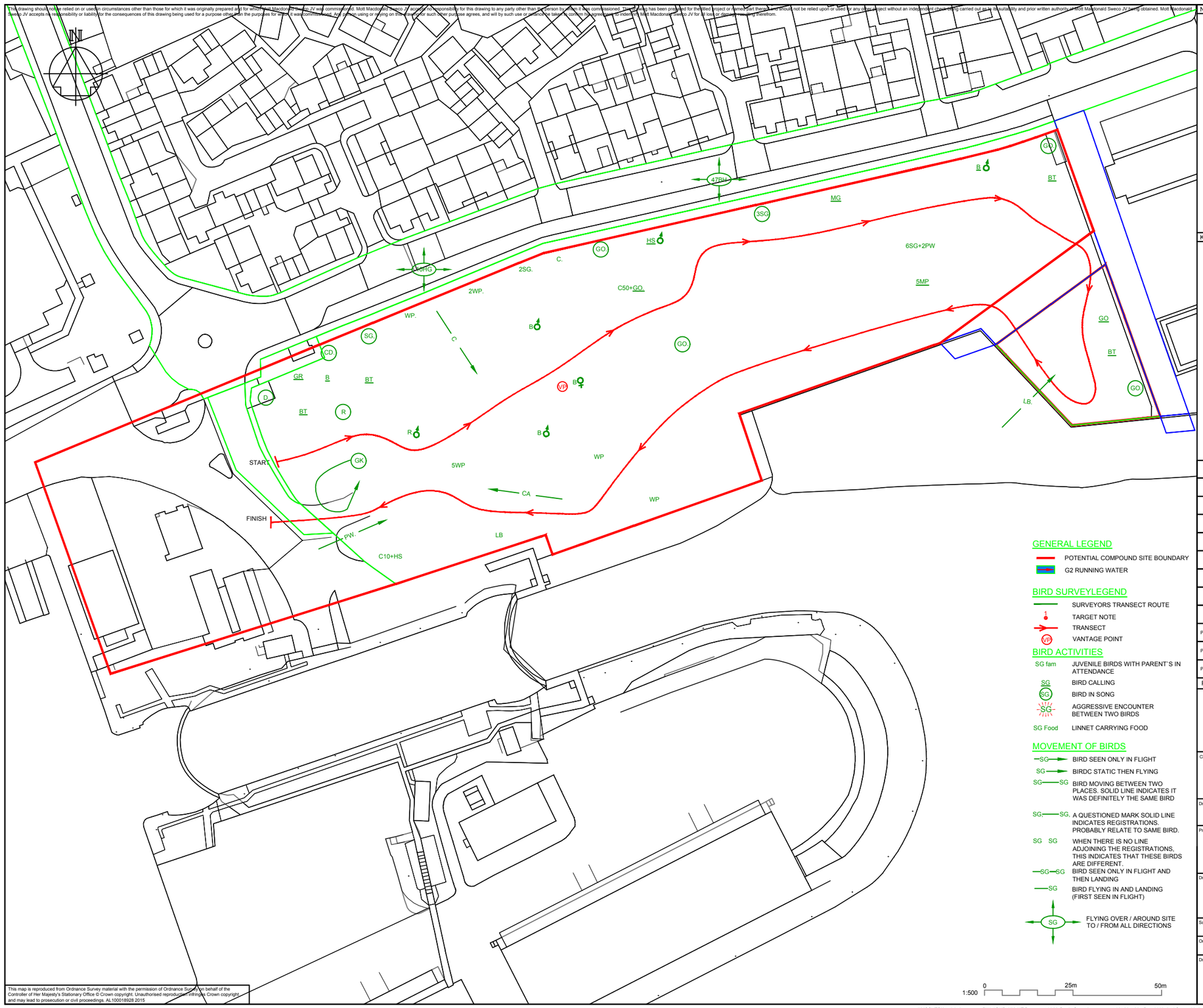
Original Size: A1	Date: 31/01/18	Date: 31/01/18	Date: 31/01/18	Date: 31/01/18

Drawing Number: 514508 - MMSJV - VES - S0 - DR - LE - 400005
(HE PIN | Originator | Volume | Location | Type | Role | Number)

Project Ref. No.: 514508

Revision: P03



GENERAL LEGEND

- POTENTIAL COMPOUND SITE BOUNDARY
- G2 RUNNING WATER

BIRD SURVEYLEGEND

- SURVEYORS TRANSECT ROUTE
- TARGET NOTE
- TRANSECT
- VP — VANTAGE POINT

BIRD ACTIVITIES

- SG fam — JUVENILE BIRDS WITH PARENT`S IN ATTENDANCE
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- (SG) — BIRD IN SONG
- -SG- — AGGRESSIVE ENCOUNTER BETWEEN TWO BIRDS
- SG Food — LINNET CARRYING FOOD

MOVEMENT OF BIRDS

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- →SG — BIRD FLYING IN AND LANDING (FIRST SEEN IN FLIGHT)
- (SG) — FLYING OVER / AROUND SITE TO / FROM ALL DIRECTIONS

1:500 0 25m 50m

Notes

Key to symbols

- PERMANENT LAND TAKE BOUNDARY
- PERMANENT RIGHTS BOUNDARY
- TEMPORARY LAND TAKE BOUNDARY

Rev	Date	Amendment Details	Drw'n	Chk'd	App'd
P03	14/09/18	SCHEME BOUNDARY EXTENTS AMENDED	VM	DW	LC
P02	16/08/18	ISSUED FOR HE APPROVAL	VM	DW	LC
P01	31/01/18	ISSUED FOR REVIEW & COMMENT	RE	DW	LC

Mott MacDonald Sweco

Client: highways england

Drawing Status: SHARED

Suitability: S4

Project Title: A63 CASTLE STREET IMPROVEMENTS, HULL

Drawing Title: WINTERING BIRD SURVEY SITE COMPOUND 'D' 16 JANUARY 2017

Scale	Designed	Drawn	Checked	Approved
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Original Size A1	Date 31/01/18	Date 31/01/18	Date 31/01/18	Date 31/01/18

Drawing Number: HE P/N 514508 - MMSJV (Originator) - VES (Volume) - S0 (Location) - DR (Type) - LE (Role) - 400006 (Number)

Project Ref. No.: 514508

Revision: P03

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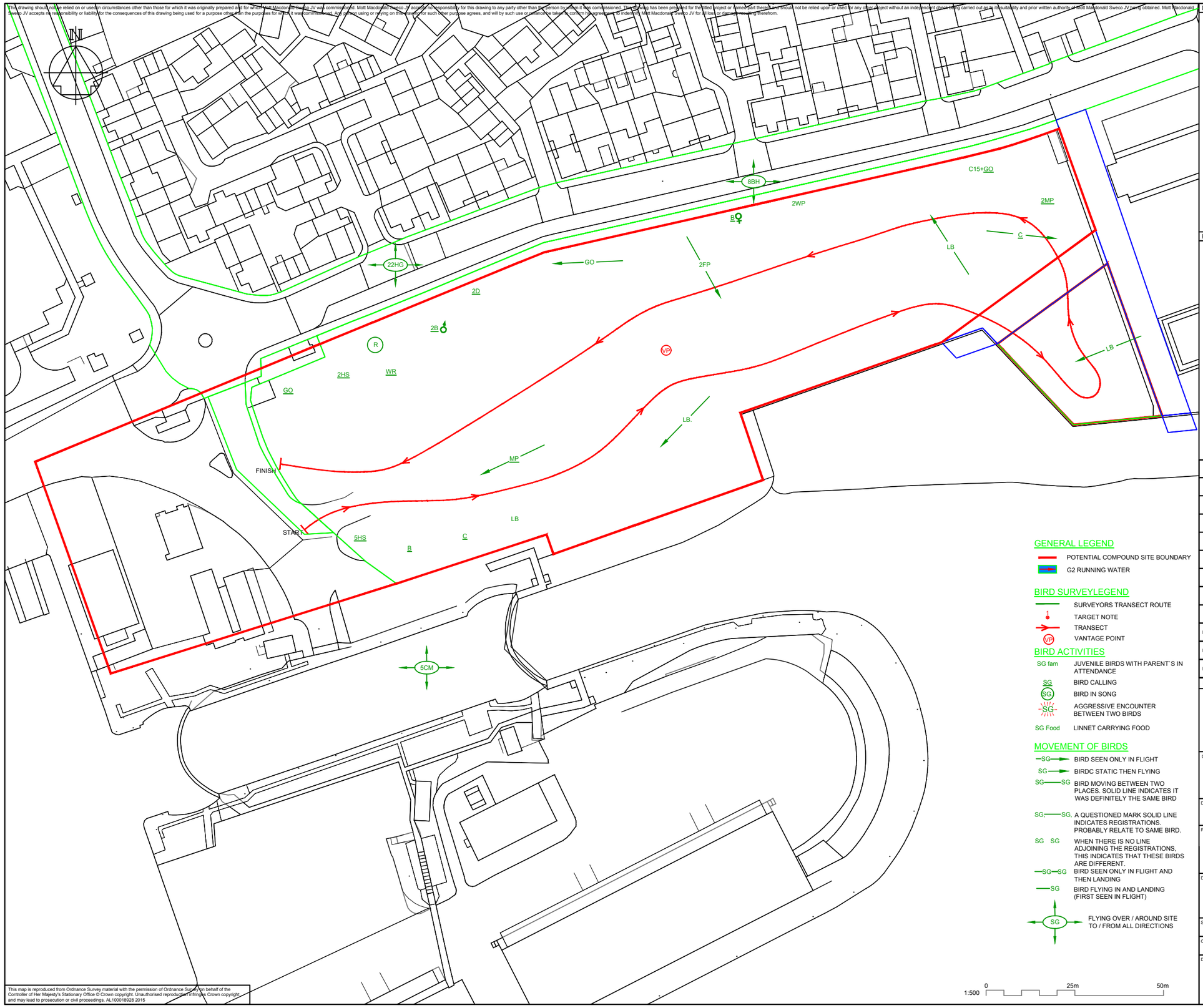

