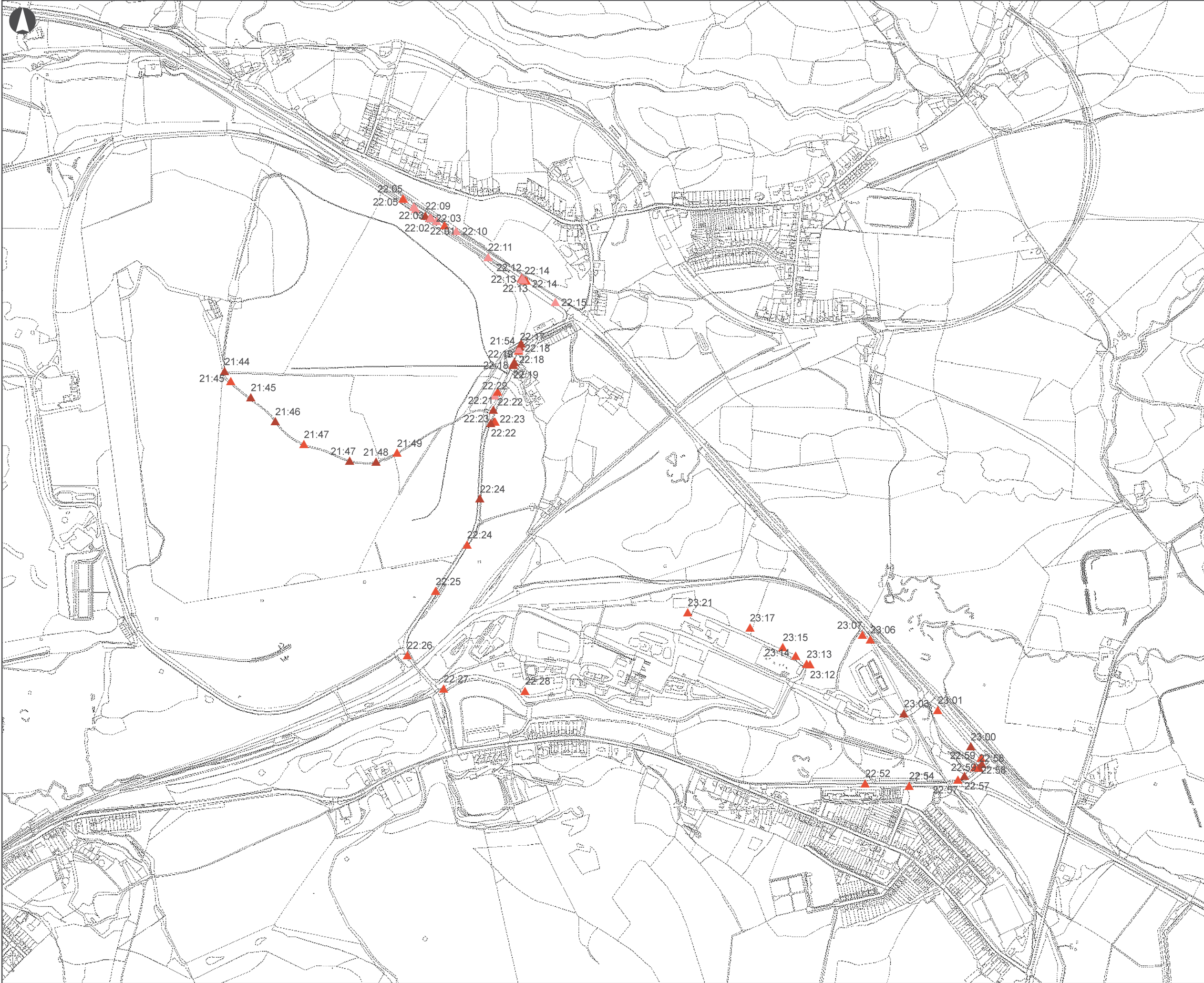




Legend

Species

- Pipistrelle species
- Common pipistrelle
- Soprano pipistrelle

F1	2020-03-30	KJ	CP	PC
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Issue	Date	By	Chkd	Appd
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Metres
0 120 240 480

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Client

Celtic Energy

Job Title

**Nant Helen Complementary
Restoration Earthworks**

**Bat Transect Results June
Green Transect**

Scale at A3

1:9,000

Job No	Drawing Status
271968-05	For Issue
Drawing No	Issue
007b	F1



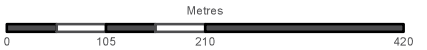
Legend

Species

- ★ Myotis species
- ▲ Common pipistrelle
- ▲ Soprano pipistrelle

F1	2020-03-26	KJ	CP	PC
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Issue	Date	By	Chkd	Appd
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Celtic Energy

Job Title

Nant Helen Complementary
Restoration Earthworks

Bat Transect Results June
Orange Transect

Scale at A3

1:8,000

Job No	Drawing Status
271968-05	For Issue

Drawing No	Issue
007c	F1



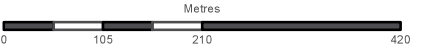
Legend

Species

- ★ Myotis species
- ▲ Common pipistrelle
- ▲ Soprano pipistrelle

F1	2020-03-26	KJ	CP	PC
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Issue	Date	By	Chkd	Appd
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Client
Celtic Energy

Job Title
**Nant Helen Complementary
Restoration Earthworks**

Bat Transect Results June
Yellow Transect

Scale at A3
1:8,000

Job No 271968-05	Drawing Status For Issue
Drawing No 007d	Issue F1



Legend

Species

- ▲ Common pipistrelle
- ▲ Soprano pipistrelle

F1	2020-03-26	KJ	CP	PC
----	------------	----	----	----

Issue	Date	By	Chkd	Appd

Metres

0 105 210 420

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Client

Celtic Energy

Job Title

**Nant Helen Complementary
Restoration Earthworks**

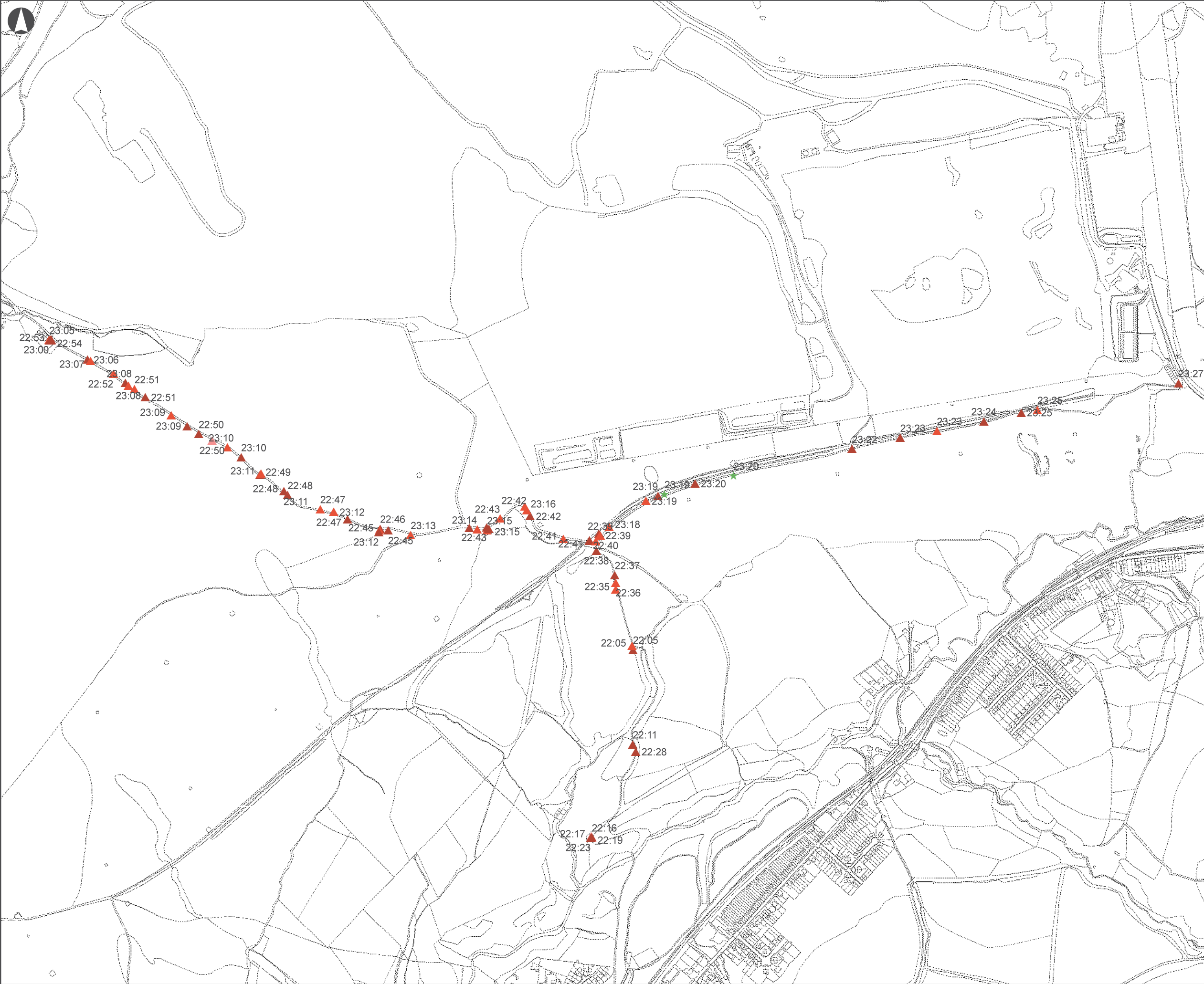
**Bat Transect Results June
Blue Transect**

Scale at A3

1:8,000

Job No	Drawing Status
271968-05	For Issue

Drawing No	Issue
007e	F1



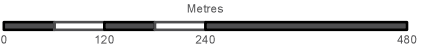
Legend

Species

- ★ Myotis species
- ▲ Pipistrelle species
- ▲ Common pipistrelle
- ▲ Soprano pipistrelle

F1	2020-03-26	KJ	CP	PC
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Issue	Date	By	Chkd	Appd
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Celtic Energy

Job Title

Nant Helen Complementary
Restoration Earthworks

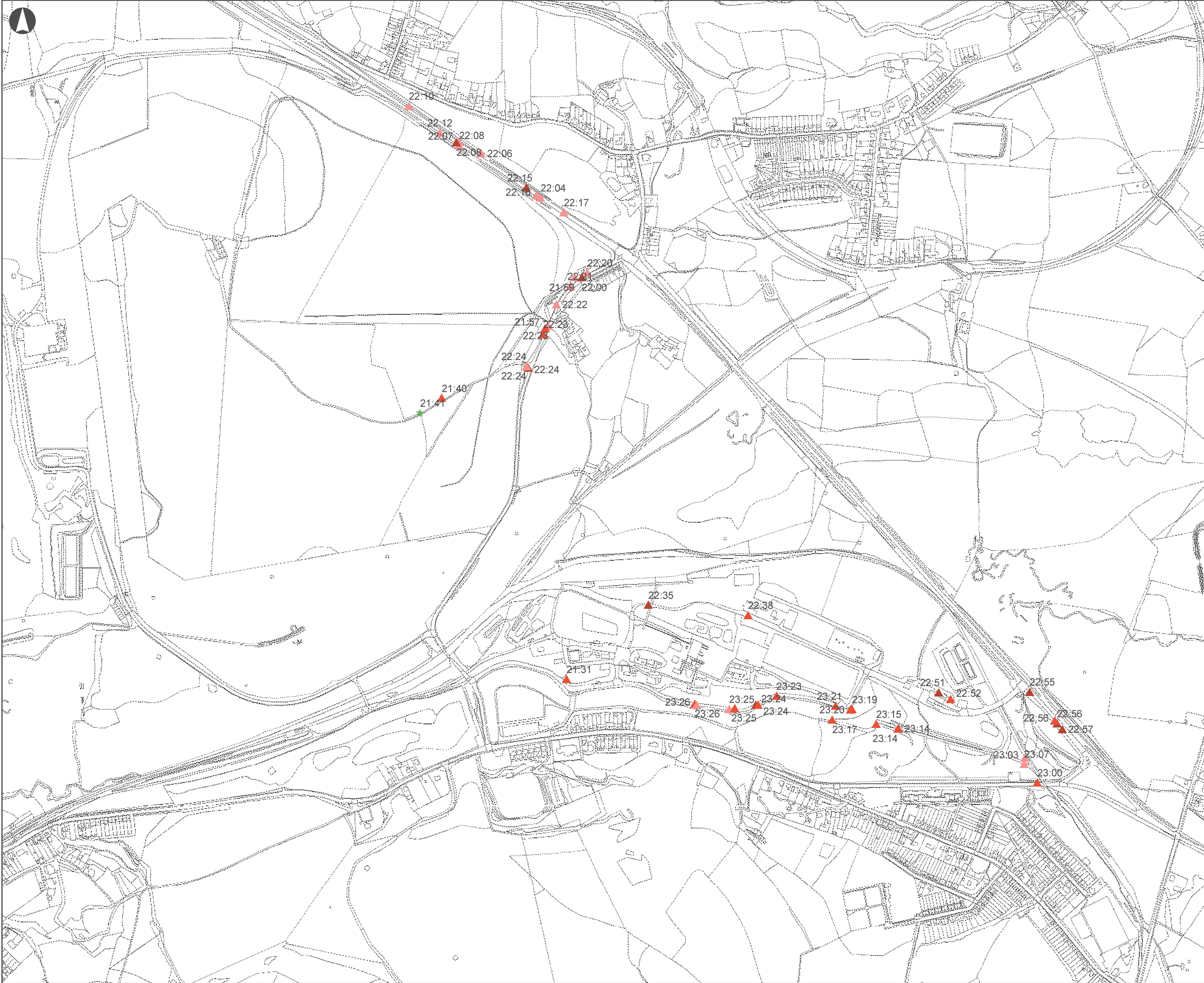
Bat Transect Results July
Purple Transect

Scale at A3

1:9,000

Job No	Drawing Status
271968-05	For Issue

Drawing No	Issue
008a	F1



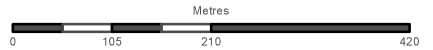
Legend

Species

- ★ Myotis species
- ▲ Pipistrelle species
- ▲ Common pipistrelle
- ▲ Soprano pipistrelle

