

Green Hill Solar Farm

EN010170

Environmental Statement

Appendix 8.1: LVIA Methodology

(Part 2 of 2)

Prepared by: Lanpro Services

Date: May 2025

Document Reference: APP/GH6.3.8.1

APFP Regulation 5(2)(a)

Key

Area For Solar Panels And Associated Development

Existing

- Existing Vegetation
- Existing Ditch Verge
- Existing Footpath
- Existing Brideway
- Existing Byway Open To All Traffic
- Existing Restricted Byways
- Existing Buildings
- Existing Listed Buildings
- Existing Utilities

Proposed

- Existing Vegetation To Be Retained And Enhanced
- Proposed Meadow Creation (Beneath Panels)
- Proposed Tussock Grassland Margins
- Proposed Damp Grassland
- Proposed Ground Nesting Bird Mitigation - Set Aside
- Proposed Ground Nesting Bird Mitigation - Continued Arable Land
- Proposed Diverse Wildflower Meadow
- Proposed Low Density Scrub
- Proposed Native Woodland Copes/Shelter Belt (Scrub And Tree Planting)
- Dense Linear Tree Planting (Without Scrub Planting)
- Native Tree and Scrub Planting - Instant Screening
- Native Scrub Planting With Scattered Trees
- Proposed River Corridor Planting For Ecology
- Proposed River Corridor Planting For Flooding
- Proposed River Corridor Planting For Instant Screening
- Proposed Indicative Locations For Ponds
- Potential Location For Proposed Cluster Of Water Scrapes
- Existing Hedge To Be Reinforced With Irregularly Spaced Native Tree Planting
- Existing Hedge To Be Reinforced With Densely Spaced Native Tree Planting
- Existing Hedge To Be Reinforced With Densely Spaced Native Tree Planting - Instant Screening
- Proposed Native Species Rich Hedgerow With Irregularly Spaced Native Hedgerow Trees
- Proposed Secondary Native Species Rich Hedgerow With Densely Spaced Native Hedgerow Trees
- Proposed Solar Arrays
- Proposed Fenceline
- Proposed Access Tracks
- Proposed Inverters
- Proposed Substation
- Proposed Battery Energy Storage Systems
- Proposed Permissive Path For Pedestrians
- Proposed Permissive Path For Pedestrians And Horse Riders
- Proposed Private Access To Sywell Wood
- Existing Vegetation To Be Removed