GENERAL LEGEND

- POTENTIAL COMPOUND SITE BOUNDARY
- G2 RUNNING WATER

BIRD SURVEYLEGEND

- SURVEYORS TRANSECT ROUTE
- TARGET NOTE
- TRANSECT
- VP — VANTAGE POINT

BIRD ACTIVITIES

- SG fam — JUVENILE BIRDS WITH PARENT`S IN ATTENDANCE
- SG — BIRD CALLING
- (SG) — BIRD IN SONG
- ~SG~ — AGGRESSIVE ENCOUNTER BETWEEN TWO BIRDS
- SG Food — LINNET CARRYING FOOD

MOVEMENT OF BIRDS

- SG → — BIRD SEEN ONLY IN FLIGHT
- SG → — BIRDC STATIC THEN FLYING
- SG —— SG — BIRD MOVING BETWEEN TWO PLACES. SOLID LINE INDICATES IT WAS DEFINITELY THE SAME BIRD
- SG, —— SG, — A QUESTIONED MARK SOLID LINE INDICATES REGISTRATIONS. PROBABLY RELATE TO SAME BIRD.
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- SG — SG — BIRD SEEN ONLY IN FLIGHT AND THEN LANDING
- —— SG — BIRD FLYING IN AND LANDING (FIRST SEEN IN FLIGHT)
- ← (SG) → — FLYING OVER / AROUND SITE TO / FROM ALL DIRECTIONS

1:500 — 0 — 25m — 50m

Notes

Key to symbols

- PERMANENT LAND TAKE BOUNDARY
- PERMANENT RIGHTS BOUNDARY
- TEMPORARY LAND TAKE BOUNDARY

Rev	Date	Amendment Details	Drw'n	Chk'd	App'd
P03	14/09/18	SCHEME BOUNDARY EXTENTS AMENDED	VM	DW	LC
P02	16/08/18	ISSUED FOR HE APPROVAL	VM	DW	LC
P01	31/01/18	ISSUED FOR REVIEW & COMMENT	RE	DW	LC

Mott MacDonald Sweco

Client: highways england

Drawing Status: SHARED

Suitability: S4

Project Title: A63 CASTLE STREET IMPROVEMENTS, HULL

Drawing Title: WINTERING BIRD SURVEY SITE COMPOUND 'D' 25 JANUARY 2017

Scale	Designed	Drawn	Checked	Approved
1:500	West, Adam	Ebbs, Ray	Wood, Diane	Cottrell, Linsey
Original Size A1	Date 31/01/18	Date 31/01/18	Date 31/01/18	Date 31/01/18

Drawing Number: HE PIN | Originator | Volume | Location | Type | Role | Number
514508 - MMSJV - VES - S0 - DR - LE - 400007

Project Ref. No.: 514508

Revision: P03

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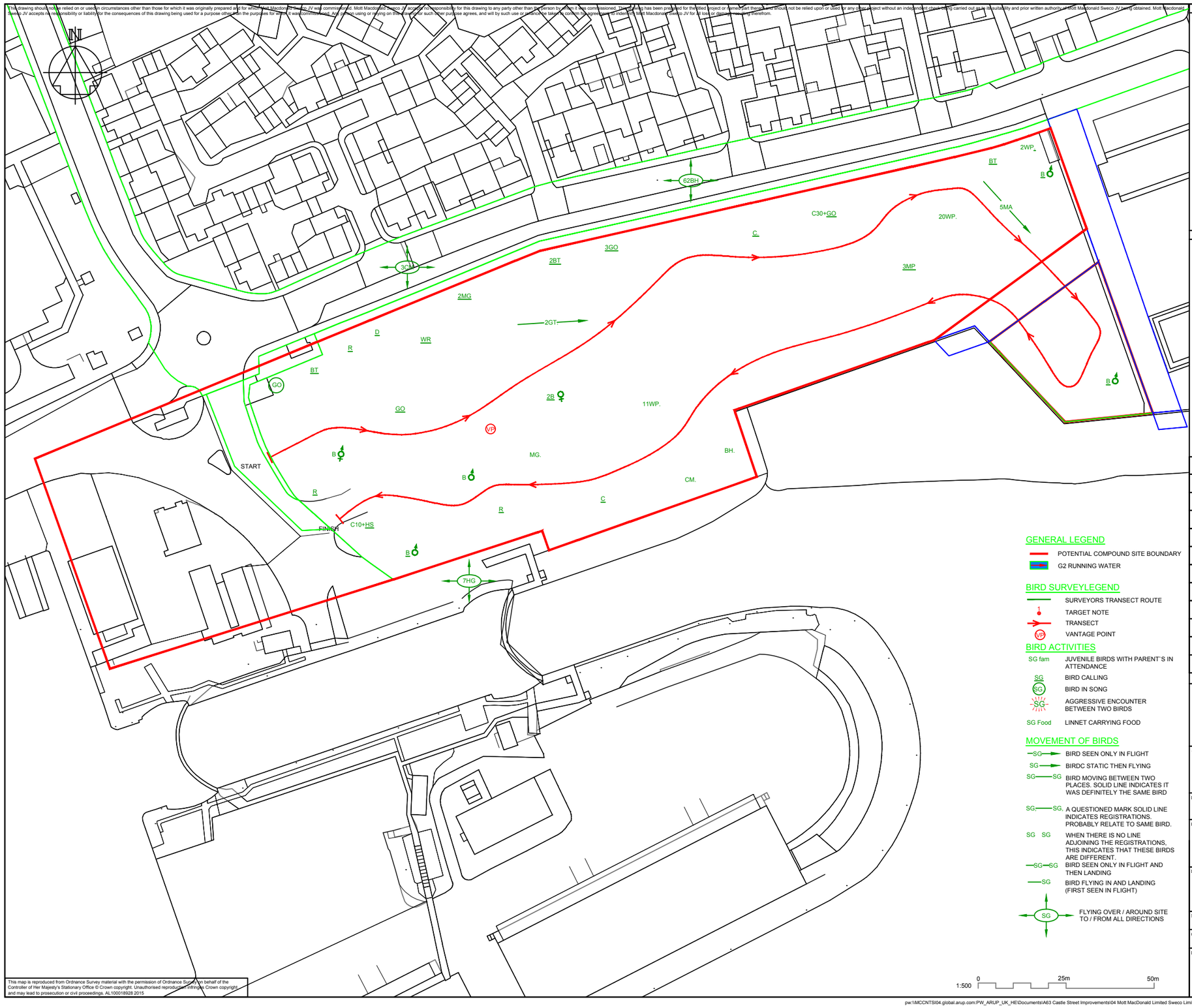

GENERAL LEGEND

- POTENTIAL COMPOUND SITE BOUNDARY
- G2 RUNNING WATER

BIRD SURVEYLEGEND

- SURVEYORS TRANSECT ROUTE
- TARGET NOTE
- TRANSECT
- VP VANTAGE POINT

BIRD ACTIVITIES

- SG fam — JUVENILE BIRDS WITH PARENT`S IN ATTENDANCE
- SG — BIRD CALLING
- (SG) — BIRD IN SONG
- SG — AGGRESSIVE ENCOUNTER BETWEEN TWO BIRDS
- SG Food — LINNET CARRYING FOOD

MOVEMENT OF BIRDS

- SG → — BIRD SEEN ONLY IN FLIGHT
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- SG→SG — BIRD SEEN ONLY IN FLIGHT AND THEN LANDING
- SG — BIRD FLYING IN AND LANDING (FIRST SEEN IN FLIGHT)
- (SG) — FLYING OVER / AROUND SITE TO / FROM ALL DIRECTIONS

1:500 0 25m 50m

Notes

Key to symbols

- PERMANENT LAND TAKE BOUNDARY
- PERMANENT RIGHTS BOUNDARY
- TEMPORARY LAND TAKE BOUNDARY

Rev	Date	Amendment Details	Drw'n	Chk'd	App'd
P03	14/09/18	SCHEME BOUNDARY EXTENTS AMENDED	VM	DW	LC
P02	16/08/18	ISSUED FOR HE APPROVAL	VM	DW	LC
P01	31/01/18	ISSUED FOR REVIEW & COMMENT	RE	DW	LC