F1	2020-03-26	KJ	CP	PC
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Issue	Date	By	Chkd	Appd
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Celtic Energy

Job Title

**Nant Helen Complementary
Restoration Earthworks**

**Bat Transect Results July
Green Transect**

Scale at A3

1:8,000

Job No	Drawing Status
271968-05	For Issue

Drawing No	Issue
008b	F1



Legend

Species

- ▲ Common pipistrelle
- ▲ Soprano pipistrelle

F1	2020-03-26	KJ	CP	PC
----	------------	----	----	----

Issue	Date	By	Chkd	Appd

Metres
0 105 210 420

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Celtic Energy

Job Title

**Nant Helen Complementary
Restoration Earthworks**

Bat Transect Results July
Orange Transect

Scale at A3

1:8,000

Job No	Drawing Status
271968-05	For Issue
Drawing No	Issue
008c	F1



Legend

Species

- Noctule
- Common pipistrelle
- Soprano pipistrelle

F1	2020-03-26	KJ	CP	PC
----	------------	----	----	----

Issue	Date	By	Chkd	Appd
-------	------	----	------	------

Metres

0 105 210 420

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Client

Celtic Energy

Job Title

**Nant Helen Complementary
Restoration Earthworks**

**Bat Transect Results July
Yellow Transect**

Scale at A3

1:8,000

Job No	Drawing Status
271968-05	For Issue
Drawing No	Issue
008d	F1



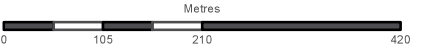
Legend

Species

- Noctule
- Common pipistrelle
- Soprano pipistrelle

F1	2020-03-26	KJ	CP	PC
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Issue	Date	By	Chkd	Appd
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Celtic Energy

Job Title
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Restoration Earthworks

Bat Transect Results July
Blue Transect

Scale at A3
1:8,000

Job No 271968-05	Drawing Status For Issue
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Drawing No 008e	Issue F1
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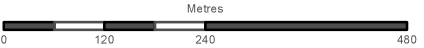
Legend

Species

- ★ Myotis species
- Long-eared species
- ▲ Pipistrelle species
- ▲ Common pipistrelle
- ▲ Soprano pipistrelle

F1	2020-03-27	KJ	CP	PC
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Issue	Date	By	Chkd	Appd
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Celtic Energy

Job Title

Nant Helen Complementary
Restoration Earthworks

Bat Transect Results August
Purple Transect

Scale at A3

1:9,000

Job No	Drawing Status
271968-05	For Issue

Drawing No	Issue
009a	F1



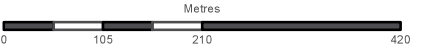
Legend

Species

- Noctule
- Pipistrelle species
- Common pipistrelle
- Soprano pipistrelle

F1	2020-03-26	KJ	CP	PC
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Issue	Date	By	Chkd	Appd
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Celtic Energy

Job Title
**Nant Helen Complementary
Restoration Earthworks**

**Bat Transect Results August
Green Transect**

Scale at A3
1:8,000

Job No 271968-05	Drawing Status For Issue
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Drawing No 009b	Issue F1
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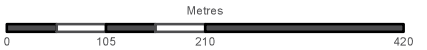
Legend

Species

- ★ Myotis species
- ▲ Common pipistrelle
- ▲ Soprano pipistrelle

F1	2020-03-26	KJ	CP	PC
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Issue	Date	By	Chkd	Appd
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Celtic Energy

Job Title

Nant Helen Complementary
Restoration Earthworks

Bat Transect Results August
Orange Transect

Scale at A3

1:8,000

Job No	Drawing Status
271968-05	For Issue

Drawing No	Issue
009c	F1



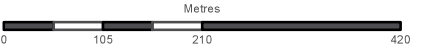
Legend

Species

- ★ Myotis species
- Noctule
- ▲ Common pipistrelle
- ▲ Soprano pipistrelle

F1	2020-03-26	KJ	CP	PC
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Issue	Date	By	Chkd	Appd
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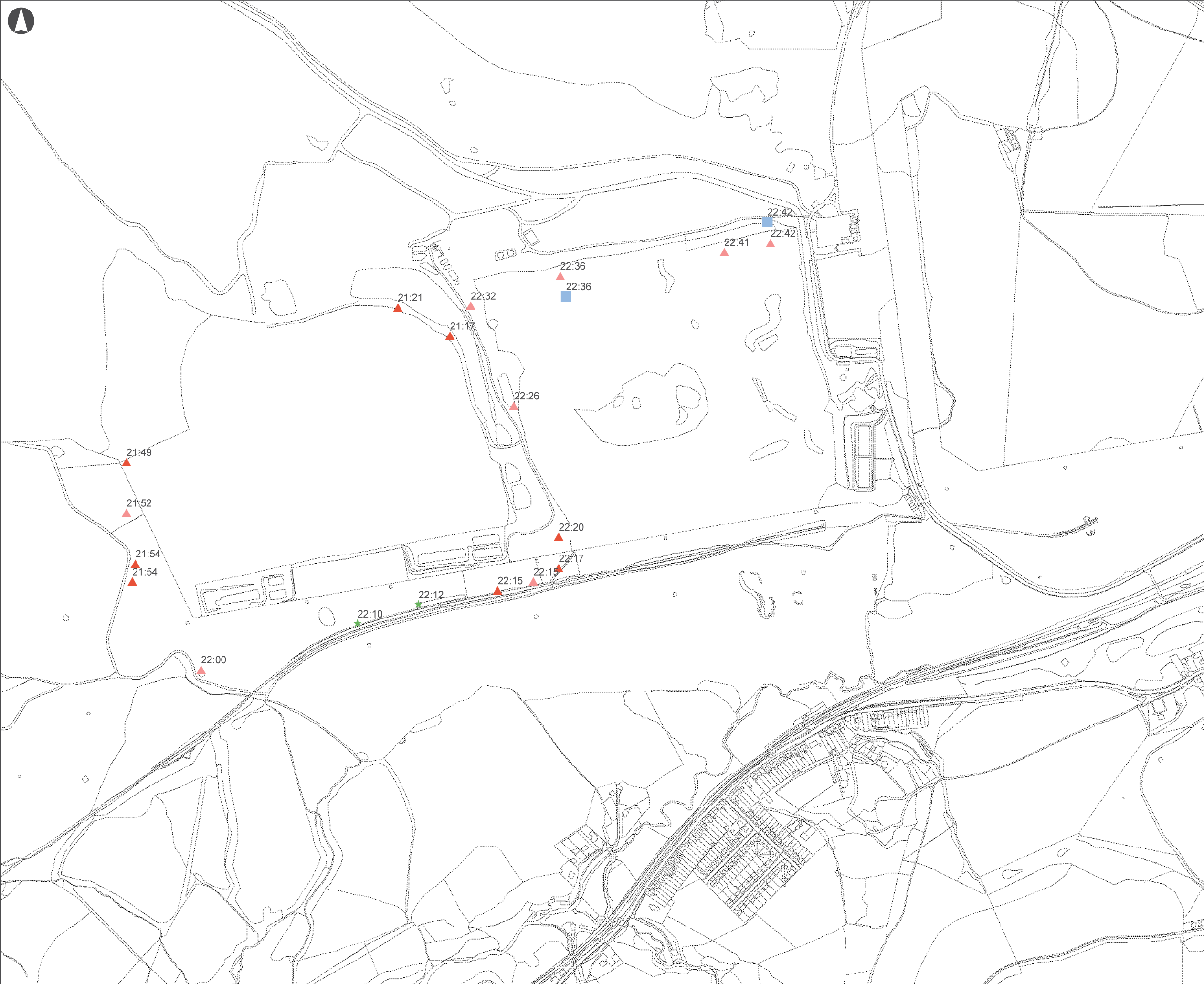
Job Title
**Nant Helen Complementary
Restoration Earthworks**

**Bat Transect Results August
Yellow Transect**

Scale at A3
1:8,000

Job No 271968-05	Drawing Status For Issue
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Drawing No 009d	Issue F1
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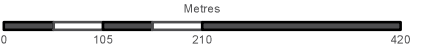
Legend

Species

- ★ Myotis species
- Noctule
- ▲ Common pipistrelle
- ▲ Soprano pipistrelle

F1	2020-03-26	KJ	CP	PC
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Issue	Date	By	Chkd	Appd
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Celtic Energy

Job Title

Nant Helen Complementary
Restoration Earthworks

Bat Transect Results August
Blue Transect

Scale at A3

1:8,000

Job No	Drawing Status
271968-05	For Issue

Drawing No	Issue
009e	F1



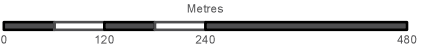
Legend

Species

- ★ Myotis species
- Noctule
- ▲ Pipistrelle species
- ▲ Common pipistrelle
- ▲ Soprano pipistrelle

F1	2020-03-27	KJ	CP	PC
----	------------	----	----	----

Issue	Date	By	Chkd	Appd
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Celtic Energy

Job Title

Nant Helen Complementary
Restoration Earthworks

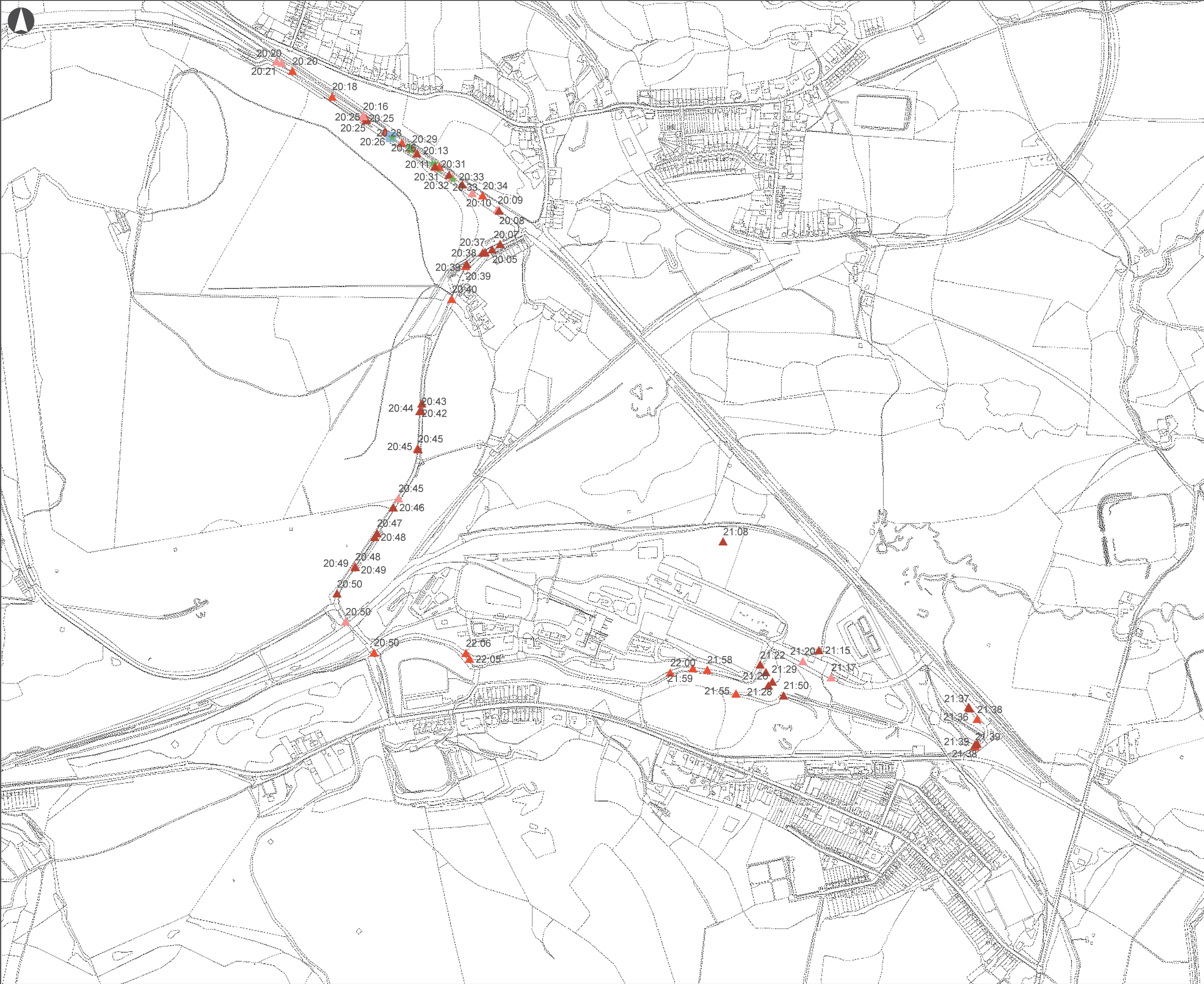
Bat Transect Results September
PurpleTransect

Scale at A3

1:9,000

Job No	Drawing Status
271968-05	For Issue

Drawing No	Issue
010a	F1



Legend

Species

★

Myotis species

■

Noctule

▲

Pipistrelle species

▲

Common pipistrelle

▲

Soprano pipistrelle

F1	2020-03-27	KJ	CP	PC
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Issue	Date	By	Chkd	Appd
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Metres

0105210420

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Celtic Energy

Job Title

Nant Helen Complementary Restoration Earthworks

Bat Transect Results September GreenTransect

Scale at A3

1:8,000

Job No	Drawing Status
271968-05	For Issue
Drawing No	Issue
010b	F1



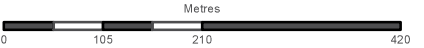
Legend

Species

- Common pipistrelle
- Soprano pipistrelle

F1	2020-03-27	KJ	CP	PC
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Issue	Date	By	Chkd	Appd
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Client
Celtic Energy

Job Title
**Nant Helen Complementary
Restoration Earthworks**

Bat Transect Results September
Orange Transect

Scale at A3
1:8,000

Job No 271968-05	Drawing Status For Issue
----------------------------	------------------------------------

Drawing No 010c	Issue F1
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Legend