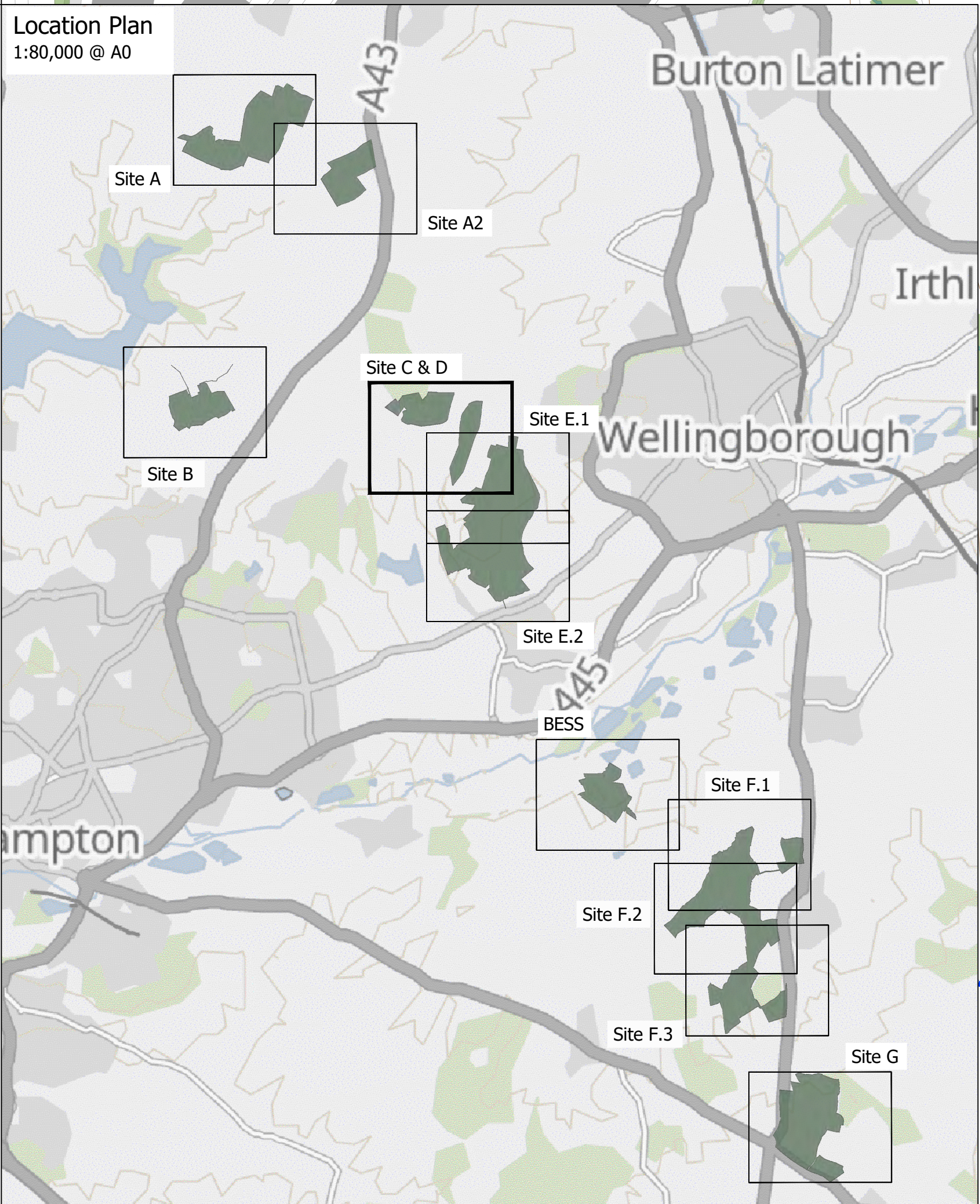
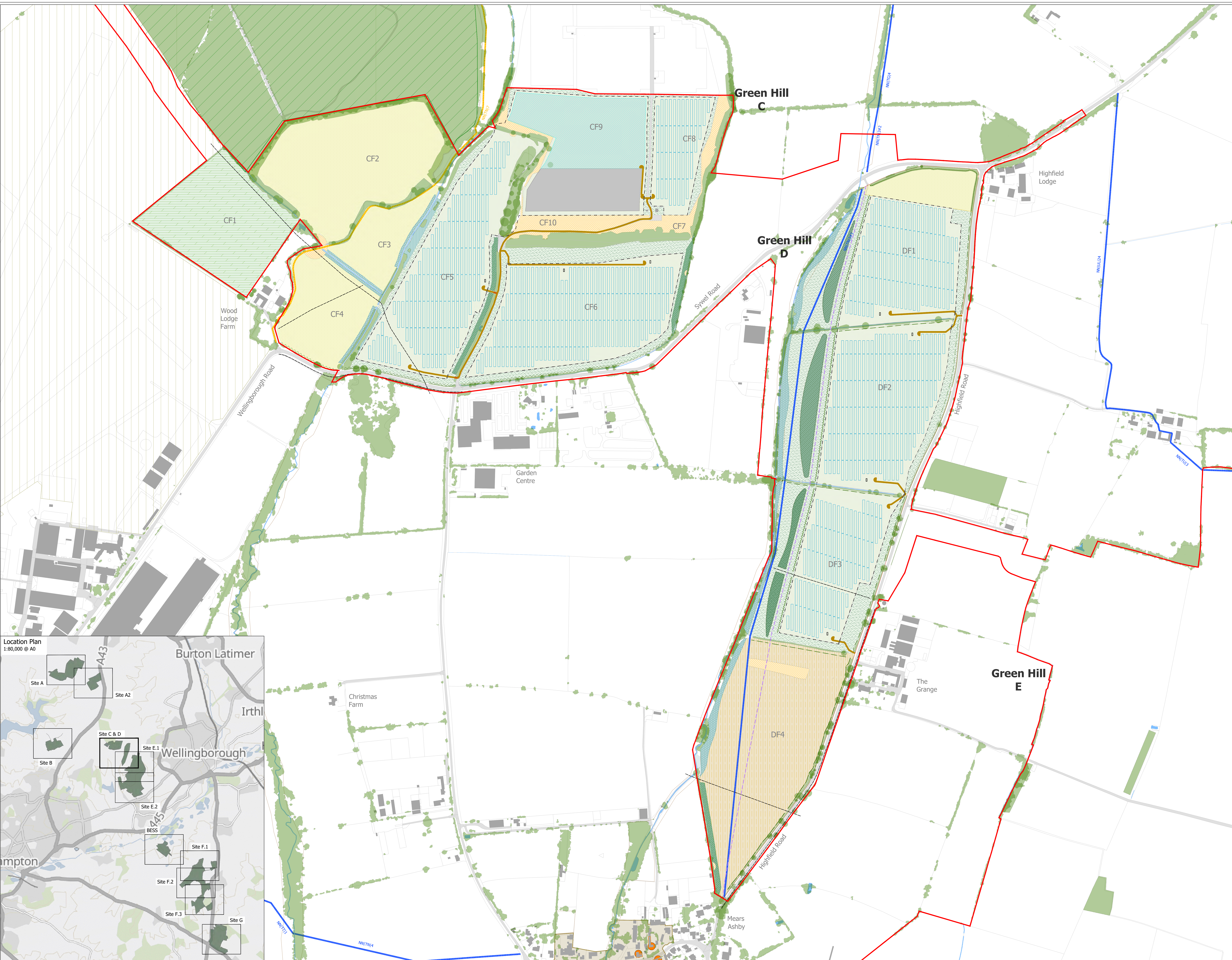