Mott MacDonald Sweco

Client: highways england

Drawing Status: SHARED

Suitability: S4

Project Title: A63 CASTLE STREET IMPROVEMENTS, HULL

Drawing Title: WINTERING BIRD SURVEY SITE COMPOUND 'D' 8 FEBRUARY 2017

Scale	Designed	Drawn	Checked	Approved
1:500	West, Adam	Ebbs, Ray	Wood, Diane	Cottrell, Linsey
Original Size A1	Date 31/01/18	Date 31/01/18	Date 31/01/18	Date 31/01/18

Drawing Number: HE PIN 514508 - Originator MMSJV - Volume VES - Location S0 - Type DR - Role LE - Number 400008

Project Ref. No. 514508

Revision P03

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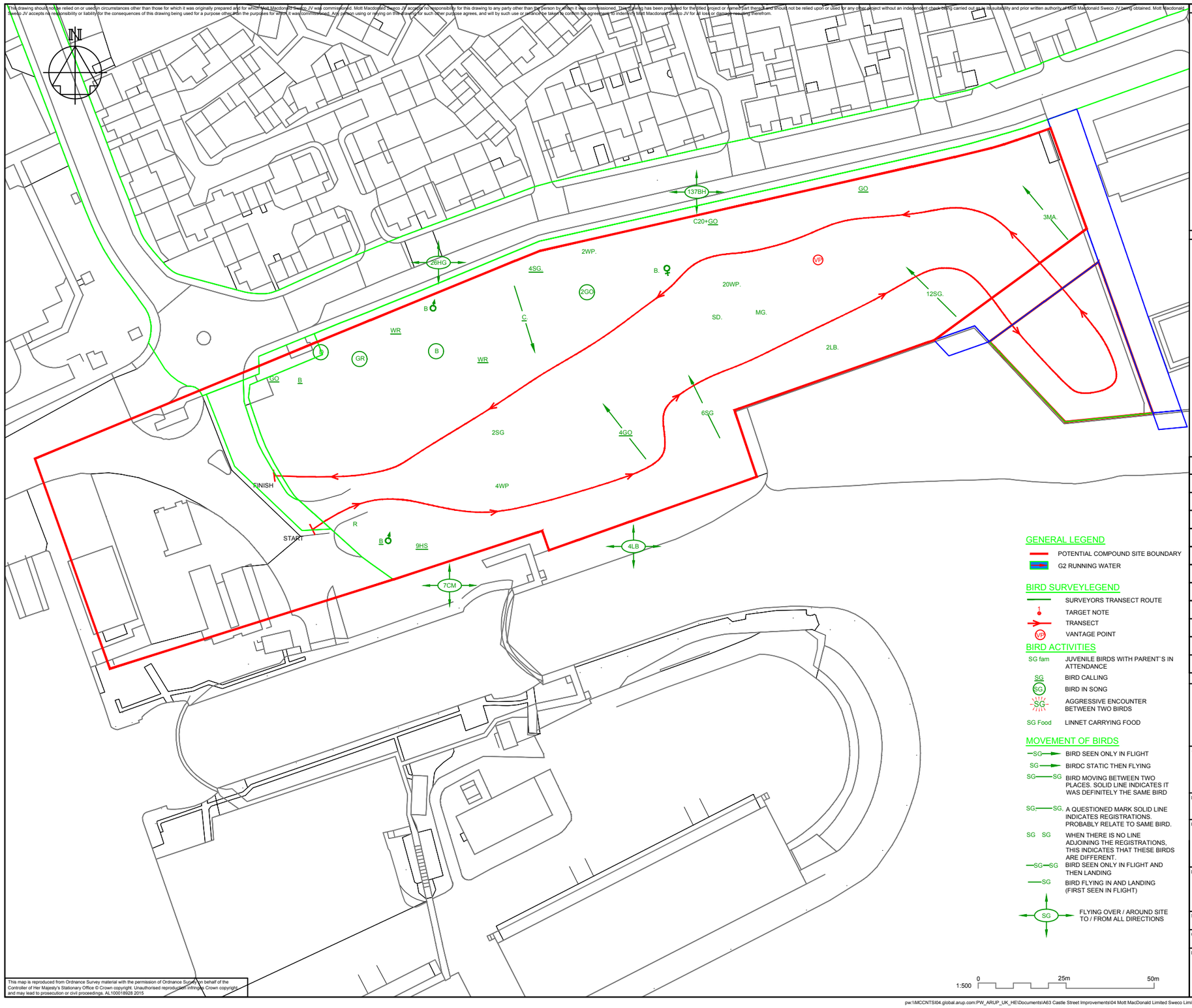


GENERAL LEGEND

- POTENTIAL COMPOUND SITE BOUNDARY
- G2 RUNNING WATER

BIRD SURVEYLEGEND

- SURVEYORS TRANSECT ROUTE
- TARGET NOTE
- TRANSECT
- VP VANTAGE POINT

BIRD ACTIVITIES

- SG fam — JUVENILE BIRDS WITH PARENT`S IN ATTENDANCE
- SG — BIRD CALLING
- (SG) — BIRD IN SONG
- SG — AGGRESSIVE ENCOUNTER BETWEEN TWO BIRDS
- SG Food — LINNET CARRYING FOOD

MOVEMENT OF BIRDS

- SG → — BIRD SEEN ONLY IN FLIGHT
- SG → — BIRDC STATIC THEN FLYING
- SG — SG — BIRD MOVING BETWEEN TWO PLACES. SOLID LINE INDICATES IT WAS DEFINITELY THE SAME BIRD
- SG, — SG, — A QUESTIONED MARK SOLID LINE INDICATES REGISTRATIONS. PROBABLY RELATE TO SAME BIRD.
- SG SG — WHEN THERE IS NO LINE ADJOINING THE REGISTRATIONS, THIS INDICATES THAT THESE BIRDS ARE DIFFERENT.
- SG — SG — BIRD SEEN ONLY IN FLIGHT AND THEN LANDING
- SG → — BIRD FLYING IN AND LANDING (FIRST SEEN IN FLIGHT)
- (SG) — FLYING OVER / AROUND SITE TO / FROM ALL DIRECTIONS

1:500 0 25m 50m

Notes

Key to symbols

- PERMANENT LAND TAKE BOUNDARY
- PERMANENT RIGHTS BOUNDARY
- TEMPORARY LAND TAKE BOUNDARY

Rev	Date	Amendment Details	Drw'n	Chk'd	App'd
P03	14/09/18	SCHEME BOUNDARY EXTENTS AMENDED	VM	DW	LC
P02	16/08/18	ISSUED FOR HE APPROVAL	VM	DW	LC
P01	31/01/18	ISSUED FOR REVIEW & COMMENT	RE	DW	LC

Mott MacDonald Sweco

Client: highways england

Drawing Status: SHARED

Suitability: S4

Project Title: A63 CASTLE STREET IMPROVEMENTS, HULL

Drawing Title: WINTERING BIRD SURVEY SITE COMPOUND 'D' 22 FEBRUARY 2017

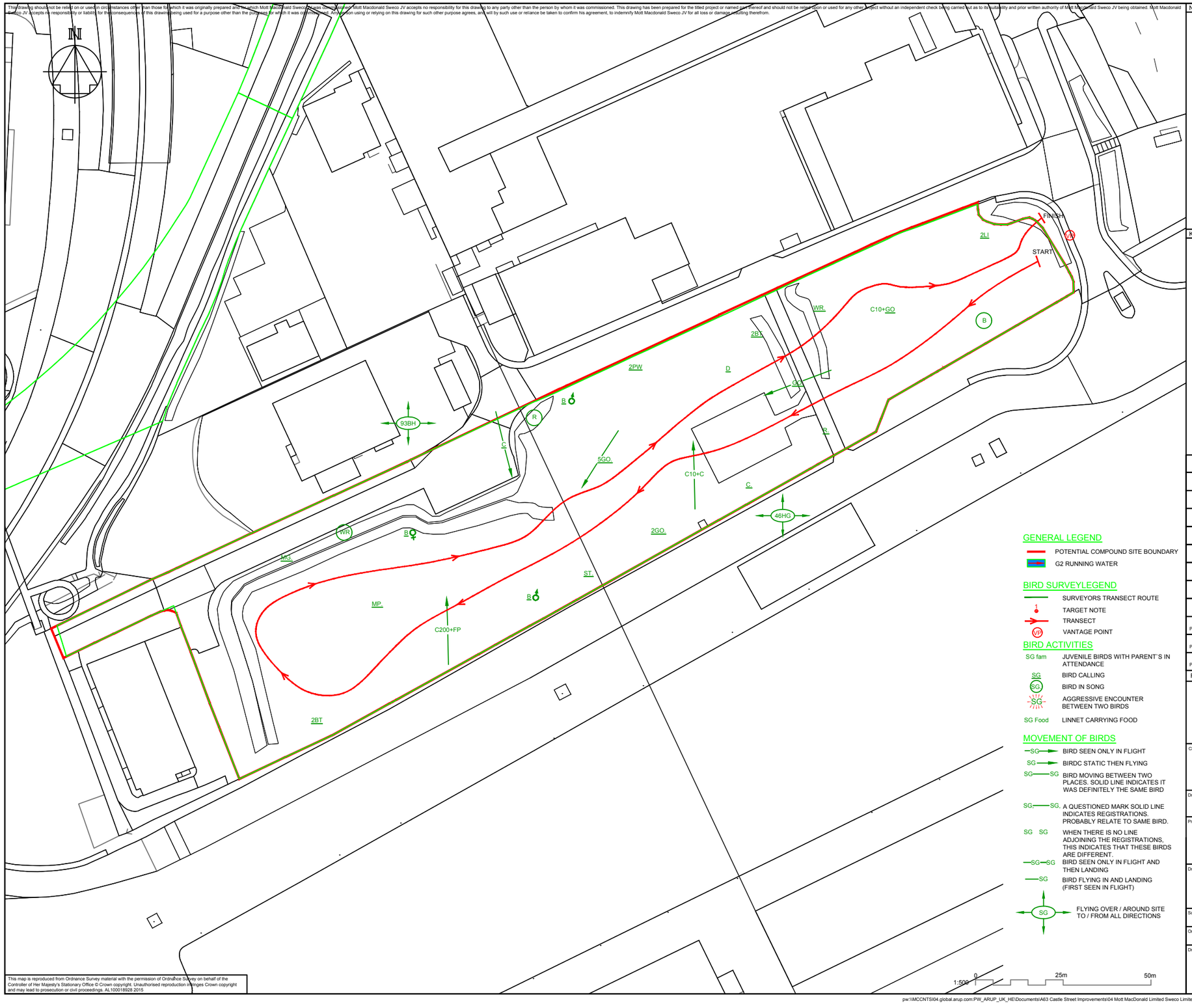
Scale	Designed	Drawn	Checked	Approved
1:500	West, Adam	Ebbs, Ray	Wood, Diane	Cottrell, Linsey
Original Size A1	Date 31/01/18	Date 31/01/18	Date 31/01/18	Date 31/01/18