Species

- ★ Myotis species
- ▲ Common pipistrelle
- ▲ Soprano pipistrelle

F1	2020-03-27	KJ	CP	PC
----	------------	----	----	----

Issue	Date	By	Chkd	Appd

Metres

0

105

210

420

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Celtic Energy

Job Title

**Nant Helen Complementary
Restoration Earthworks**

**Bat Transect Results September
Yellow Transect**

Scale at A3

1:8,000

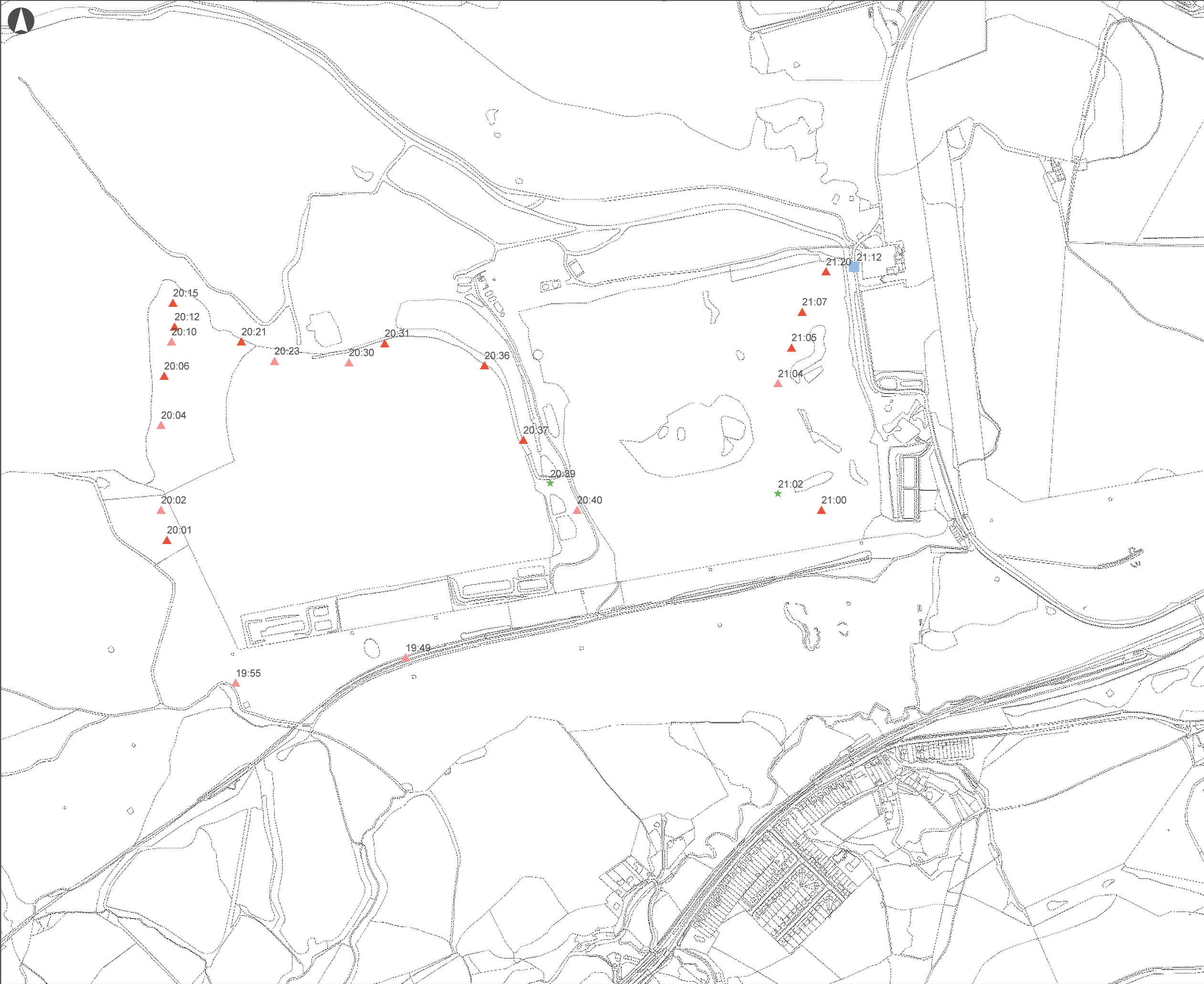
Job No	Drawing Status
271968-05	For Issue

Drawing No	Issue
010d	F1

I:\global\Europe\Cardiff\Jobs\264000\264904-00\4 Internal Project Data\4-80 GIS\4-84 Map Documents\ENV_Environment\hombay Bat plans.mxd

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27/03/2020 08:54:28



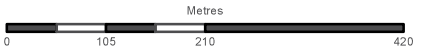
Legend

Species

- ★ Myotis species
- Noctule
- ▲ Common pipistrelle
- ▲ Soprano pipistrelle

F1	2020-03-27	KJ	CP	PC
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Issue	Date	By	Chkd	Appd
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Celtic Energy

Job Title

Nant Helen Complementary
Restoration Earthworks

Bat Transect Results September
Blue Transect

Scale at A3

1:8,000

Job No	Drawing Status
271968-05	For Issue

Drawing No	Issue
010e	F1



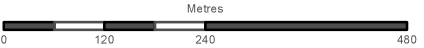
Legend

Species

- ★ Myotis species
- ▲ Pipistrelle species
- ▲ Common pipistrelle
- ▲ Soprano pipistrelle

F1	2020-03-27	KJ	CP	PC
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Issue	Date	By	Chkd	Appd
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Celtic Energy

Job Title
**Nant Helen Complementary
Restoration Earthworks**

**Bat Transect Results October
Purple Transect**

Scale at A3
1:9,000

Job No 271968-05	Drawing Status For Issue
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Drawing No 011a	Issue F1
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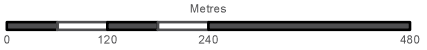
Legend

Species

- ▲ Pipistrelle species
- ▲ Common pipistrelle
- ▲ Soprano pipistrelle

F1	2020-03-27	KJ	CP	PC
----	------------	----	----	----

Issue	Date	By	Chkd	Appd
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Job Title
**Nant Helen Complementary
Restoration Earthworks**

**Bat Transect Results October
Green Transect**

Scale at A3
1:9,000

Job No 271968-05	Drawing Status For Issue
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Drawing No 011b	Issue F1
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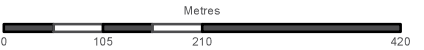
Legend

Species

- ★ Myotis species
- ▲ Common pipistrelle
- ▲ Soprano pipistrelle

F1	2020-03-27	KJ	CP	PC
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Issue	Date	By	Chkd	Appd
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Celtic Energy

Job Title
**Nant Helen Complementary
Restoration Earthworks**

**Bat Transect Results October
Orange Transect**

Scale at A3
1:8,000

Job No 271968-05	Drawing Status For Issue
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Drawing No 011c	Issue F1
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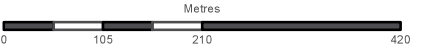
Legend

Species

- ★ Myotis species
- Noctule
- ▲ Common pipistrelle
- ▲ Soprano pipistrelle

F1	2020-03-27	KJ	CP	PC
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Issue	Date	By	Chkd	Appd
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Celtic Energy

Job Title

Nant Helen Complementary
Restoration Earthworks

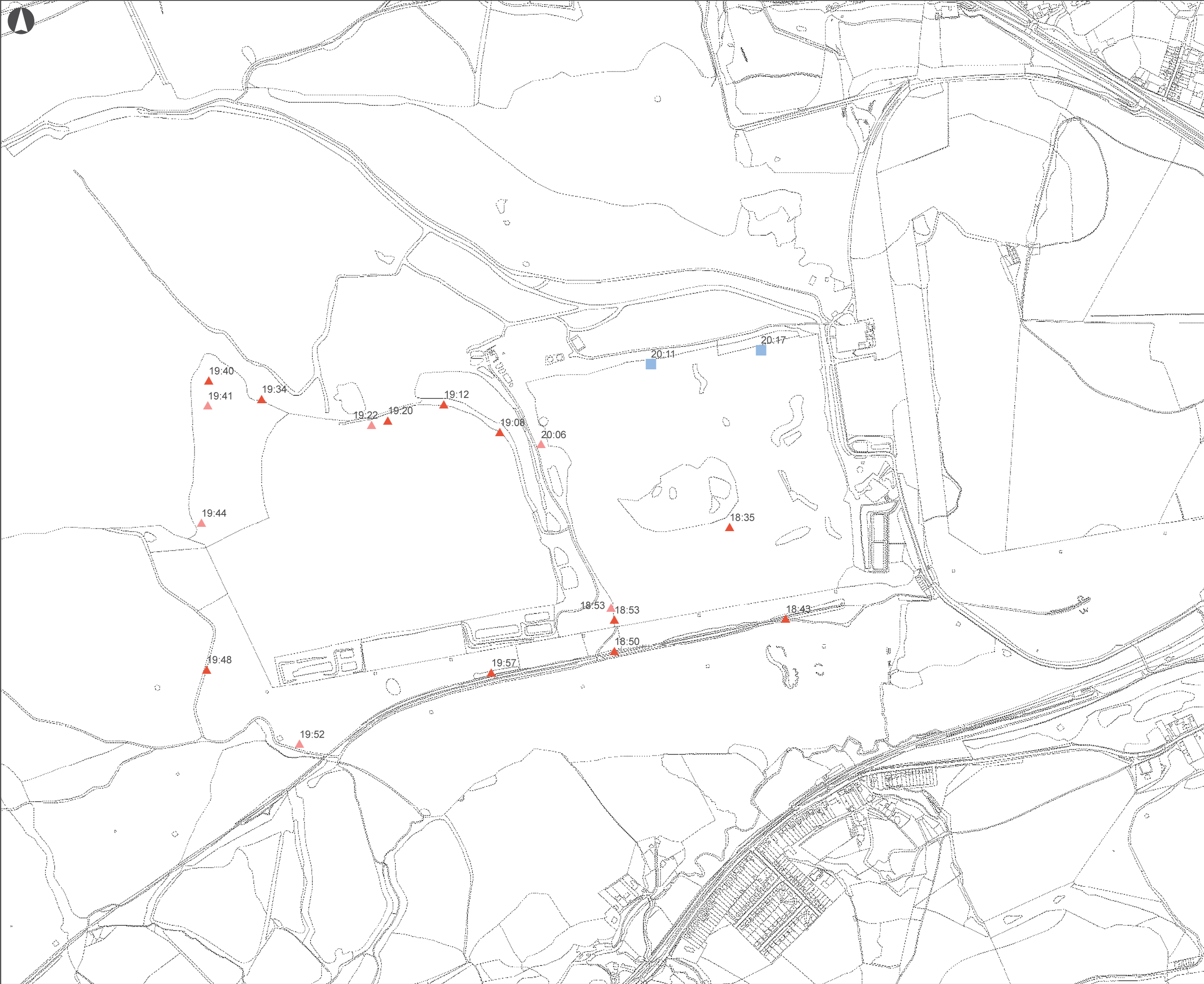
Bat Transect Results October
Yellow Transect

Scale at A3

1:8,000

Job No	Drawing Status
271968-05	For Issue

Drawing No	Issue
011d	F1



Legend

Species

- Noctule
- Common pipistrelle
- Soprano pipistrelle

F1	2020-03-27	KJ	CP	PC
----	------------	----	----	----

Issue	Date	By	Chkd	Appd

Metres
0 120 240 480

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Celtic Energy

Job Title

**Nant Helen Complementary
Restoration Earthworks**

**Bat Transect Results October
Blue Transect**

Scale at A3

1:8,848

Job No	Drawing Status
271968-05	For Issue
Drawing No	Issue
011e	F1



Legend

April Bat Species

- BARBAR
- EPTSER
- MYOTIS
- NYCLEI
- NYCNOC
- PIPNAT
- PIPPIP
- PIPPYG
- PIPSPE
- PLASPE
- RHIFER
- RHIHIP

F1	2020-03-30	KJ	CP	PC
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Issue	Date	By	Chkd	Appd

Metres

0 270 540 1,080

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Celtic Energy

Job Title

**Nant Helen Complementary
Restoration Earthworks**

**Bat Static Detector Results
Bat Species Proportions
April**

Scale at A3

1:20,000

Job No	Drawing Status
271968-05	For Issue
Drawing No	Issue
012a	F1



Legend

May Bat Species

F1	2020-03-30	KJ	CP	PC
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Issue	Date	By	Chkd	Appd
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0 270 540 1,080 Metres

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Celtic Energy

Job Title

**Nant Helen Complementary
Restoration Earthworks**

**Bat Static Detector Results
Bat Species Proportions
May**

Scale at A3

1:20,000

Job No	Drawing Status
271968-05	For Issue
Drawing No	Issue
012b	F1



Legend

July Bat Species

- BARBAR
- EPTSER
- MYOTIS
- NYCLEI
- NYCNOC
- PIP NAT
- PIPPIP
- PIPPYG
- PIPSPE
- PLASPE
- RHIFER
- RHIHIP

F1	2020-03-30	KJ	CP	PC
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Issue	Date	By	Chkd	Appd

Metres

0 270 540 1,080

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www.arup.com

Client

Celtic Energy

Job Title

**Nant Helen Complementary
Restoration Earthworks**

**Bat Static Detector Results
Bat Species Proportions
July**

Scale at A3

1:20,000

Job No	Drawing Status
271968-05	For Issue
Drawing No	Issue
012c	F1



Legend

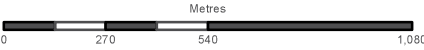
August Bat Species



- BARBAR
- EPTSER
- MYOTIS
- NYCLEI
- NYCNOG
- PIP NAT
- PIPPIP
- PIPPYG
- PIPSPE
- PLASPE
- RHIFER
- RHIHIP

F1	2020-03-30	KJ	CP	PC
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Issue	Date	By	Chkd	Appd
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Client
Celtic Energy

Job Title
**Nant Helen Complementary
Restoration Earthworks**

Bat Static Detector Results
Bat Species Proportions
August

Scale at A3
1:20,000

Job No 271968-05	Drawing Status For Issue
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Drawing No 012d	Issue F1
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Legend