Drawing Number: HE PIN | Originator | Volume | Location | Type | Role | Number
514508 - MMSJV - VES - S0 - DR - LE - 400009

Project Ref. No. 514508

Revision P03

pw:\\MCCNTSI04.global.arup.com:PW_ARUP_UK_HE\Documents\A63 Castle Street Improvements\04 Mott MacDonald Limited Sweco Limited JV\LE - Landscape and environment - Environmentalist\DR - Drawing\HE514508-MMSJV-VES-S0-DR-LE-400009



GENERAL LEGEND

- POTENTIAL COMPOUND SITE BOUNDARY
- G2 RUNNING WATER

BIRD SURVEYLEGEND

- SURVEYORS TRANSECT ROUTE
- TARGET NOTE
- TRANSECT
- VP VANTAGE POINT

BIRD ACTIVITIES

- SG fam — JUVENILE BIRDS WITH PARENT`S IN ATTENDANCE
- SG — BIRD CALLING
- (SG) — BIRD IN SONG
- SG — AGGRESSIVE ENCOUNTER BETWEEN TWO BIRDS
- SG Food — LINNET CARRYING FOOD

MOVEMENT OF BIRDS

- SG → — BIRD SEEN ONLY IN FLIGHT
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- SG — FLYING OVER / AROUND SITE TO / FROM ALL DIRECTIONS

1:500 0 25m 50m

Notes

Key to symbols

- PERMANENT LAND TAKE BOUNDARY
- PERMANENT RIGHTS BOUNDARY
- TEMPORARY LAND TAKE BOUNDARY

Rev	Date	Amendment Details	Drw'n	Chk'd	App'd
P03	14/09/18	SCHEME BOUNDARY EXTENTS AMENDED	VM	DW	LC
P02	16/08/18	ISSUED FOR HE APPROVAL	VM	DW	LC
P01	31/01/18	ISSUED FOR REVIEW & COMMENT	RE	DW	LC

Mott MacDonald Sweco

Client: highways england

Drawing Status: SHARED

Suitability: S4

Project Title: A63 CASTLE STREET IMPROVEMENTS, HULL

Drawing Title: WINTERING BIRD SURVEY SITE COMPOUND 'R' 16 JANUARY 2017

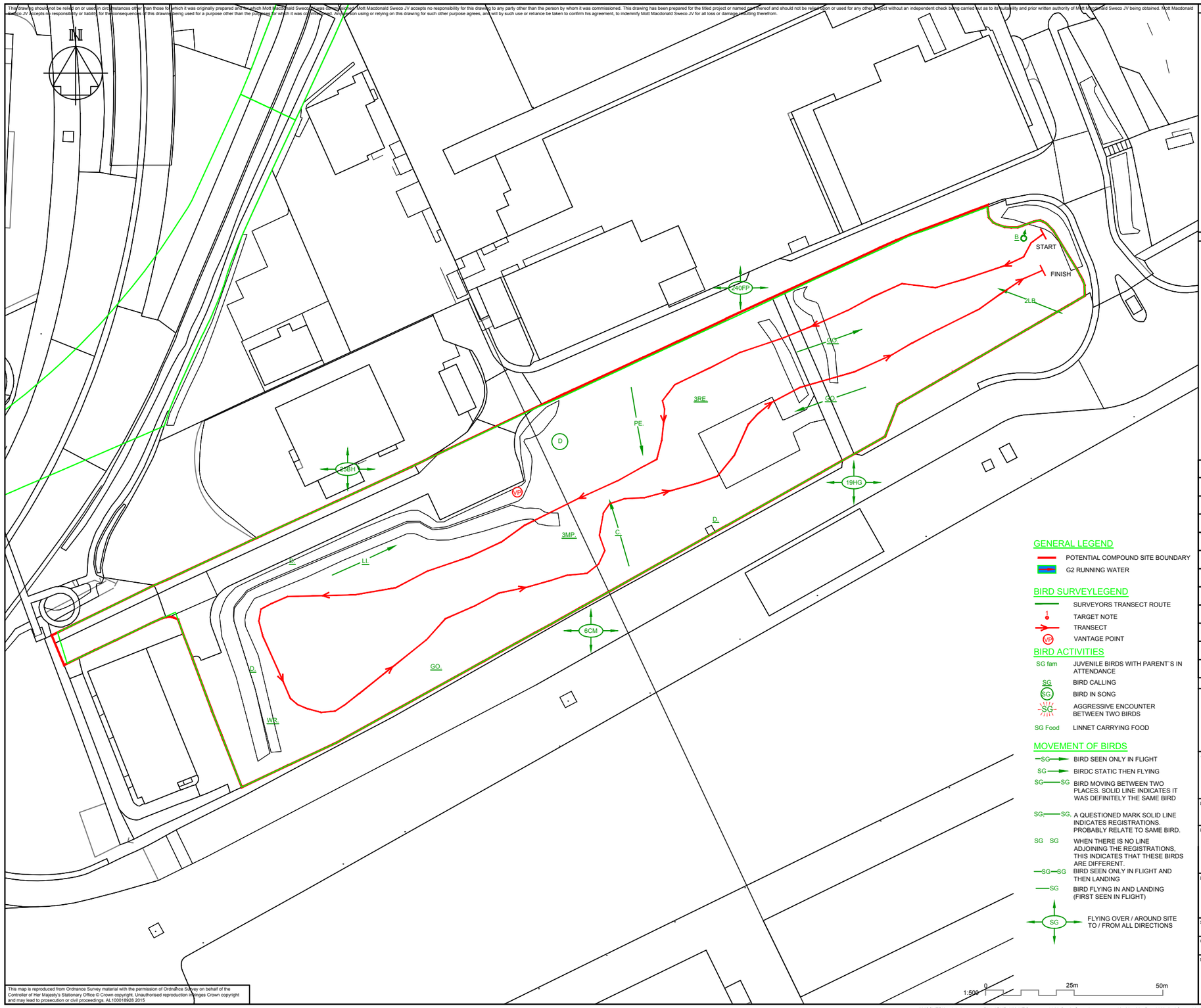
Scale	Designed	Drawn	Checked	Approved
1:500	West, Adam	Ebbs, Ray	Wood, Diane	Cottrell, Linsey
Original Size A1	Date 31/01/18	Date 31/01/18	Date 31/01/18	Date 31/01/18

Drawing Number: HE PIN | Originator | Volume | Location | Type | Role | Number
514508 - MMSJV - VES - S0 - DR - LE - 400010

Project Ref. No. 514508

Revision P03

pw:\\MCCNTSI04.global.arup.com:PW_ARUP_UK_HE\Documents\A63 Castle Street Improvements\04 Mott MacDonald Limited Sweco Limited JV\LE - Landscape and environment - Environmentalist\DR - Drawing\HE514508-MMSJV-VES-S0-DR-LE-400010



1:500 0 25m 50m

GENERAL LEGEND

- POTENTIAL COMPOUND SITE BOUNDARY
- G2 RUNNING WATER

BIRD SURVEYLEGEND

- SURVEYORS TRANSECT ROUTE
- TARGET NOTE
- TRANSECT
- VP VANTAGE POINT

BIRD ACTIVITIES

- SG fam — JUVENILE BIRDS WITH PARENT`S IN ATTENDANCE
- SG — BIRD CALLING
- SG — BIRD IN SONG
- SG — AGGRESSIVE ENCOUNTER BETWEEN TWO BIRDS
- SG Food — LINNET CARRYING FOOD

MOVEMENT OF BIRDS

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Notes

Key to symbols

- PERMANENT LAND TAKE BOUNDARY
- PERMANENT RIGHTS BOUNDARY
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Rev	Date	Amendment Details	Drw'n	Chk'd	App'd
P03	14/09/18	SCHEME BOUNDARY EXTENTS AMENDED	VM	DW	LC
P02	16/08/18	ISSUED FOR HE APPROVAL	VM	DW	LC
P01	31/01/18	ISSUED FOR REVIEW & COMMENT	RE	DW	LC

Mott MacDonald Sweco

Client: highways england

Drawing Status: SHARED

Suitability: S4

Project Title: A63 CASTLE STREET IMPROVEMENTS, HULL

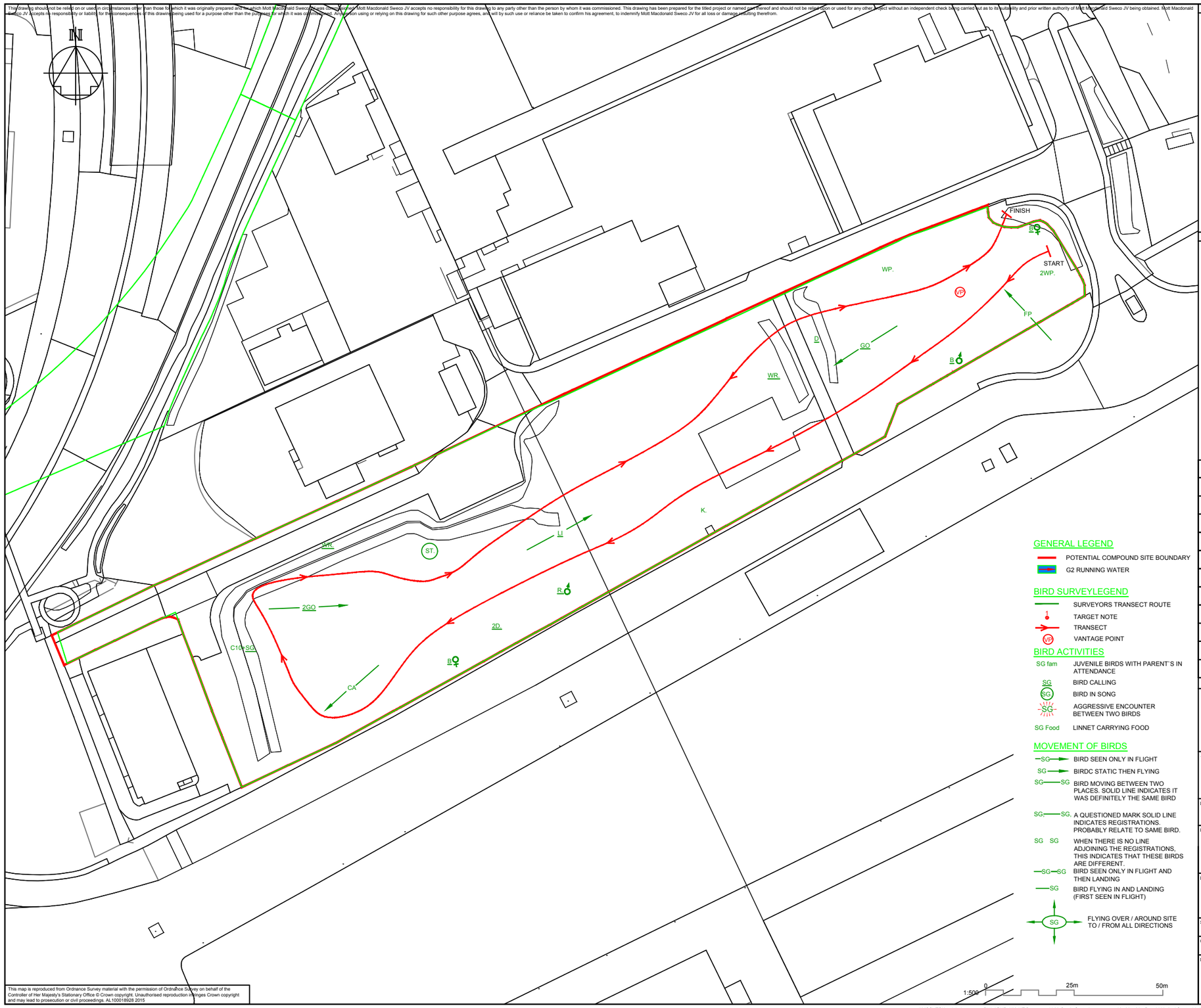
Drawing Title: WINTERING BIRD SURVEY SITE COMPOUND 'R' 25 JANUARY 2017

Scale	Designed	Drawn	Checked	Approved
1:500	West, Adam	Ebbs, Ray	Woodhouse, Diane	Cottrell, Linsey
Original Size: A1	Date: 31/01/18	Date: 31/01/18	Date: 31/01/18	Date: 31/01/18

Drawing Number: HE PIN | Originator | Volume | Location | Type | Role | Number
514508 - MMSJV - VES - S0 - DR - LE - 400011

Project Ref. No.: 514508

Revision: P03



GENERAL LEGEND

- POTENTIAL COMPOUND SITE BOUNDARY
- G2 RUNNING WATER

BIRD SURVEYLEGEND

- SURVEYORS TRANSECT ROUTE
- TARGET NOTE
- TRANSECT
- VP VANTAGE POINT

BIRD ACTIVITIES

- SG fam — JUVENILE BIRDS WITH PARENT`S IN ATTENDANCE
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- (SG) — BIRD IN SONG
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- SG Food — LINNET CARRYING FOOD

MOVEMENT OF BIRDS

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1:500 0 25m 50m

Notes

Key to symbols

- PERMANENT LAND TAKE BOUNDARY
- PERMANENT RIGHTS BOUNDARY
- TEMPORARY LAND TAKE BOUNDARY

Rev	Date	Amendment Details	Drw'n	Chk'd	App'd
P03	14/09/18	SCHEME BOUNDARY EXTENTS AMENDED	VM	DW	LC
P02	16/08/18	ISSUED FOR HE APPROVAL	VM	DW	LC
P01	31/01/18	ISSUED FOR REVIEW & COMMENT	RE	DW	LC

Mott MacDonald Sweco

Client: highways england

Drawing Status: SHARED

Suitability: S4

Project Title: A63 CASTLE STREET IMPROVEMENTS, HULL

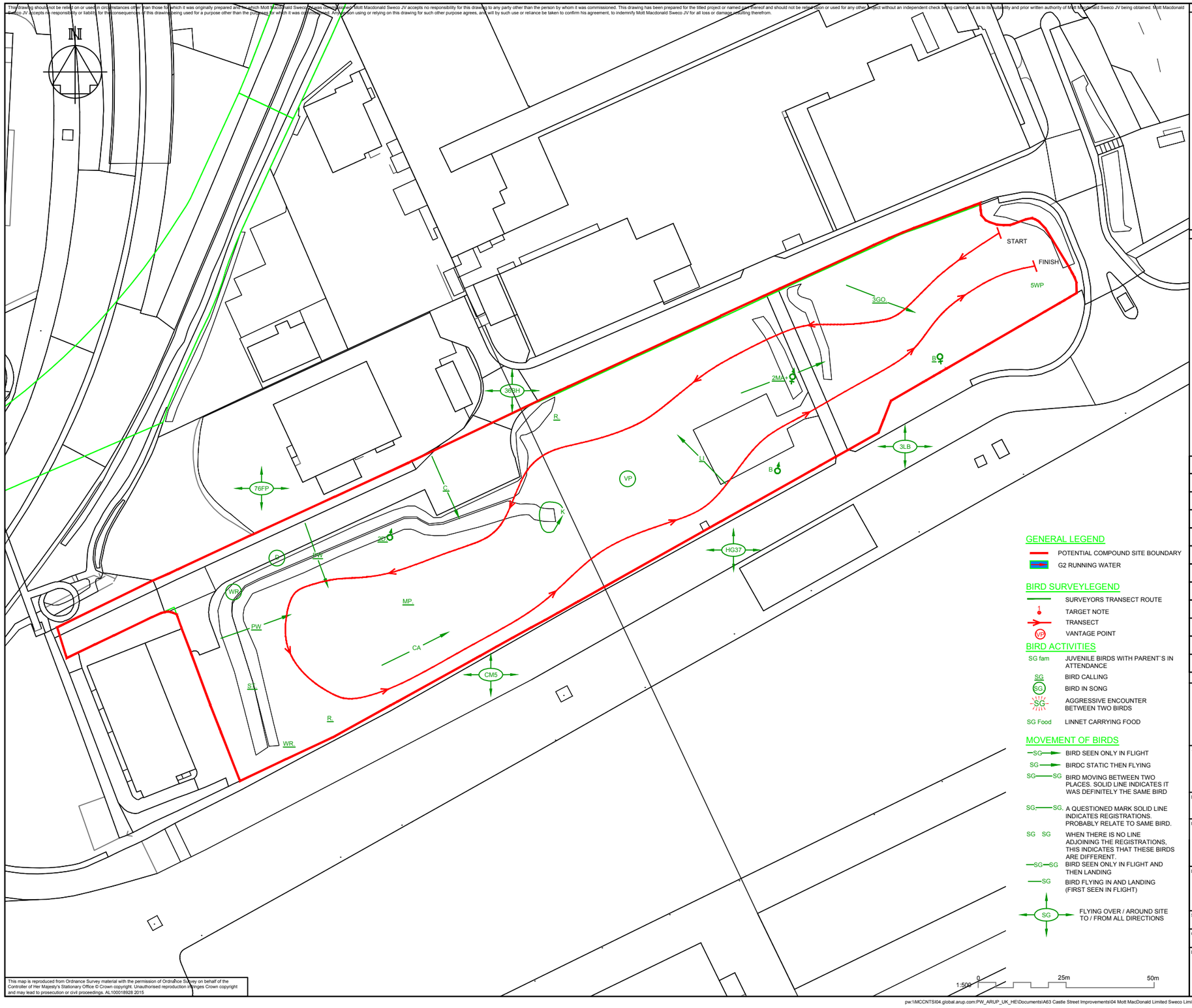
Drawing Title: WINTERING BIRD SURVEY SITE COMPOUND 'R' 8 FEBRUARY 2017