September Bat Species

- EPTSER
- MYOTIS
- NYCLEI
- NYCNOC
- PIPNAT
- PIPPIP
- PIPPYG
- PIPSPE
- PLASPE
- RHIFER
- RHIHIP

F1	2020-03-30	KJ	CP	PC
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Issue	Date	By	Chkd	Appd
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Metres

0 270 540 1,080

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Client

Celtic Energy

Job Title

**Nant Helen Complementary
Restoration Earthworks**

**Bat Static Detector Results
Bat Species Proportions
September**

Scale at A3

1:20,000

Job No	Drawing Status
271968-05	For Issue
Drawing No	Issue
012e	F1



Legend

October Bat Species

- BARBAR
- EPTSER
- MYOTIS
- NYCLEI
- NYCNOC
- PIPNAT
- PIPPIP
- PIPPYG
- PIPSPE
- PLASPE
- RHIFER
- RHIHIP

F1	2020-03-30	KJ	CP	PC
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Issue	Date	By	Chkd	Appd

Metres

0 270 540 1,080

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Client

Celtic Energy

Job Title

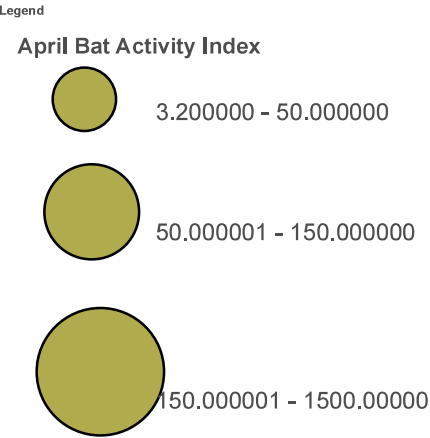
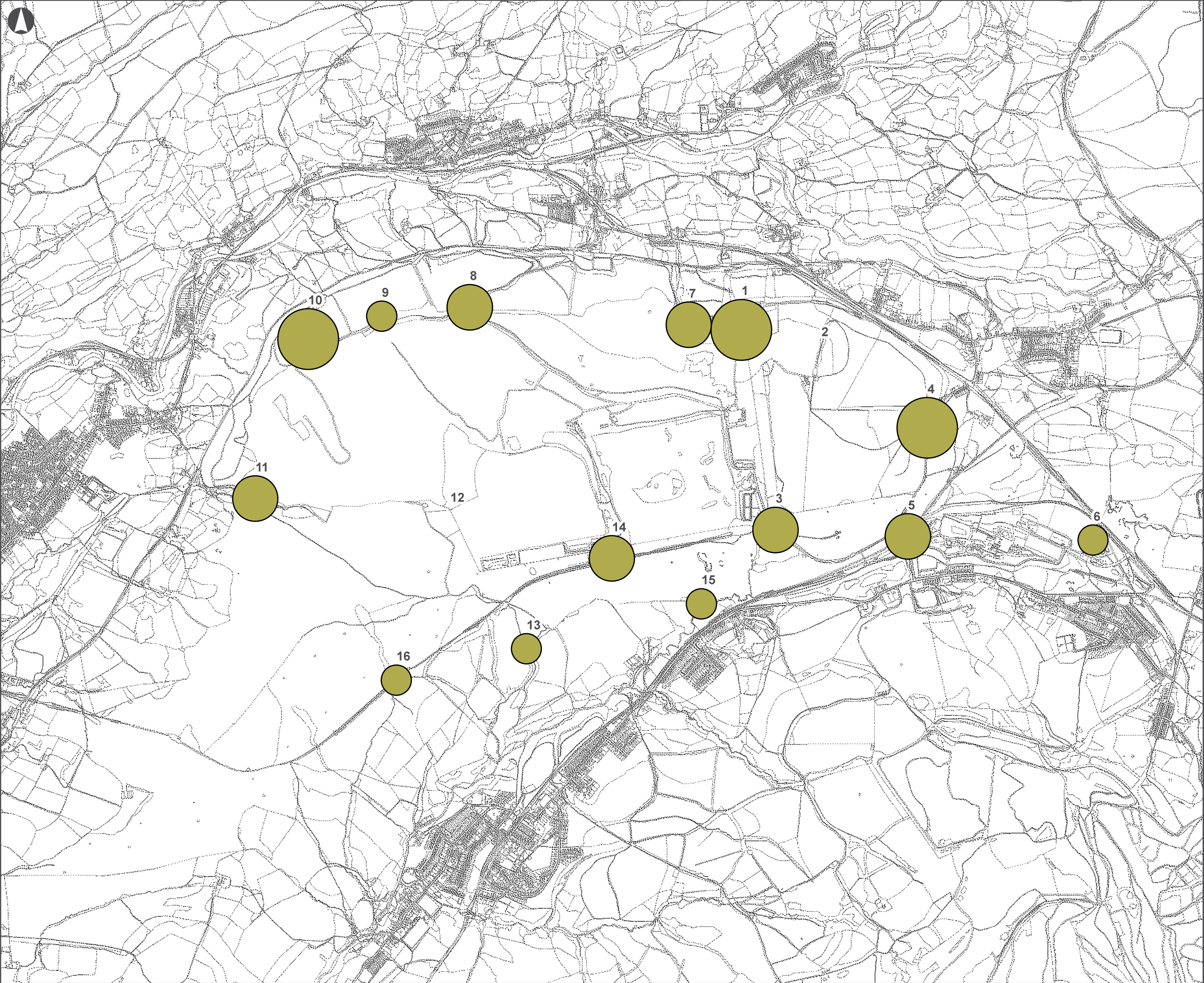
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Restoration Earthworks**

**Bat Static Detector Results
Bat Species Proportions
October**

Scale at A3

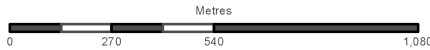
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Drawing No	Issue
012f	F1



F1	2020-03-30	KJ	CP	PC
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Issue	Date	By	Chkd	Appd
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Celtic Energy

Job Title

**Nant Helen Complementary
Restoration Earthworks**

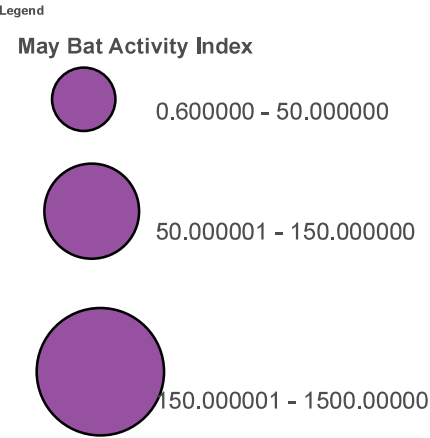
**Bat Static Detector Results
Bat Activity Index
April**

Scale at A3

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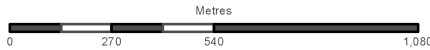
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Drawing No	Issue
013a	F1



F1	2020-03-30	KJ	CP	PC
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Issue	Date	By	Chkd	Appd
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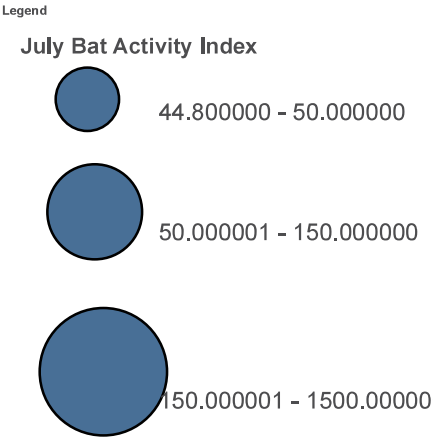
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Restoration Earthworks**

**Bat Static Detector Results
Bat Activity Index
May**

Scale at A3
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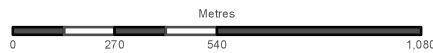
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Drawing No 013b	Issue F1
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F1	2020-03-30	KJ	CP	PC
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Issue	Date	By	Chkd	Appd
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Job Title

**Nant Helen Complementary
Restoration Earthworks**

**Bat Static Detector Results
Bat Activity Index
July**

Scale at A3

1:20,000

Job No	Drawing Status
271968-05	For Issue

Drawing No	Issue
013c	F1



Legend

August Bat Activity Index

150.0000001-1500.000000

F1	2020-03-30	KJ	CP	PC
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Issue	Date	By	Chkd	Appd

Metres

0 270 540 1,080

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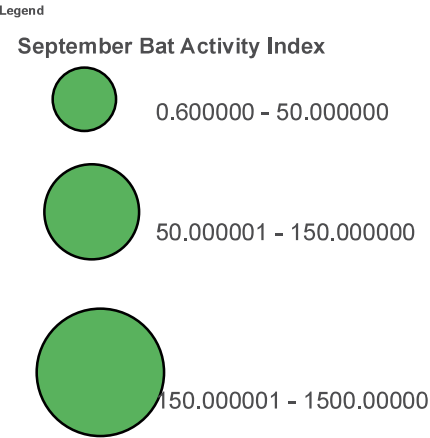
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Bat Activity Index
August**

Scale at A3

1:20,000

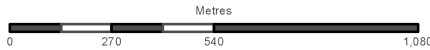
Job No	Drawing Status
271968-05	For Issue

Drawing No	Issue
013d	F1



F1	2020-03-30	KJ	CP	PC
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Issue	Date	By	Chkd	Appd
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Job Title

Nant Helen Complementary
Restoration Earthworks

Bat Static Detector Results
Bat Activity Index
September

Scale at A3

1:20,000

Job No	Drawing Status
271968-05	For Issue

Drawing No	Issue
013e	F1



Legend

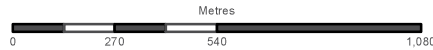
October Bat Activity Index

0.200000 - 50.000000

50.000001 - 150.000000

F1	2020-03-30	KJ	CP	PC
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Issue	Date	By	Chkd	Appd
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Client

Celtic Energy

Job Title

**Nant Helen Complementary
Restoration Earthworks**

**Bat Static Detector Results
Bat Activity Index
October**

Scale at A3

1:20,000

Job No	Drawing Status
271968-05	For Issue

Drawing No	Issue
013f	F1

Appendix 7Q

Soils Technical Note



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Caerphilly CF83 2AX
Tel: 029 2076 0990

28th April 2020

TECHNICAL NOTE – Nant Helen - Investigation of Soils within Planted Ancient Woodland Site.

Dr R N Humphries CBIol CSci FRSB FBSSS FIQ

Natural Resources Manager

Background

A Planted Ancient Woodland Site (PAWS) was reported in the draft NANT HELEN COMPLEMENTARY RESTORATION EARTHWORKS EIA (Section 7.14.4) as occurring within the proposed location of an embankment to be built (see EIA Figure 7.4).

The PAWS and the proposed embankment are located within the excavation area of the former Abercrave / Gwaunton surface mine with the mined area no longer having any coal (the grey shadowed fill in the following extract from Figure 14.01 (Celtic Energy, Nant Helen Remainder EIA, 2011)).

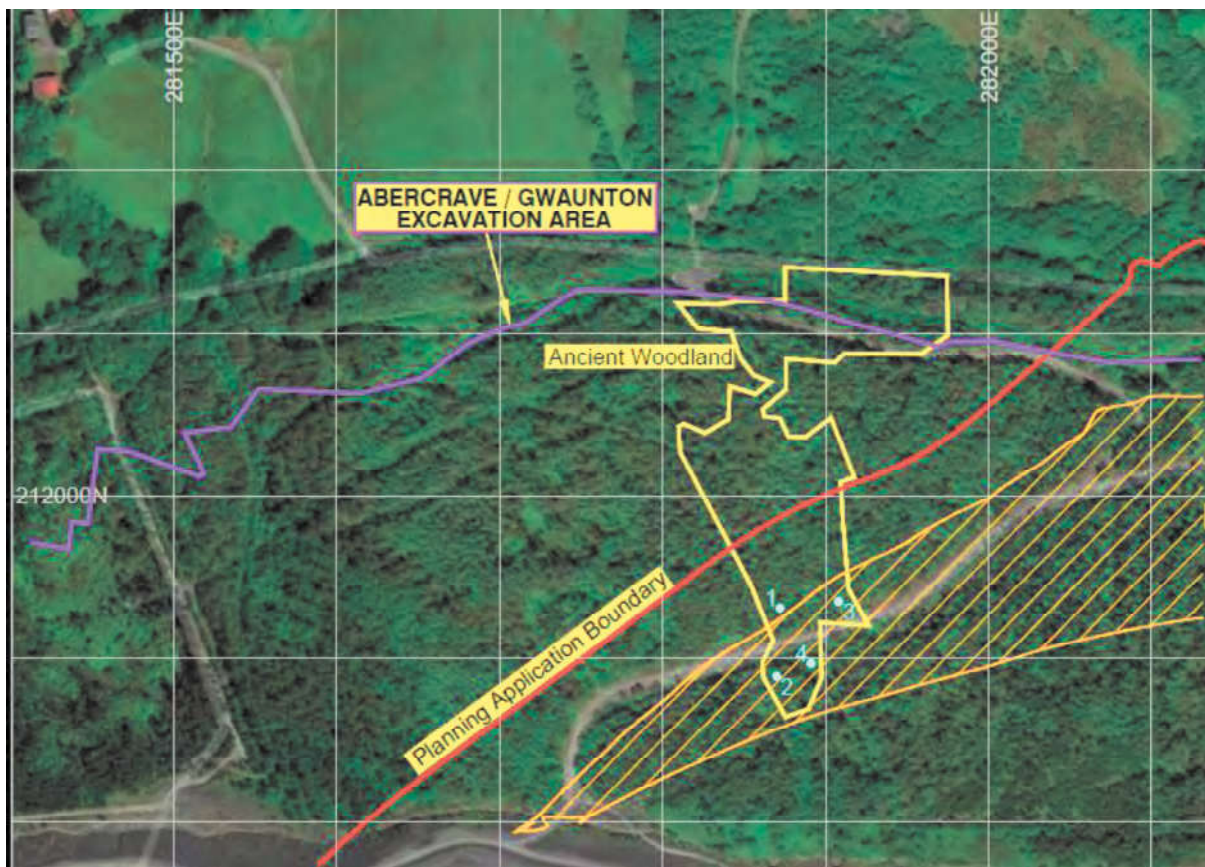


This is compelling evidence that the current plantation is likely to be on backfilled material following mining and extending over the area recorded as a PAWS, rather than as implied, the plantation replacing semi-natural woodland on the in situ woodland soils.