Scale	Designed	Drawn	Checked	Approved
1:500	West, Adam	Ebbs, Ray	Wood, Diane	Cottrell, Linsey
Original Size: A1	Date: 31/01/18	Date: 31/01/18	Date: 31/01/18	Date: 31/01/18

Drawing Number: HE PIN | Originator | Volume | Location | Type | Role | Number
514508 - MMSJV - VES - S0 - DR - LE - 400012

Project Ref. No.: 514508

Revision: P03



1:500 0 25m 50m

GENERAL LEGEND

- POTENTIAL COMPOUND SITE BOUNDARY
- G2 RUNNING WATER

BIRD SURVEYLEGEND

- SURVEYORS TRANSECT ROUTE
- TARGET NOTE
- TRANSECT
- VP VANTAGE POINT

BIRD ACTIVITIES

- SG fam — JUVENILE BIRDS WITH PARENT`S IN ATTENDANCE
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- SG Food — LINNET CARRYING FOOD

MOVEMENT OF BIRDS

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Notes

Key to symbols

- PERMANENT LAND TAKE BOUNDARY
- PERMANENT RIGHTS BOUNDARY
- TEMPORARY LAND TAKE BOUNDARY

Rev	Date	Amendment Details	Drw'n	Chk'd	App'd
P03	14/09/18	SCHEME BOUNDARY EXTENTS AMENDED	VM	DW	LC
P02	16/08/18	ISSUED FOR HE APPROVAL	VM	DW	LC
P01	31/01/18	ISSUED FOR REVIEW & COMMENT	RE	DW	LC

Mott MacDonald Sweco

Client: highways england

Drawing Status: SHARED

Suitability: S4

Project Title: A63 CASTLE STREET IMPROVEMENTS, HULL

Drawing Title: WINTERING BIRD SURVEY SITE COMPOUND 'R' 22 FEBRUARY 2017

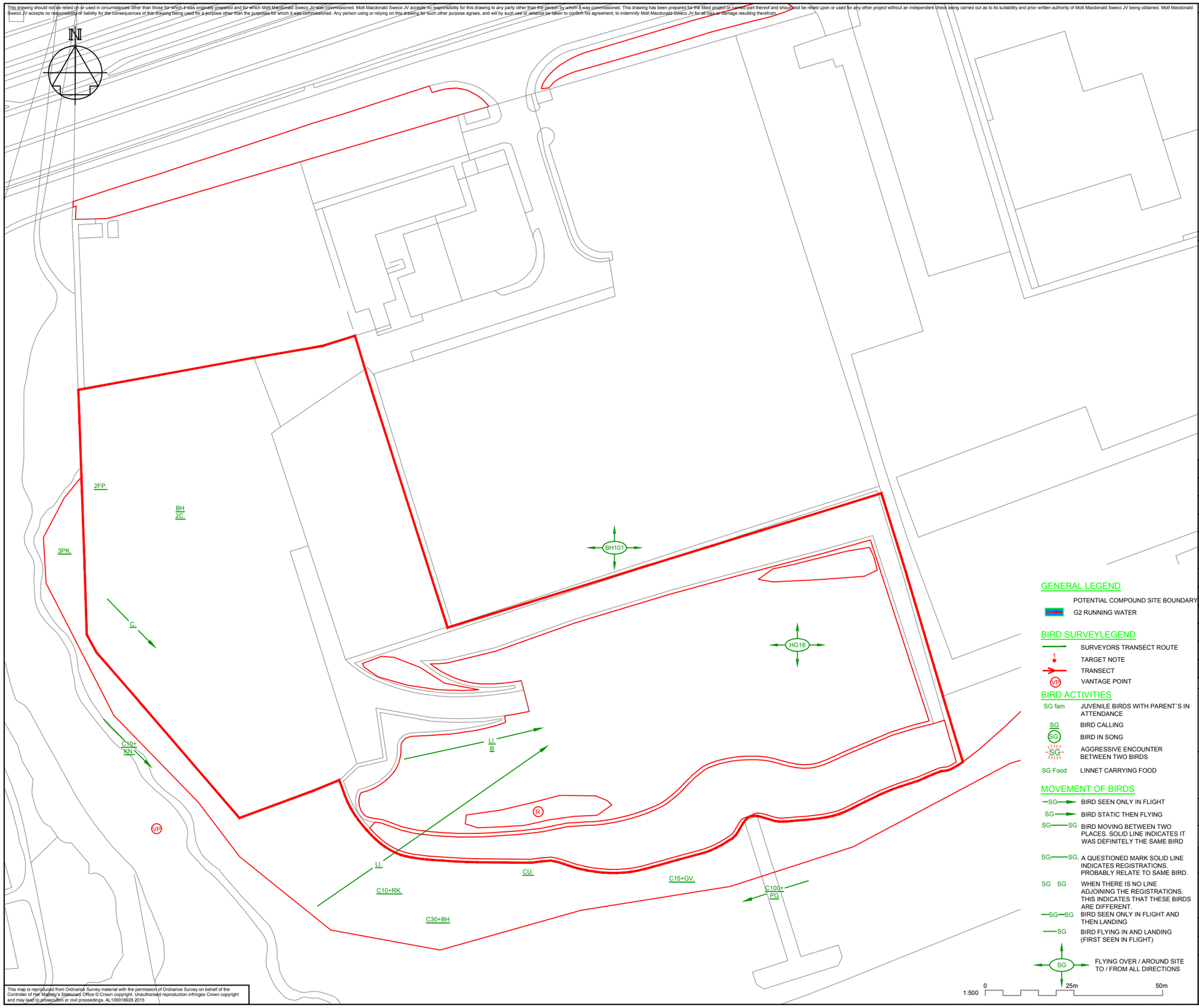
Scale	Designed	Drawn	Checked	Approved
1:500	West, Adam	Ebbs, Ray	Wood, Diane	Cottrell, Linsey
Original Size A1	Date 31/01/18	Date 31/01/18	Date 31/01/18	Date 31/01/18

Drawing Number: HE PIN | Originator | Volume | Location | Type | Role | Number
514508 - MMSJV - VES - S0 - DR - LE - 400013

Project Ref. No. 514508

Revision P03

pw:\\MCCNTSI04.global.arup.com:PW_ARUP_UK_HE\Documents\A63 Castle Street Improvements\04 Mott MacDonald Limited Sweco Limited JV\LE - Landscape and environment - Environmentalist\DR - Drawing\HE514508-MMSJV-VES-S0-DR-LE-400013



GENERAL LEGEND

- POTENTIAL COMPOUND SITE BOUNDARY
- G2 RUNNING WATER

BIRD SURVEYLEGEND

- SURVEYORS TRANSECT ROUTE
- 1 TARGET NOTE
- TRANSECT
- VP VANTAGE POINT

BIRD ACTIVITIES

- SG fam — JUVENILE BIRDS WITH PARENT`S IN ATTENDANCE
- SG — BIRD CALLING
- SG — BIRD IN SONG
- SG — AGGRESSIVE ENCOUNTER BETWEEN TWO BIRDS
- SG Food — LINNET CARRYING FOOD

MOVEMENT OF BIRDS

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- SG — FLYING OVER / AROUND SITE TO / FROM ALL DIRECTIONS

1:500 0 25m 50m

Notes

Key to symbols

- PERMANENT LAND TAKE BOUNDARY
- PERMANENT RIGHTS BOUNDARY
- TEMPORARY LAND TAKE BOUNDARY

Rev	Date	Amendment Details	Drw'n	Chk'd	App'd
P01	31/01/18	ISSUED FOR REVIEW & COMMENT	VM	DW	LC

Mott MacDonald Sweco

Client: highways england

Drawing Status	Suitability
SHARED	S4

Project Title: A63 CASTLE STREET IMPROVEMENTS, HULL

Drawing Title: PHASE 1 HABITAT MAP
POTENTIAL SITE COMPOUND 'G'
LIVINGSTONE ROAD SOUTH, HUMBER
PROPERTIES LTD. 16 JANUARY 2017