To solve the inconsistency between the recorded 'PAWS' and the mining records, the soils within the area of the 'PAWS' affected by the proposed raising of the embankment were examined to determine if they were backfilled 'spoil' or in situ woodland soils.

Method

The location and extent of the 'PAWS' (yellow line) within the application area (red line) and intersections with the proposed embankment works (orange hatch) on ground were marked using a GPS surveying system (see aerial image below). The purple line is the northern most extent of the surface mined land. Four representative locations (light blue and numbered) within the 'PAWS' and with safe access for a mini-tracked excavator were identified (see below).



Soil pits to a depth of about 1m were dug to expose the soil profile and provide material for examination. The features of the soil profile were recorded using standard soil survey descriptions (Hodgson, 1974). Photographs of each Pit are provided at the end of this Note.

Findings

At all four locations, the soil pits were within the European larch plantation where the ground had been deep 'forestry' ploughed to create parallel 0.3-0.5m high planting ridges at about 2.5m spacing. The pits were dug in the furrows between two ridges.

All four soil pits comprised backfilled Carboniferous Shale material. Soil Pits 1 and 2, and particularly Pit 2, had burnt colliery shale indicating an origin as ‘above ground’ deposited colliery waste. The predominantly clay profiles of Pits 3 and 4 were likely to be surfaced mined overburden.

Soil Pit 1 – 281872 E 211931 N

Depth cm	Description	Horizon
0-1	Moss/Litter	L
1-3	Dark Brown Humic / Stone Free	H
3-10	Clay Loam / 90% Grit / Grey Shale	Ah
10-70	80% Boulders & 20% Small Stones / Grey Shale	C

Soil Pit 2 – 281870 E 211889 N

Depth cm	Description	Horizon
0-1	Moss/Litter	L
1-3	Dark Brown Humic / Stone Free	H
3-10	Heavy Clay Loam / Stone Free / Grey Shale	Ah
10-90	Heavy Clay Loam/Clay / 40% Large Stones / Grey Shale	C

Soil Pit 3 – 281908 E 211935 N

Depth cm	Description	Horizon
0-1	Moss/Litter	L
1-3	Dark Brown Humic / Stone Free	H
3-10	Sandy Clay Loam / Stone Free / Grey Shale	Ah
10-70	Clay Loam / 20% Large Stones / Grey Shale + 30% Red Burnt Shale	C

Soil Pit 4 281891 E 211897 N

Depth cm	Description	Horizon
0-1	Moss/Litter	L
1-3	Dark Brown Humic / Stone Free	H
3-20	Heavy Clay Loam / Stone Free / Grey Shale	Ah
20-90	Heavy Clay Loam/Clay / 50% Large Stones / Grey Shale	C

There was no evidence of buried natural soil layers due to the forestry ploughing resulting in soil inversion in any of the Pits.

Conclusion

Clearly the original ancient woodland within the area now denoted as PAWS was surface mined during the extensive Abercrave / Gwaunton scheme. The in situ woodland soils were most likely disposed of within the progressive workings, as was the general practice into the early 1990s. Hence, the status of the ancient woodland site is more accurately referred to as having been ‘destroyed’. The planting of the current conifer plantation after the backfilling of the surface mine workings could

give the impression that it is a PAWS, whereas it is simply a plantation on a destroyed ancient woodland site.

Reference

Hodgson J M, 1974. Technical Monograph nNo. 5: Soil Survey Field Handbook. Soil Survey, Harpenden.



Soil Pit 1



Soil Pit 2



Soil Pit 3



Soil Pit 4

Appendix 7R

Habitat Regulation Assessment Screening Report

Celtic Energy

**Nant Helen Complementary
Restoration Earthworks**

Preliminary Information to Inform a
Habitats Regulations Assessment
(HRA) Stage 1: Screening

Issue 17 January 2020

This report takes into account the particular
instructions and requirements of our client.

It is not intended for and should not be relied
upon by any third party and no responsibility
is undertaken to any third party.

Job number 271968-05

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Capital Waterside
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ARUP

Document Verification

ARUP

Job title		Nant Helen Complementary Restoration Earthworks		Job number		271968-05	
Document title		Preliminary Information to Inform a Habitats Regulations Assessment (HRA) Stage 1: Screening		File reference		4-50	
Document ref							
Revision	Date	Filename	Nant Helen earthworks HRA_Nov2019_draft.docx				
Draft 1		Description	First draft				
			Prepared by	Checked by	Approved by		
		Name	Claire Pooley				
		Signature					
Draft 2	28 Nov 2019	Filename	Nant Helen earthworks HRA_Nov2019_draft PC.docx				
		Description	To address review comments				
			Prepared by	Checked by	Approved by		
		Name	Claire Pooley	Paul Clack			
		Signature					
Issue	17 Jan 2020	Filename	Nant Helen earthworks HRA_Nov2019_Issue_2.docx				
		Description	Issue				
			Prepared by	Checked by	Approved by		
		Name	Claire Pooley	Paul Clack	Paul Clack		
		Signature					
		Filename					
		Description					
			Prepared by	Checked by	Approved by		
		Name					
		Signature					

Issue Document Verification with Document



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Figures

Figure 1: Site Location

Figure 2: International Statutory Designated Sites

Figure 3: Extended Phase 1 Habitat Survey

Appendices

Appendix A

Habitats Regulations Assessment Process Outline Designs

Appendix B

Biodiversity Desk Study Results

1 Introduction

Ove Arup & Partners Ltd (Arup) was commissioned by Celtic Energy to provide a range of consultancy services in relation to the proposed Nant Helen complimentary restoration earthworks (the Project).

The proposed site is currently being mined by Celtic Energy, who will cease extraction operations in 2021, at which point Celtic Energy will be required to restore the land in accordance with regulatory requirements and agreements with Powys County Borough Council (PCBC) and Neath Port Talbot County Borough Council (NPTCBC). This includes Section 106 planning obligations and planning conditions that need to be discharged.

Celtic Energy has submitted a revised restoration strategy for approval (under Section 73 application under the Town and Country Planning Act 1990) which would change the existing approved restoration scheme (for planning application ref 18/1070/REM). The purpose of the variation is to allow for a *'flexible and adaptable landform for a variety of uses on restoration including agriculture, nature conservation, leisure, tourism and some industrial uses'*¹.

Following discussions with PCC and NPTCBC both authorities have expressed a desire along with Celtic Energy to look at regeneration projects for the area that will create long term, sustainable jobs. Whilst not within the Brecon Beacons National Park (BBNP), due to its proximity the area has been identified as having the potential for a variety of uses. It is the intention of this project to compliment the revised restoration proposal submitted by Celtic Energy in October 2019.

The revised restoration proposal looks to provide a flexible landform that can be used or adapted for a diverse set of future uses. This could range from the traditional agriculture, woodland and nature conservation uses, to amenity, leisure and tourism uses (including the potential for tourist accommodation to add to the existing offering within the BBNP) that would be designed to help take visitor pressure off the BBNP.

Other uses of the site could also include industrial after uses such as the Welsh Government's (WG) proposal to develop a rail testing and storage facility, known as the Global Centre of Rail Excellence (GCRE) at this site together with the adjacent Onllwyn Washery. It is anticipated that a planning application for the GCRE will be submitted early next year subject to confirmation of its feasibility.

The justification for designing the proposed earthworks in this way are is that they would not only make an ideal bridleway / footpath for walking, cycling and horse riding, but should planning permission be awarded for the GCRE, then the required profile for this would already have been created, thereby avoiding the need for further extensive earthmoving should GCRE gain planning permission.

¹ Celtic Energy s73 application for variation of condition 45 of planning application 18/1070/REM – further addendum to original environmental statement and supporting information submitted under planning reference 18/1070/REM including revised LVIA.

If desired, the earthworks programme required to create the profile for the GCRE could be accelerated. By accelerating this part of the programme then the financial and environmental impacts of the GCRE project could be reduced by:-

- utilising existing, onsite resources;
- reducing heavy plant vehicle movements into, and out of the site, thereby reducing any impact on the local road network;
- avoiding double handling of materials and therefore reduction in additional cost;
- aligning the earthworks programme with other restoration earthworks, therefore reducing the time period of construction activity on site;
- taking advantage of the opportunity for the GCRE earlier and contributing to the positive viability and deliverability;
- increasing the viability of future tourist developments such as hotels which would be supported by the GCRE temporary workforce both during and after construction; and
- more sustainable use of existing resources (including natural, human and mechanical) to allow for the full restoration of the site to be delivered without further disturbance in the event of future development.

1.1 Site Baseline

The planning application site boundary is shown on Figure 1 and is hereafter referred to as the 'site'.

The Project site is within the Dulais Valley located within Powys and Neath Port Talbot, with the BBNP boundary immediately to the north. Nearby settlements include Onllwyn, Seven Sisters, Ystradgynlais, Caehopkin, Abercrave or Coelbren.

The site is predominantly brownfield land that has been heavily worked by open cast mining. Much of the site has been revegetated.

1.2 Requirements of the Habitats Directive

Regulation 63 of the Habitats Regulations requires a competent authority before deciding to undertake or give consent for a plan or project which (a) is likely to have a significant effect on a European Site (either alone or in combination with other plans or project), and (b) is not directly connected with or necessary to the management of that site to make an 'appropriate assessment' of the implications of the plan or project for that site in view of its conservation objectives. In light of the conclusions of the assessment, the competent authority may proceed with or consent to the plan or project only after having ascertained that it will not adversely affect the integrity of the European site. European Sites include Special

Areas of Conservation (SACs) and Special Protection Areas (SPAs). UK Government policy requires proposed SACs and SPAs to be treated as European Sites along with wetlands designated under the Convention on Wetlands of International Importance (Ramsar Sites).

All plans and projects should identify any possible effects early in the plan/project making process and then either alter the plan/project to avoid them or introduce mitigation measures to the point where no adverse effects remain. The ‘competent authority’ shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and if appropriate having obtained the opinion of the general public.

The assessment of a project under the Habitats Regulations can be split into several sections as shown in Appendix D²; however, there are effectively four stages to the assessment.

Stage 1 is the assessment of the likelihood of a plan or project having a significant effect on a European site or its features. This is the trigger for the need for an Appropriate Assessment as set out in Regulation 63 of the Habitats Regulations. The Appropriate Assessment (Stage 2) is the detailed consideration of the potential effects of the plan or project in relation to the conservation objectives for the European Site(s) to determine if there is likely to be an adverse effect on the integrity of the site (i.e. an effect that would compromise the site meeting its conservation objectives. Providing it can be demonstrated that with appropriate mitigation measures the plan or project would not give rise to an adverse effect on the integrity of a European Site, the plan or project can proceed.

Where this cannot be demonstrated or there is uncertainty, the assessment would then need to consider if there were any other alternatives to the plan or project (Stage 3) that would not give rise to adverse effects on the integrity of the European Site. If there are no alternatives, Stage 4 would then consider if there are any Imperative Reasons of Overriding Public Interest (IROPI), only at this stage can Compensatory Measures be considered. It is very unusual for plans for projects to be considered in Stages 3 or 4.

1.3 Consideration of Mitigation

With regards to recent case law (Coillte vs People against Wind³), the inclusion of mitigation required to avoid, reduce or cancel potential effects on SAC features during HRA Stage 1: Screening is no longer considered appropriate. Mitigation, as considered by the Centre Européen de Coopération Juridique (CECJ) in regard to the case law⁴, is interpreted to mean measures that are intended to avoid or reduce the harmful effects of the envisaged project on the site and features concerned. Consequently, any project which identifies an impact on a European site, or feature thereof, and where avoidance and mitigation is applicable will need to address these measures during HRA Stage 2: Appropriate Assessment.

² Tyldesley & Chapman, 2019. The Habitats Regulations Assessment Handbook, May 2019 Edition, UK: DTA Publications Limited.

³ People over Wind, Case C323/17 European Court of Justice, 12th April 2018.

The Habitats Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Flora and Fauna provides legal protection for habitats and species of European importance. The Directive is transposed into UK law by the Conservation of Habitats and Species Regulations 2017 (hereafter referred to as the ‘Habitats Regulations’). Before deciding to undertake or give authorisation for a plan or project the determining body (known as the Competent Authority), must consider under the requirements of Regulation 63 whether the plan or project:

- (a) is likely to have a significant effect on a European site (either alone or in combination with other plans or projects), and
- (b) is not directly connected with or necessary to the management of that site, and in such cases they must make an appropriate assessment of the implications for that site in view of that site’s conservation objectives.

Where there is a Likely Significant Effect (LSE), (or such an effect cannot be discounted) and the plan or project is not connected with or necessary to the management of the site then the competent authority must make an ‘appropriate assessment’ of the implications for that site in view of its conservation objectives.

In the light of the conclusions of the assessment, the competent authority may agree to the plan or project only after having ascertained that the project will not, alone or in-combination with other plans and projects, adversely affect the integrity of the European site. The only exceptions are where there are no alternatives and there are imperative reasons of overriding public interest, in which case compensatory measures must be adopted if the Scheme is to proceed

1.4 Purpose of this Document

This document has been prepared by Arup on behalf of our client, to provide information to inform a Habitats Regulations Assessment report for the project in compliance with the requirements of the Conservation of Habitats and Species Regulations 2017 (as amended); hereafter referred to as the ‘Habitats Regulations’.

The formal Assessment required by the Regulations will be undertaken by Planning Department of PCC and NPTCBC in the process of determining the applications in their role as Competent Authority.

1.5 Structure of this Report

This document is structured as follows:

Section 2: Description of the Development;

Section 3: Guidance and Methodology;

Section 4 European Sites potentially affected by the development;

Section 5: Environmental Baseline Screening Assessment;

Section 6: Conclusions.

2 Project Description

The planning application includes:

- Earthworks to include cutting and embankment; and
- Drainage works associated with the revised landform.

2.1 Restoration Earthworks

The restoration earthworks include a combination of cutting and embankments to create a loop form. The materials for the earthworks would all originate from within the existing Celtic Energy Nant Helen open cast mining site boundary and represents a volume of approximately 1,850,000m³.