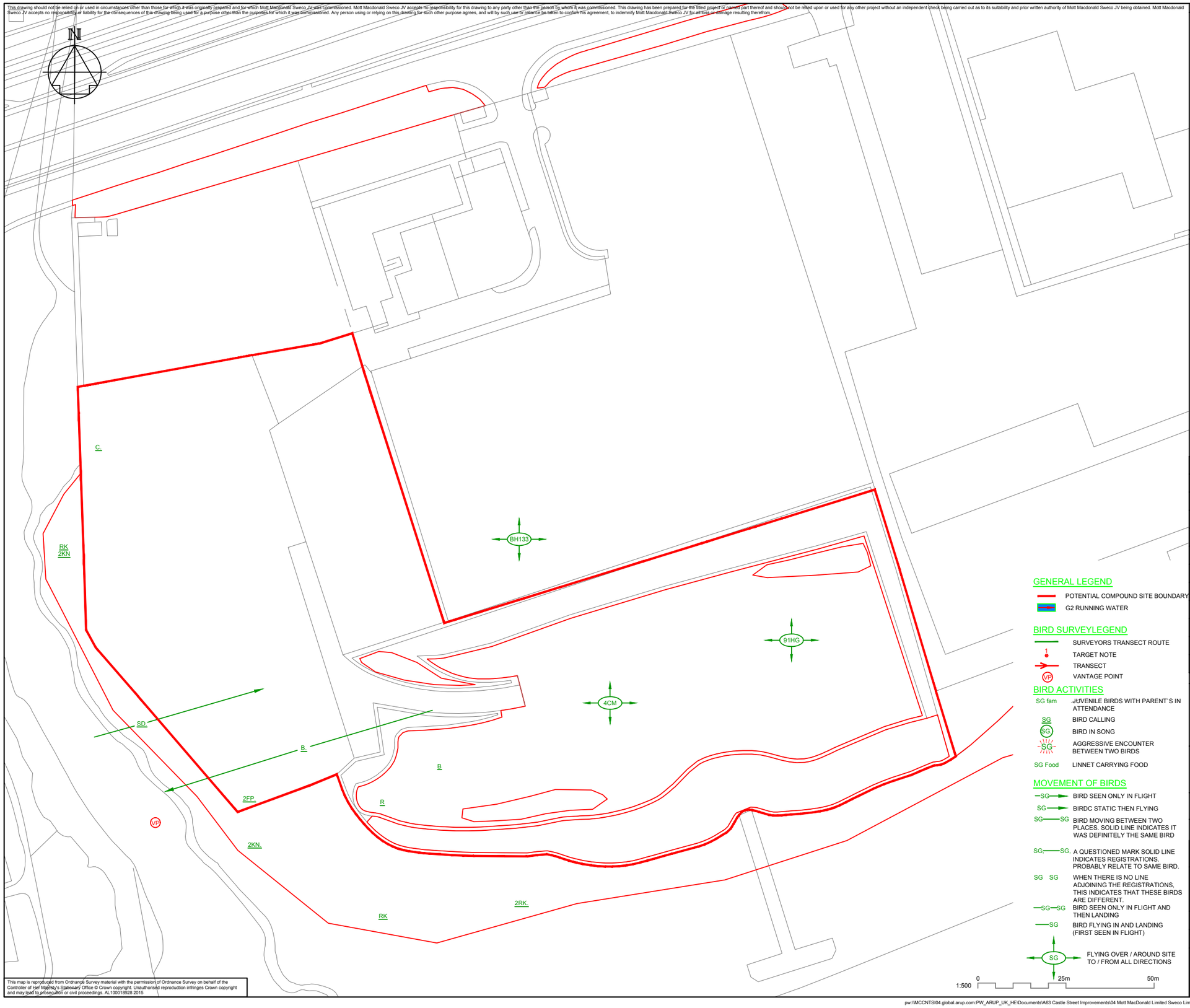
Scale	Designed	Drawn	Checked	Approved
1:500	West, Adam	Mchugh, Vincent	Wood, Diane	Cottrell, Linsey
Original Size A1	Date 22/07/18	Date 22/07/18	Date 22/07/18	Date 22/07/18

Drawing Number: HE PIN | Originator | Volume
514508 - MMSJV - VES -
S0 - DR - LE - 400014
Location | Type | Role | Number

Project Ref. No. 514508

Revision P01

pw:\\MCCNTSI04.global.arup.com:PW_ARUP_UK_HE\Documents\A63 Castle Street Improvements\04 Mott MacDonald Limited Sweco Limited JV\LE - Landscape and environment - Environmentalist\DR - Drawing\HE514508-MMSJV-VES-S0-DR-LE-400014



GENERAL LEGEND

- POTENTIAL COMPOUND SITE BOUNDARY
- G2 RUNNING WATER

BIRD SURVEYLEGEND

- SURVEYORS TRANSECT ROUTE
- 1 TARGET NOTE
- TRANSECT
- VP VANTAGE POINT

BIRD ACTIVITIES

- SG fam JUVENILE BIRDS WITH PARENT`S IN ATTENDANCE
- SG BIRD CALLING
- (SG) BIRD IN SONG
- SG AGGRESSIVE ENCOUNTER BETWEEN TWO BIRDS
- SG Food LINNET CARRYING FOOD

MOVEMENT OF BIRDS

- SG → BIRD SEEN ONLY IN FLIGHT
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- (SG) FLYING OVER / AROUND SITE TO / FROM ALL DIRECTIONS

1:500 0 25m 50m

Notes

Key to symbols

- PERMANENT LAND TAKE BOUNDARY
- PERMANENT RIGHTS BOUNDARY
- TEMPORARY LAND TAKE BOUNDARY

Rev	Date	Amendment Details	Drw'n	Chk'd	App'd
P01	31/01/18	ISSUED FOR REVIEW & COMMENT	VM	DW	LC

Mott MacDonald Sweco

Client: highways england

Drawing Status	Suitability
SHARED	S4

Project Title: A63 CASTLE STREET IMPROVEMENTS, HULL

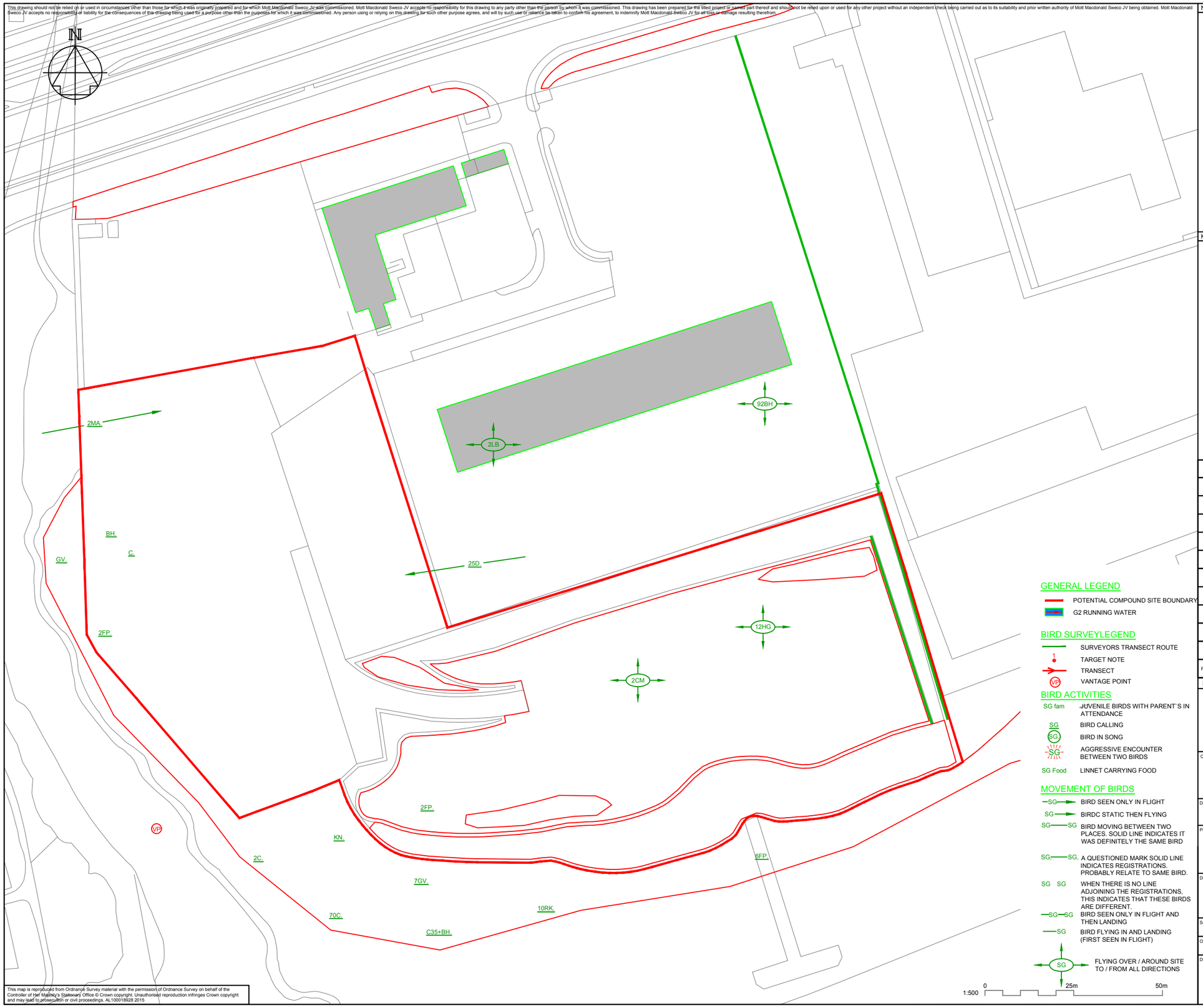
Drawing Title: PHASE 1 HABITAT MAP
POTENTIAL SITE COMPOUND 'G
'LIVINGSTONE ROAD SOUTH, HUMBER
PROPERTIES LTD. 25 JANUARY 2017

Scale	Designed	Drawn	Checked	Approved
1:500	West, Adam	Ebbs, Ray	Wood, Diane	Cottrell, Linsey
Original Size A1	Date 31/01/18	Date 31/01/18	Date 31/01/18	Date 31/01/18

Drawing Number: HE PIN | Originator | Volume
514508 - MMSJV - VES -
S0 - DR - LE - 400015
Location | Type | Role | Number

Project Ref. No. 514508

Revision P01



GENERAL LEGEND

- POTENTIAL COMPOUND SITE BOUNDARY
- G2 RUNNING WATER

BIRD SURVEYLEGEND

- SURVEYORS TRANSECT ROUTE
- 1 TARGET NOTE
- TRANSECT
- VP VANTAGE POINT

BIRD ACTIVITIES

- SG fam — JUVENILE BIRDS WITH PARENT`S IN ATTENDANCE
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1:500 0 25m 50m

Notes

Key to symbols

- PERMANENT LAND TAKE BOUNDARY
- PERMANENT RIGHTS BOUNDARY
- TEMPORARY LAND TAKE BOUNDARY

Rev	Date	Amendment Details	Drw'n	Chk'd	App'd
P01	31/01/18	ISSUED FOR REVIEW & COMMENT	VM	DW	LC

Mott MacDonald Sweco

Client: highways england

Drawing Status	Suitability
SHARED	S4

Project Title: A63 CASTLE STREET IMPROVEMENTS, HULL

Drawing Title: PHASE 1 HABITAT MAP
POTENTIAL SITE COMPOUND 'G'
LIVINGSTONE ROAD SOUTH, HUMBER
PROPERTIES LTD. 8 FEBUARY 2017

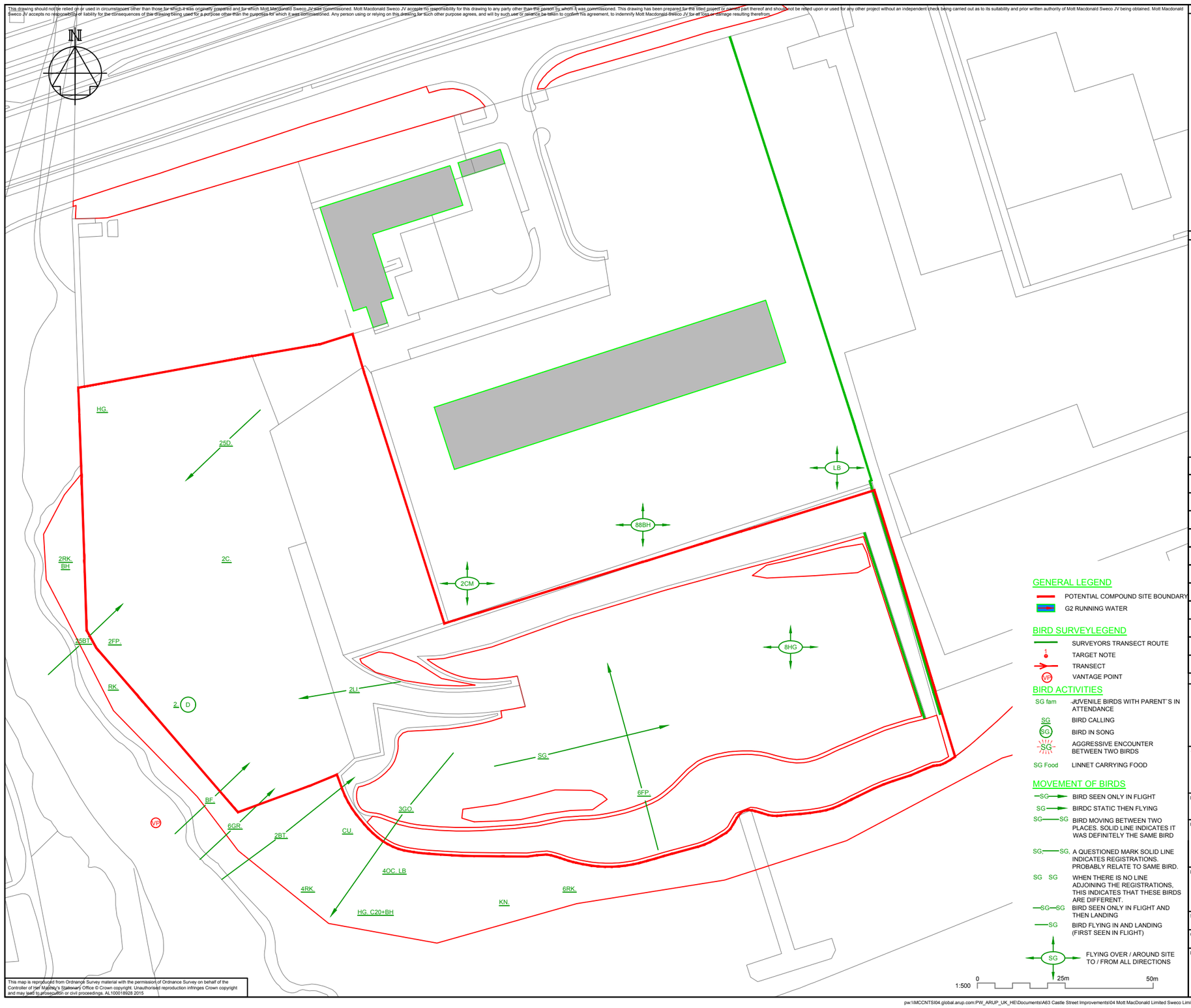
Scale	Designed	Drawn	Checked	Approved
1:500	West, Adam	Ebbs, Ray	Wood, Diane	Cottrell, Linsey
Original Size A1	Date 31/01/18	Date 31/01/18	Date 31/01/18	Date 31/01/18

Drawing Number: HE PIN | Originator | Volume
514508 - MMSJV - VES -
S0 - DR - LE - 400016
Location | Type | Role | Number

Project Ref. No. 514508

Revision P01

pw:\\MCCNTSI04.global.arup.com:PW_ARUP_UK_HE\Documents\A63 Castle Street Improvements\04 Mott MacDonald Limited Sweco Limited JV\LE - Landscape and environment - Environmentalist\DR - Drawing\HE514508-MMSJV-VES-S0-DR-LE-400016



GENERAL LEGEND

- POTENTIAL COMPOUND SITE BOUNDARY
- G2 RUNNING WATER

BIRD SURVEYLEGEND

- SURVEYORS TRANSECT ROUTE
- 1 TARGET NOTE
- TRANSECT
- VP VANTAGE POINT

BIRD ACTIVITIES

- SG fam JUVENILE BIRDS WITH PARENT`S IN ATTENDANCE
- SG BIRD CALLING
- (SG) BIRD IN SONG
- -SG- AGGRESSIVE ENCOUNTER BETWEEN TWO BIRDS
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1:500 0 25m 50m

Notes

Key to symbols

- PERMANENT LAND TAKE BOUNDARY
- PERMANENT RIGHTS BOUNDARY
- TEMPORARY LAND TAKE BOUNDARY

Rev	Date	Amendment Details	Drw'n	Chk'd	App'd
P01	31/01/18	ISSUED FOR REVIEW & COMMENT	VM	DW	LC

Mott MacDonald Sweco

Client: highways england

Drawing Status	Suitability
SHARED	S4

Project Title: A63 CASTLE STREET IMPROVEMENTS, HULL

Drawing Title: PHASE 1 HABITAT MAP
POTENTIAL SITE COMPOUND 'G'
LIVINGSTONE ROAD SOUTH, HUMBER
PROPERTIES LTD. 22 FEBUARY 2017

Scale	Designed	Drawn	Checked	Approved
1:500	West, Adam	Ebbs, Ray	Wood, Diane	Cottrell, Linsey
Original Size A1	Date 31/01/18	Date 31/01/18	Date 31/01/18	Date 31/01/18

Drawing Number: HE PIN | Originator | Volume | Location | Type | Role | Number
514508 - MMSJV - VES - S0 - DR - LE - 400017

Project Ref. No. 514508

Revision P02

pw:\\MCCNTSI04.global.arup.com:PW_ARUP_UK_HE\Documents\A63 Castle Street Improvements\04 Mott MacDonald Limited Sweco Limited JV\LE - Landscape and environment - Environmentalist\DR - Drawing\HE514508-MMSJV-VES-S0-DR-LE-400017