2.2 Earthworks modelling

The earthworks modelling has been based on Celtic Energy's restored site levels, i.e. the revised restoration strategy submitted under Section 73 of the Town and Country Planning Act 1990, which seeks to change the existing approved restoration scheme under planning application reference 18/1070/REM.

2.3 Stormwater Drainage Strategy

A stormwater drainage strategy has been prepared for the Earthworks which will identify how water falling on the site during rainfall events will be managed and mitigated to attenuate flows.

Vehicle movements and programme

The cut excavation will likely be carried out using a combination of machinery, each achieving approximately half of the cut excavation (i.e. 1,425,000m³). Table 1 sets out the potential number of vehicle movements across the site based on these estimations:

Table 1 Estimated vehicle movements within the site

Machinery	Load rate (approx.)	Machinery used with	Carrying Capacity	Loads per hour	Total number of loads	Total hours
PC2000	600m ³ /hr	Cat 777 dump trucks	52m ³	600/52 = 11.5	1,425,000/52 = 27,403 loads	27,403/11.5 = 2,382
Hitachi EX1200	560m ³ /hr	40 tonne Articulated Dump Trucks (ADT's)	17m ³	560/17 = 32.9	1,425,000/17 = 83,824 loads	83,824/32.9 = 2,547

Based on a 55-hour working week (7 days a week), this would result in approximately 350 vehicle movements a day and a programme of approximately 44 weeks.

It is assumed that the Complementary Restoration Earthworks would take place at the same time as the works needed to return some of the overburden back into the void on the site (part of the restoration requirements includes the reduction in height of the overburden mound that currently exists to the east of the existing void). This would result in a combined works programme of approximately 48 weeks.

In the event that this Project and the return of overburden material back to the void do not take place at the same time, a further 44 weeks would be required.

Access

Existing access onto the site for personnel would be via the A4109, into Celtic Energy owned land.

Landscaping

At this stage the earthworks would not include for landscaping. A landscape strategy would be developed once the future use of the earthworks has been confirmed.

Lighting

During earthworks lighting will be required during winter months to facilitate safe working. On completion no lighting is currently anticipated.

3 Guidance and Methodology

This section sets out the guidance and evidence base used in assessing the potential effects of the proposed works.

3.1 Guidance and Policy

This information has been informed by the following guidance and policy documents:

- Planning Policy Wales - Technical Advice Note (TAN) 5: Nature Conservation and Planning⁵; and
- The Habitats Regulations Assessment Handbook, May 2019 edition, UK: DTA Publications Limited⁶.

This guidance is intended to improve understanding of how projects are regulated under the Habitats Directive. This guidance draws on experience throughout Britain and on case law in Britain and Europe.

3.2 Desk Study Information

In addition to the guidance noted above, the following websites were used to gather information on the European Protected Sites;

- Natural Resources Wales (NRW) website;
- Magic (Multi-Agency Geographic Information for the Countryside) website, and;
- Joint Nature Conservation Committee (JNCC).

Information on the interest features of European Sites has been obtained from the information provided on the Joint Nature Conservation Committee (JNCC) website, the Magic (Multi-Agency Geographic Information for the Countryside) website and Natural Resources Wales (NRW) website⁷. In particular the Core Management Plans for European Sites, and Regulation 35 information⁸ containing advice on European Marine Sites where relevant, were obtained and have been used to inform this assessment.

These documents provide the main elements of NRW's management plan for European Sites along with the Conservation Objectives for the qualifying features. The qualifying features will be considered to be in Favourable Conservation

⁵ Welsh Government. (2009). Planning Policy Wales - Technical Advice Note 5: Nature Conservation and Planning. Cardiff: Welsh Government.

⁶ Tyldesley & Chapman, 2017. The Habitats Regulations Assessment Handbook, January 2017 Edition, UK: DTA Publications Limited.

⁷ <http://naturalresources.wales/guidance-and-advice/environmental-topics/wildlife-and-biodiversity/find-protected-areas-of-land-and-seas/designated-sites/?lang=en>

⁸ <http://naturalresources.wales/guidance-and-advice/environmental-topics/wildlife-and-biodiversity/find-protected-areas-of-land-and-seas/advice-for-developers-and-marine-planners/?lang=en>

Status only when the conservation objectives are being met. These objectives therefore provide an indication of the type of effects which could affect the features of European Site. An effect which could affect the ability of a site or feature meet its objective could be considered to be an adverse effect on the integrity of the European Site concerned.

3.3 Habitats Regulations Assessment Methodology

3.3.1 Identifying sites

In order to understand the potential implications for European Sites from the proposed project it is necessary to identify those sites that are located close to the project or are linked by pathways which could join sources of impacts with European Sites.

All European Sites within 10km of the proposed works were identified using Geographic Information System data from datasets downloaded from the JNCC and NRW. In addition, European Sites with a direct hydrological connection with the location of the proposed works were also identified and included within the screening assessment.

3.3.2 Understanding qualifying interests and conservation objectives

For each of the European Sites identified the qualifying interests were established and the conservation objectives for each feature were obtained. Information was also sought to understand the potential vulnerability of the features to any effects that might arise from the proposed project.

3.3.3 Identification of the potential effects of the project

Any potential pathways for effect on European Sites resulting from the proposed improvement works were identified prior to consideration of best practice procedures (e.g. Guidelines for Pollution Prevention⁹ and CIRIA guidance) or the integration of any mitigation measures.

3.3.4 Identification of plans or projects considered for in-combination effects

An 'in-combination' assessment is required where the project may have an effect on a European site, but on its own the effects would not be significant. The potential effects of the project should be considered in-combination with other plans or projects that similarly may have an effect, but where on their own those effects would not be significant. The combined effects may therefore become significant.

⁹ <http://www.netregs.org.uk/environmental-topics/pollution-prevention-guidelines-ppgs-and-replacement-series/guidance-for-pollution-prevention-gpps-full-list/>

Details of other plans and projects which are currently proposed or consented within the vicinity of the European Sites identified were obtained to inform the in-combination assessment of the proposed project.

3.3.5 Consideration of the significance of potential effects

The significance of potential effects was assessed in the absence of avoidance or other mitigation measures other than those which are standard construction practices such as pollution control or those incorporated into the scheme. The assessment has been made with awareness of the conservation objectives for the features of the European Sites, although as stated in the relevant guidance the assessment of the project against the conservation objectives is not required until the Appropriate Assessment stage of the HRA process.

In the assessment of the significance of effects, professional judgement was applied using the following criteria, as often insufficient information about the elements and interests is available:

- The vulnerability/sensitivity of the receiving environment/features of interest;
- When the risk of effects is likely to occur (e.g. construction and/or operation);
- The likely geographical extent of the effects; and
- Likelihood of significant effects (e.g. those above negligible in magnitude) occurring based on previous experience with similar elements, where available.

Professional judgement was used in the carrying out of this work where professional guidance was not available. Where there was not enough information about the risk of qualifying interest being present, or of the risk of effects, the assessment used the precautionary principle to inform the judgement. The precautionary principle has been applied to ensure that any assessment errs on the side of caution, without being overly cautious. This principle means that the conservation objectives should prevail where there is uncertainty or that harmful effects will be assumed in the absence of evidence to the contrary.

4 European Sites Potentially Affected by the Proposal

Figure 2 shows the location of the project in relation to European Sites within 10 km of the proposed works. A 10 km search area is considered sufficient to identify any potential impacts on the majority of European sites, except sites which have mobile qualifying features (and which may have ranges that extend beyond 10 km).

The European Sites identified within 10 km of the proposed works are as follows (distances and direction are measured as a straight line from the Project location to the European Site):

- Coedydd Nedd a Mellte SAC: two compartments, approximately 4.2 km and 6.7 km east; and
- Cwm Cadlan SAC: 9.5 km east.

In addition, a search was undertaken of European Sites designated for marsh fritillary *Euphydryas aurinia*, within 15 km of the Project location, since this species is known to range up to 15 km from its primary habitat (and due to records of this species being present in vicinity of the site). European Sites designated for marsh fritillary are detailed below.

- Blaen Cynon SAC: 6 compartments, with the closest being approximately 10.4 km east.

The features for which these Sites are designated are summarised in Table 2.

Table 2 Qualifying Features of the European Sites Selected

Site	Qualifying Features	Importance	Conservation Objectives Summary	Vulnerability
Coedydd Nedd a Mellte SAC	<i>Tilio-Acerion</i> forests of slopes, screes and ravines. Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles.	Tilio-Acerion forests of slopes, screes and ravines for which the area is considered to support a significant presence. Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles for which this is considered to be one of the best areas in the United Kingdom.	• Upland ash woodland will occupy at least 18 ha of the total site area. • The canopy should be predominantly ash and the following trees will be common in the woodland. • Ferns will be common ground flora species. • Although they may be present in the canopy in small quantities, sycamore and beech should not become dominant at the expense of ash. • Introduced invasive species will be absent and any conifers seeding in from adjoining plantations will be removed whilst at the seedling/sapling stage. • Damage to the ground flora and soil erosion due to public pressure will be at a minimum. • All factors affecting the achievement of these conditions are under control.	Livestock grazing, non-native species, woodland management, Access and Visitor management and human and grazing induced bare ground.
Cwm Cadlan SAC	Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>).	Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) for which this is considered to be one of the best areas in the United Kingdom.	• Fen-meadow will occupy at least 26 ha of a total area of marshy grassland habitat which itself will cover at least 42 ha. • The remainder of the site will mainly consist of other semi-natural habitat, including alkaline fen. • Typical fen-meadow plants will be common. • Plants indicating agricultural modification or alteration to hydrology and drying of soils will be absent or present at only low cover.	Human induced changes in hydraulic conditions, air pollution, air-borne pollutants, problematic native species, biocenotic evolution, succession, fertilisation and grazing.

Site	Qualifying Features	Importance	Conservation Objectives Summary	Vulnerability
	Alkaline fens.	Alkaline fens for which this is considered to be one of the best areas in the United Kingdom.	• Although rushes are frequent, the more bulky species will not exceed 33% cover. • Bare ground will generally not exceed 5% cover and vegetation litter 25%. • Dense scrub will be largely absent from the fen-meadow, but it is probably desirable for invertebrates and birds to have a sparse scattering of shrubs or trees. • All factors affecting the achievement of these conditions are under control. • Alkaline Fen will occupy about 11 ha or more. • The remainder of the site will mainly consist of other semi-natural habitat including fenmeadow. • Typical alkaline fen plants will be common. • Plants indicating agricultural modification or alteration of hydrology and drying of soils will be absent or present only at low cover. • Although rushes are frequent, the more bulky species will not exceed 33% cover. • Bare ground will generally not exceed 5% cover and vegetation litter 10 %. • Scrub species will be largely absent from the alkaline fen. • At selected springheads, water should flow in all but the most severe drought conditions. • All factors affecting the achievement of these conditions are under control.	

Site	Qualifying Features	Importance	Conservation Objectives Summary	Vulnerability
Blaen Cynon SAC	Marsh fritillary butterfly (<i>Euphydryas aurinia</i>)	<i>Eurodryas aurinia</i> which this is considered to be one of the best areas in the United Kingdom.	The site will contribute towards supporting a sustainable metapopulation of the marsh fritillary in the Penderyn/Hirwaun area. This will require a minimum of 50 ha of suitable habitat, of which at least 10 ha must be in good condition, although not all is expected to be found within the SAC. Some will be on nearby land within a radius of about 2km. • The population will be viable in the long term, acknowledging the extreme population fluctuations of the species. • A minimum of 30% of the total site area will be grassland suitable for supporting marsh fritillary. (As the total area of the SAC is 66.62 ha, 30% represents approximately 20 ha.) • At least 40% of the suitable habitat (approximately 8 ha) must be in optimal condition for breeding marsh fritillary. • Suitable marsh fritillary habitat is defined as stands of grassland where <i>Succisa pratensis</i> is present and where scrub more than 1 metre tall covers no more than 10% of the stands. • Optimal marsh fritillary breeding habitat will be characterised by grassland where the vegetation height is 10-20 cm, with abundant purple moor-grass <i>Molinia caerulea</i>, frequent “large-leaved” devil’s-bit scabious <i>Succisa pratensis</i> suitable for marsh fritillaries to lay their eggs and only occasional scrub. In peak years, a density of 200 larval webs per hectare of optimal habitat will be found across the site.	Owner objectives, weather conditions, parasites.

4.1 Environmental Baseline

An Extended Phase 1 Habitat Survey was carried out on the following dates: 26th November 2018, 25th April 2019, 26th April 2019 and 29th May 2019 (Figure 3)¹⁰. A desk study search was carried out on 21st November 2019 (summarised in Appendix B).

In summary, habitats within and adjacent to, the red line boundary of the scheme include broadleaved woodland, conifer woodland, scrub, acid grassland, improved grassland, marshy grassland, bracken, heathland (dry and wet heath), flushes, swamp, standing water, running water, inland cliff, quarry, spoil, amenity grassland, spoil, ephemeral/short perennial vegetation, hedgerows, ditches, buildings and bare ground/hardstanding.

Targeted species surveys were also undertaken including fungi, invertebrates (including marsh fritillary) amphibians, reptiles, breeding and wintering birds, bats, otter and water vole and arboreal mammals.

4.2 Identification of Other Plans and Projects

In November 2019, planning applications¹¹ were searched for within 500m of the proposed works and within the last six months. These are included below:

- Request for scoping opinion (under Regulation 14 of the Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017 in respect of a proposed application for a rail testing and storage facility, known as the Global Centre of Rail Excellence (GCRE), and incorporating:- a Rolling Stock and Infrastructure Testing Facility (consisting of two test tracks of loop configuration, one 4.5km, inside a larger loop of 6.9km in length), New buildings including Test Platform/Station, Control Building, Research and Development Centre, Rolling Stock Maintenance Shed, Decommissioning facility and Rail Sidings, Winch-propelled facility for testing of track and track systems, Carriage Wash facility, plus ancillary development including land reformation, landscaping, infrastructure works and access (affecting land within Neath Port Talbot and Powys County Council administrative boundaries). Land at and surrounding the Nant Helen open cast coal site, Powys and Onllwyn distribution centre, SA10 9NN. Pending decision.
- P/2018/0524: Outline-proposed replacement dwelling (some matters reserved), Glendale. A building has been proposed for demolition. Ecological surveys have been undertaken and no protected species have been found using the building.

¹⁰ Further ecological details provided in the: Nant Helen Phase 1 Report; Arup (2019) prepared for Celtic Energy.

¹¹ <https://pa.powys.gov.uk/online-applications> and <https://www.npt.gov.uk/1617> [accessed 20.11.2019]

- 19/1520/HH: Erection of a single storey side extension at Tynyntant farm Caehopkin Abercrave, SA9 1UE. Pending decision.
- 19/0625/AGR: Erection of an agricultural building at Tynyntant farm Caehopkin Abercrave, SA9 1UE.

5 Screening Assessment

5.1 Screening of European Sites

Both European Sites identified in Section 4 have been screened out of the following assessment. These Sites include:

- Coedydd Nedd a Mellte SAC;
- Cwm Cadland SAC; and
- Blaen Cynon SAC.

5.2 Justification for Screening Out European Sites

5.2.1 Coedydd Nedd a Mellte SAC

Coedydd Nedd a Mellte SAC's closest compartment is 4.3 km from the proposed works. The SAC is designated for its important woodland habitat. Potential effects on the SAC are limited to [1] water quality effects: pollutants (fuel, chemical spills, dusk and vehicle emissions) or high sediment load in surface water runoff from construction areas; and [2] air quality effects: increases in levels of nitrogen oxides (NO_x), sulphur dioxide (SO₂) and ammonia (NH₃), which can be absorbed directly (the relevant assessment benchmark for pollutant concentrations 'in the air' is referred to as a critical level) or indirectly i.e. through deposition, which affects the soil pH or causes nutrient enrichment of the soil.

The SAC is not hydrologically connected to the Project area, and therefore there is no pathway for effects from changes in water quality. Due to the distance/spatial separation of the SAC from the proposed works it is considered that any changes in air quality would not result in any effects.

No mitigation is required to be integrated into the Outline Construction Method Statement to avoid, reduce or cancel effects on the Coedydd Nedd a Mellte SAC.

5.2.2 Cwm Cadlan SAC

Cwm Cadlan SAC's closest point is 9.5 km from the proposed works. The SAC is designated for its important Molinia meadows and alkaline fen habitat. Potential effects on the SAC are limited to [1] water quality effects: pollutants (fuel, chemical spills, dusk and vehicle emissions) or high sediment load in surface water runoff from construction areas; and [2] air quality effects: increases in levels of nitrogen oxides (NO_x), sulphur dioxide (SO₂) and ammonia (NH₃), which can be absorbed directly (the relevant assessment benchmark for pollutant concentrations 'in the air' is referred to as a critical level) or indirectly i.e. through deposition, which affects the soil pH or causes nutrient enrichment of the soil.

The SAC is not hydrologically connected to the Project area, and therefore there is no pathway for effects from changes in water quality. Due to the distance/spatial

separation of the SAC from the proposed works it is considered that any changes in air quality would not result in any effects.

No mitigation is required to be integrated into the Outline Construction Method Statement to avoid, reduce or cancel effects on the Cwm Cadlan SAC.

5.2.3 Blaen Cynon SAC

The closest compartment of Blaen Cynon is located 10.4 km from the Site. It is designated for its population of marsh fritillary; a species which exists in metapopulations and are known to range up to 15 km from its primary habitat¹². Marsh fritillary are also known to be present in the Wildlife Trust Nature Reserve west of the Site (approximately 1.5 km).

Potential effects could occur to this species, if they were to occur within any habitats the Site or adjacent habitats. Although purple moor grass and rush pasture that supports the larval foodplant devil's-bit scabious *Succisa pratensis*, the habitat often used by this species, is present within and adjacent to the Site, invertebrate surveys¹³ found no evidence of marsh fritillary using habitats within the Site. In addition, surveys assessed the habitat present as being largely unsuitable for this species (due to being in poor condition as a result of agricultural improvement and overgrazing and having little or no growth of the larval food plant).

Therefore, it is considered unlikely that any metapopulations of marsh fritillary, associated with either the Wildlife Trust Reserve or Blaen Cynon SAC, would occur within the Site. Furthermore, although there would be a loss habitat within the Site, this would be a very small proportion of what is available within the wider area.

Potential impacts on the Wildlife Trust Reserve, have been scoped out in the Ecology Chapter of the Environmental Impact Assessment for this Project¹⁴, due to the distance of the Reserve from the works.

No mitigation is required to be integrated into the Outline Construction Method Statement to avoid, reduce or cancel effects on the Blaen Cynon SAC.

5.3 In-Combination Assessment

No effects are anticipated from the proposed improvement works alone; as such, there cannot be an in-combination effect with other plans and projects. It is therefore reasonable to conclude that the application will not have a likely significant effect in-combination with other plans and projects.

¹² Warren M.S. 1994. The UK status and suspected metapopulation structure of a threatened European butterfly, the marsh fritillary *Eurodryas aurinia*. Biol. Conserv. 67: 239–249.

¹³ Further ecological details provided in the: Nant Helen Invertebrate Report; Arup (2019) prepared for Celtic Energy.

¹⁴ Nant Helen Environmental Impact Assessment, Arup (2019), prepared for Celtic Energy.

6 Conclusion

Based on results presented above, it is reasonable to conclude that there are **no effects**, either alone or in-combination with other plans and projects, resulting from the proposed improvement works.

Given the conclusion that the proposal is not likely to have a significant effect on European Sites, nor are mitigation measures proposed to avoid, reduce or cancel potential effects, the requirement to complete a Stage 2: Appropriate Assessment has not been triggered.

As a consequence, the proposed works are not considered to be contrary to the provisions of Regulation 63 of the Conservation of Habitats and Species Regulations 2017 (as amended).

Figures

Figure 1: Site Location

Figure 2: International Statutory Designated Sites

Figure 3: Extended Phase 1 Habitat Survey

- Redline Boundary
- Earthworks Outline
- Cuttings
- Embankments

A horizontal scale bar labeled "Metres" at the top center. Below the label, the bar is marked with numerical values: 0 at the left end, 65, 130, and 200 at the right end. The bar is divided into segments by vertical tick marks corresponding to these values.

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Nant Helen Complementary Restoration Earthworks

Site Location

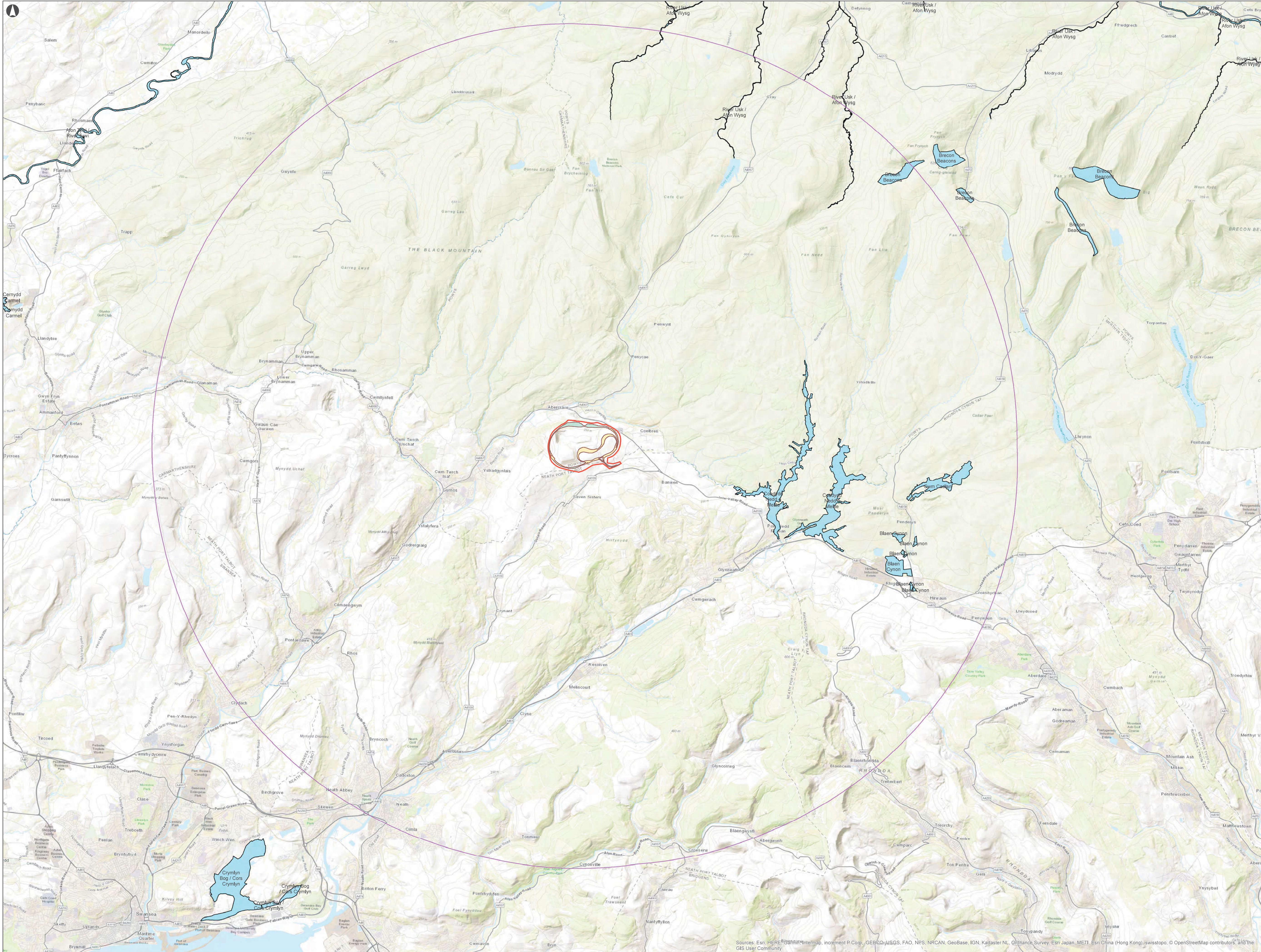
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- Legend**
- Redline Boundary
 - Earthworks Outline
 - Cuttings
 - Embankments
 - SAC
 - 15km Buffer

F1	2018-11-19	MSJ	CP	NH
Issue	Date	By	Chkd	Appl

0 875 1750 3500

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Client
Celtic Energy Ltd.

Job Title
**Nant Helen Complementary
Restoration Earthworks**

**International Statutory
Designated Sites**

1:65,000	
Job No	Drawing Status
271968-05	For Issue
Drawing No	Issue
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Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), Swisstopo, © OpenStreetMap contributors, and the GIS User Community



Legend

- Study Area
- Earthworks Outline
- Redline Boundary
- Cuttings
- Embankments
- A1.1.1 - Broadleaved woodland - semi-natural
- A1.1.2 - Broadleaved woodland - plantation
- A1.2.2 - Coniferous woodland - plantation
- A1.3.1 - Mixed woodland - semi-natural
- A1.3.2 - Mixed woodland - plantation
- A2.1 - Scrub - dense/continuous
- A2.2 - Scrub - scattered
- A3.1 - Broadleaved parkland/scattered trees
- A3.2 - Coniferous parkland/scattered trees
- A4.2 - Coniferous woodland - recently felled
- B1.2 - Acid grassland - semi-improved
- B2.1 - Neutral grassland - unimproved
- B4 - Improved grassland
- B5 - Marsh/marshy grassland
- B6 - Poor semi-improved grassland
- C1.2 - Bracken - scattered
- D1.1 - Dry dwarf shrub heath - acid
- D2 - Wet dwarf shrub heath
- D5 - Dry heath/acid grassland
- E3.2 - Fen - basin mire
- F1 - Swamp
- G1 - Standing water
- G2 - Running water
- I2.1 - Quarry
- I2.2 - Spoil
- J1.2 - Cultivated/disturbed land - amenity grassland
- J1.3 - Cultivated/disturbed land - ephemeral/short perennial
- J2.2.2 - Defunct hedge - species-poor
- J3.6 - Buildings
- J4 - Bare ground
- J5 - Gravel/hard standing
- J6 - Tarmac surface
- TN - Target note
- A3.1 - Broadleaved parkland/scattered trees
- A1.1.1 - Semi-natural broadleaved woodland
- A3.1 - Broadleaved parkland/scattered trees
- A3.3 - Mixed parkland/scattered trees
- E2.1 - Acid/neutral flush
- H1.1.1 - Acid/neutral natural inland cliff
- Railway
- J2.5.4 - Derelict wall
- J2.6 - Dry ditch
- J2.6 - Earth bank
- J2.4 - Fence
- J2.4.1 - Fence with trees
- J4 - Bare ground
- G2 - Running water
- J2.2.2 - Defunct hedge - species-poor
- J2.1.2 - Intact hedge - species-poor
- J2.1.2.1 - Species-poor intact hedge with fence
- G1 - Standing water
- J2.5 - Wall

F1	2015-11-25	WSJ	CP	NH
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Issue	Date	By	Chkd	Appl

0 120 240 480

Metres

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Job Title

Nant Helen Complementary Restoration Earthworks

Extended Phase 1 Habitat Map

Scale at A1

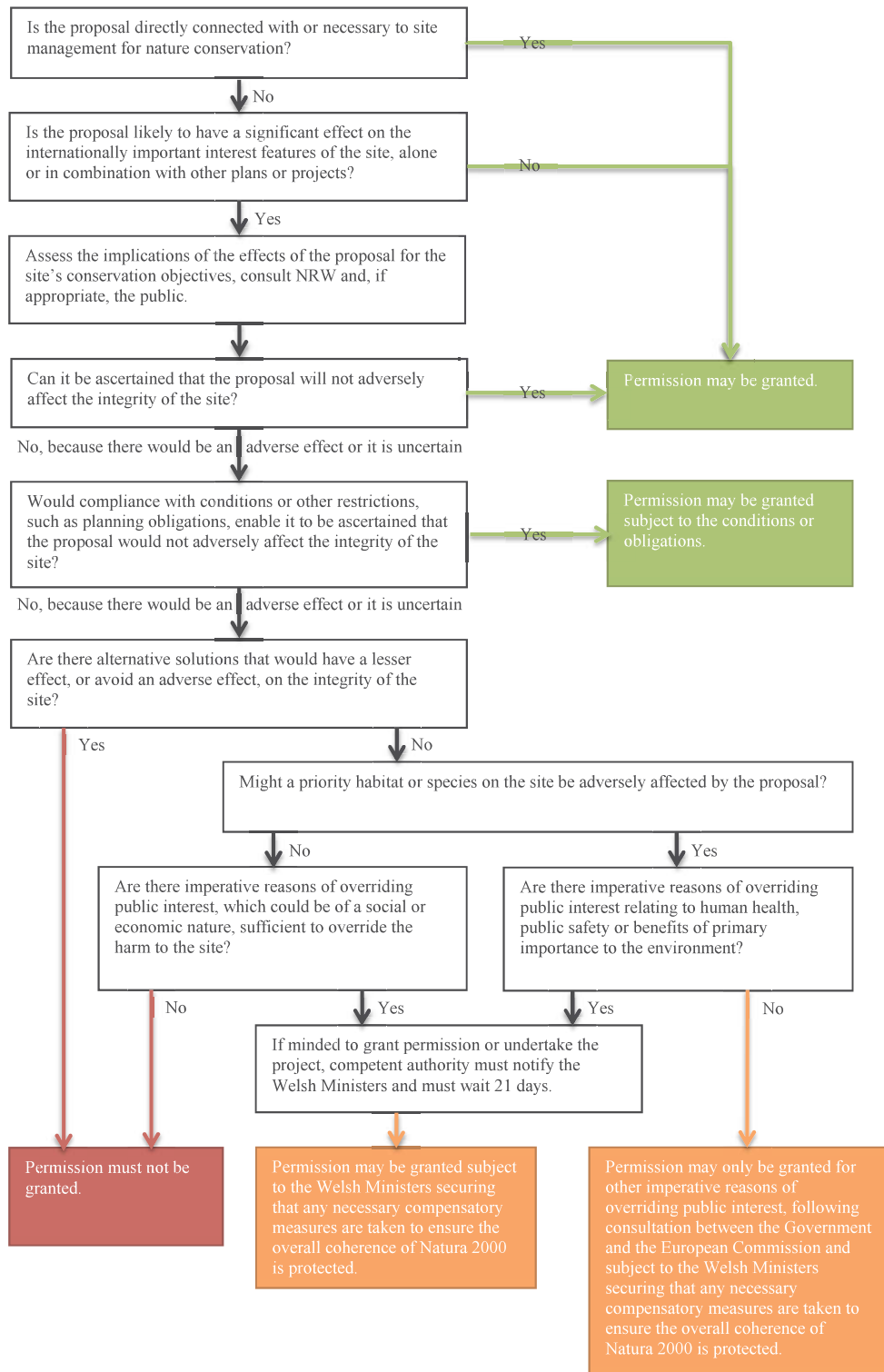
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Job No	Drawing Status
271968-05	For Issue
Drawing No	Issue
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Appendix A

Habitats Regulations Assessment Process Outline Designs

A1 HRA Process outline



Appendix B

Biodiversity Desk Study Results

B1 Biodiversity Desk Study Results

Records of protected and/or notable species identified within 5 km of the site are summarised in Table 1 below. The distance given is that to the closest point on the site boundary.

Table 3. Protected and notable species within 5 km of the site

Species / Group	Scientific Name	Status ¹⁵	Number of Records	Approximate distance of closest record (m)
Bats				
Soprano pipistrelle	<i>Pipistrellus pygmaeus</i>	EPS, WCA	10	300
Common pipistrelle	<i>Pipistrellus pipistrellus</i>	EPS, WCA	27	400
Unidentified bat	<i>Chiroptera</i>	EPS, WCA	10	400
Daubenton's bat	<i>Myotis daubentonii</i>	EPS, WCA	7	400
Noctule bat	<i>Nyctalus noctula</i>	EPS, WCA	11	400
Pipistrelle species	<i>Pipistrellus</i> spp.	EPS, WCA	14	600
Brown long-eared bat	<i>Plecotus auritus</i>	EPS, WCA	7	1000
Myotis bat	<i>Myotis</i> spp.	EPS, WCA	2	1700
Nathusius' pipistrelle	<i>Pipistrellus nathusii</i>	EPS, WCA	2	2000
Natterer's bat	<i>Myotis nattereri</i>	EPS, WCA	2	2000
Lesser horseshoe bat	<i>Rhinolophus hipposideros</i>	EPS, WCA	1	2000
Other mammals				
Hare	<i>Lepus europaeus</i>	S7	3	Within the site
Otter	<i>Lutra lutra</i>	EPS, WCA, S7	27	400

¹⁵ EPS = European Protected Species as listed under Schedule 2 of the Conservation of Habitats and Species Regulations (2017).

HDir = Animals and plants that receive protection under the Council Directive 92/43/EEC (The Habitats Directive).

BDir = Birds that receive protection under the Directive 2009/147/ED (The Birds Directive).

WCA = Species protected under Schedule 1 (birds), Schedule 5 (animals) or Schedule 8 (plants) of the Wildlife and Countryside Act (1981) as amended.

WCA9 = Species listed under Schedule 9 (invasive non-native plants) of the Wildlife and Countryside Act (1981) as amended.

S7 = Species listed on Section 7 of the Environment (Wales) Act 2016.

Species / Group	Scientific Name	Status ¹⁵	Number of Records	Approximate distance of closest record (m)
Badger ¹⁶	<i>Meles meles</i>	BA	3	700
Hedgehog	<i>Erinaceus europaeus</i>	S7	32	800
Polecat	<i>Mustela putorius</i>	HDir, S7	4	1500
Harvest mouse	<i>Micromys minutus</i>	S7	1	2000
Birds				
Cuckoo	<i>Cuculus canorus</i>	S7	23	Within the site
House sparrow	<i>Passer domesticus</i>	S7	81	Within the site
Kestrel	<i>Falco tinnunculus</i>	S7	27	Within the site
Lesser black-backed gull	<i>Larus fuscus</i>	BDir	6	Within the site
Red kite	<i>Milvus milvus</i>	WCA, BDir	44	Within the site
Starling	<i>Sturnus vulgaris</i>	BDir, S7	68	Within the site
Hawfinch	<i>Coccothraustes coccothraustes</i>	S7	1	100
Dunnoek	<i>Prunella modularis</i>	S7	51	300
Merlin	<i>Falco columbarius</i>	BDir, WCA	1	300
Mistle thrush	<i>Turdus viscivorus</i>	BDir	31	300
Bullfinch	<i>Pyrrhula pyrrhula</i>	S7	24	400
Common crossbill	<i>Loxia curvirostra</i>	WCA	24	400
Skylark	<i>Alauda arvensis</i>	BDir, S7	26	400
Woodcock	<i>Scolopax rusticola</i>	BDir	12	400
Grasshopper warbler	<i>Locustella naevia</i>	S7	12	600
Pied flycatcher	<i>Ficedula hypoleuca</i>	S7	11	600
Wood warbler	<i>Phylloscopus sibilatrix</i>	S7	13	600
Barn owl	<i>Tyto alba</i>	WCA	5	700
Curlew	<i>Numenius arquata</i>	BDir, S7	4	800
Linnet	<i>Linaria cannabina</i>	S7	9	800
Mallard	<i>Anas platyrhynchos</i>	BDir	33	800
Snipe	<i>Gallinago gallinago</i>	BDir	17	800
Song thrush	<i>Turdus philomelos</i>	BDir, S7	57	800

¹⁶ BA = Protection of Badgers Act (1992).

Species / Group	Scientific Name	Status ¹⁵	Number of Records	Approximate distance of closest record (m)
Brambling	<i>Fringilla montifringilla</i>	WCA	1	900
Fieldfare	<i>Turdus pilaris</i>	BDir, WCA	13	900
Lapwing	<i>Vanellus vanellus</i>	BDir, S7	7	900
Redwing	<i>Turdus iliacus</i>	WCA, BDir	17	900
Reed bunting	<i>Emberiza schoeniclus</i>	S7	27	900
Peregrine	<i>Falco peregrinus</i>	BDir, WCA	18	1000
Lesser redpoll	<i>Acanthis cabaret</i>	S7	32	1200
Hen harrier	<i>Circus cyaneus</i>	BDir, S7	2	1300
Jack snipe	<i>Lymnocyptes minimus</i>	BDir	3	1400
Water rail	<i>Rallus aquaticus</i>	BDir	2	1500
Hobby	<i>Falco subbuteo</i>	WCA	4	1600
Honey buzzard	<i>Pernis apivorus</i>	BDir WCA	2	1600
Goshawk	<i>Accipiter gentilis</i>	WCA	7	1700
Herring gull	<i>Larus argentatus</i>	S7	7	1700
Tree pipit	<i>Anthus trivialis</i>	S7	15	1700
Nightjar	<i>Caprimulgus europaeus</i>	BDir, S7	8	1800
Osprey	<i>Pandion haliaetus</i>	BDir, WCA	1	1900
Short-eared owl	<i>Asio flammeus</i>	BDir	3	2000
Spotted flycatcher	<i>Muscicapa striata</i>	S7	2	2500
Goosander	<i>Mergus merganser</i>	BDir	9	2900
Kingfisher	<i>Alcedo atthis</i>	BDir, WCA	2	2900
Willow tit	<i>Poecile montana</i>	S7	1	3400
Yellowhammer	<i>Emberiza citrinella</i>	S7	2	3400
Golden plover	<i>Pluvialis apricaria</i>	BDir, BDir, S7	1	3600
Wigeon	<i>Anas penelope</i>	BDir	2	3600
Mute swan	<i>Cygnus olor</i>	BDir	9	3700
Ring ouzel	<i>Turdus torquatus</i>	S7	1	4000
Reptiles and Amphibians				
Common toad	<i>Bufo bufo</i>	WCA	12	200
Common lizard	<i>Zootoca vivipara</i>	WCA	14	700
Common frog	<i>Rana temporaria</i>	WCA	32	700

Species / Group	Scientific Name	Status ¹⁵	Number of Records	Approximate distance of closest record (m)
Grass snake	<i>Natrix helvetica</i>	WCA	7	1000
Palmate newt	<i>Lissotriton helveticus</i>	WCA	5	1700
Slow worm	<i>Anguis fragilis</i>	WCA	10	2000
Fish				
Atlantic salmon	<i>Salmo salar</i>	HDir, S7	2	600
Bullhead	<i>Cottus gobio</i>	HDir	2	2000
Invertebrates				
Broom moth	<i>Ceramica pisi</i>	S7	7	800
Marsh fritillary	<i>Euphydryas aurinia</i>	EPS, WCA, S7	49	900
Dark-barred Twin-spot Carpet	<i>Xanthorhoe ferrugata</i>	S7	9	900
Small phoenix	<i>Ecliptopera silaceata</i>	S7	9	900
Small heath	<i>Coenonympha pamphilus</i>	S7	16	1000
Knot grass	<i>Acronicta rumicis</i>	S7	7	1200
Dot moth	<i>Melanchra persicariae</i>	S7	2	1300
Rosy minor	<i>Litoligia literosa</i>	S7	2	1300
Rosy rustic	<i>Hydraecia micacea</i>	S7	2	1300
Sallow	<i>Cirrhia icteritia</i>	S7	2	1300
Ear moth	<i>Amphipoea oculatea</i>	S7	2	1400
Oak hook-tip	<i>Watsonalla binaria</i>	S7	1	1500
Oblique carpet	<i>Orthonama vittata</i>	S7	4	1500
Autumnal rustic	<i>Eugnorisma glareosa</i>	S7	2	1500
Hedge rustic	<i>Tholera cespitis</i>	S7	1	1600
Grayling	<i>Hipparchia semele</i>	S7	9	1800
Double dart	<i>Graphiphora augur</i>	S7	1	1800
Blood-vein	<i>Timandra comae</i>	S7	1	1900
Buff ermine	<i>Spilosoma lutea</i>	S7	2	1900
Garden tiger	<i>Arctia caja</i>	S7	2	1900
Shoulder-striped wainscot	<i>Leucania comma</i>	S7	1	1900
Small square-spot	<i>Diarsia rubi</i>	S7	5	1900

Species / Group	Scientific Name	Status ¹⁵	Number of Records	Approximate distance of closest record (m)
White ermine	<i>Spilosoma lubricipeda</i>	S7	5	1900
Centre-barred sallow	<i>Atethmia centrargo</i>	S7	1	1900
Dusky brocade	<i>Apamea remissa</i>	S7	1	1900
Ghost moth	<i>Hepialus humuli</i>	S7	2	1900
Small Pearl-bordered Fritillary	<i>Boloria selene</i>	S7	4	2200
Small blue	<i>Cupido minimus</i>	WCA, S7	1	2300
Wall	<i>Lasiommata megera</i>	S7	15	2300
Brindled beauty	<i>Lycia hirtaria</i>	S7	1	2400
Cinnabar	<i>Tyria jacobaeae</i>	S7	3	2500
Narrow-bordered bee hawk-moth	<i>Hemaris tityus</i>	S7	1	3700
Dingy skipper	<i>Erynnis tages</i>	S7	2	4000
Vascular plants				
Small-flowered Sticky Eyebright	<i>Euphrasia officinalis subsp. anglica</i>	S7	1	100
Bluebell	<i>Hyacinthoides non-scripta</i>	WCA	47	100
Globeflower	<i>Trollius europaeus</i>	S7	1	600
Eyebright	<i>Euphrasia officinalis subsp. pratensis</i>	S7	1	1700
Bryophytes & lichens				
A lichen	<i>Parmotrema perlatum</i>	S7	6	Within the site
A lichen	<i>Usnea articulata</i>	S7	6	Within the site
Scarce Turf-moss	<i>Rhytidiadelphus subpinnatus</i>	S7	6	500
Witches' Whiskers Lichen	<i>Usnea florida</i>	S7	2	1300
Varnished Hook-moss	<i>Hamatocaulis vernicosus</i>	HDir, WCA	1	1400
A lichen	<i>Pachyphiale carneola</i>	S7	1	1900
A lichen	<i>Pannaria conoplea</i>	S7	1	1900