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GREEN HILL SOLAR FARM

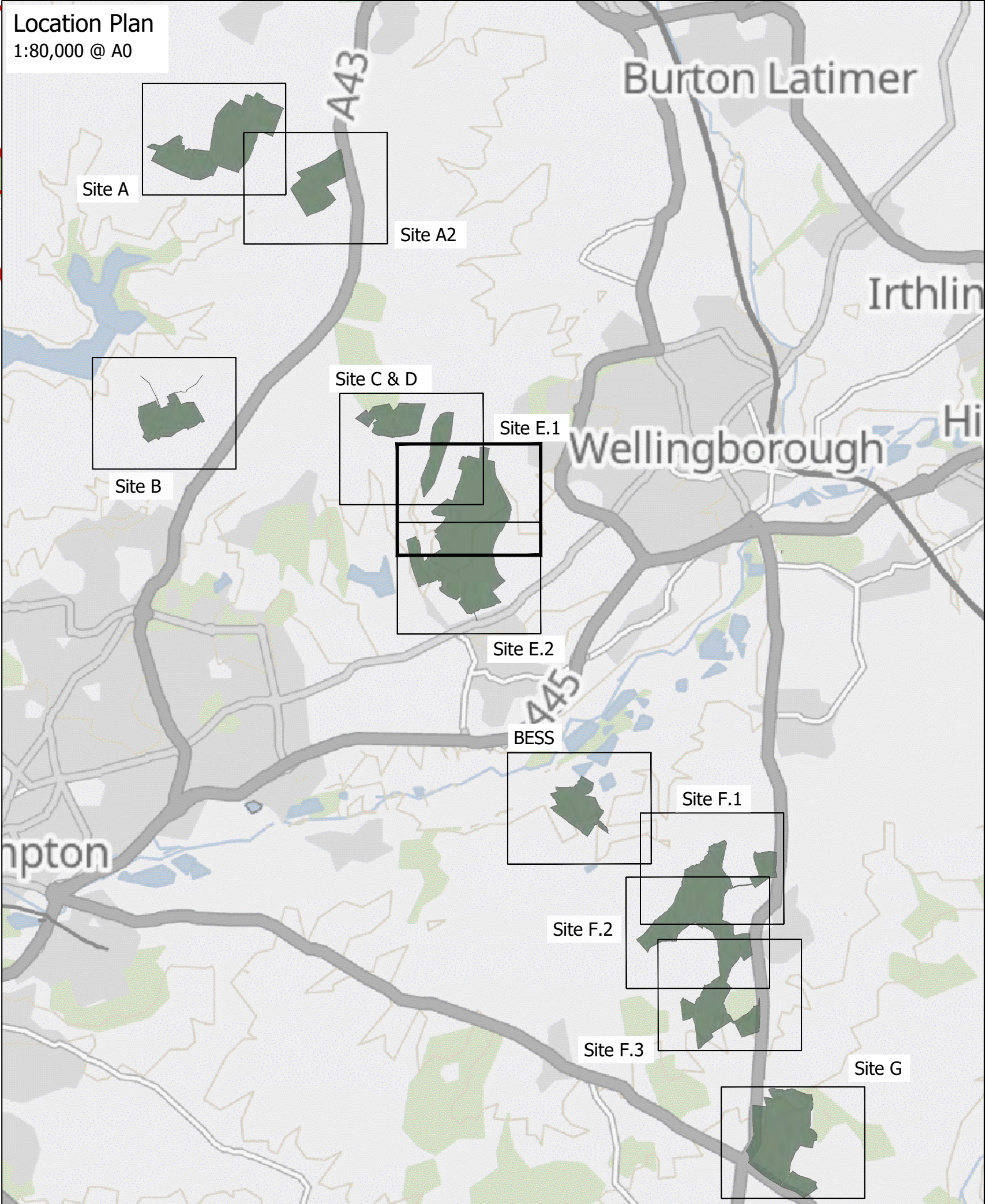
Figure 4.13.1
Green Hill Site C & D Option A
Landscape and Ecology Mitigation Plan
[EN010170]APP/GH5-4.4.13.1
5/2(a)

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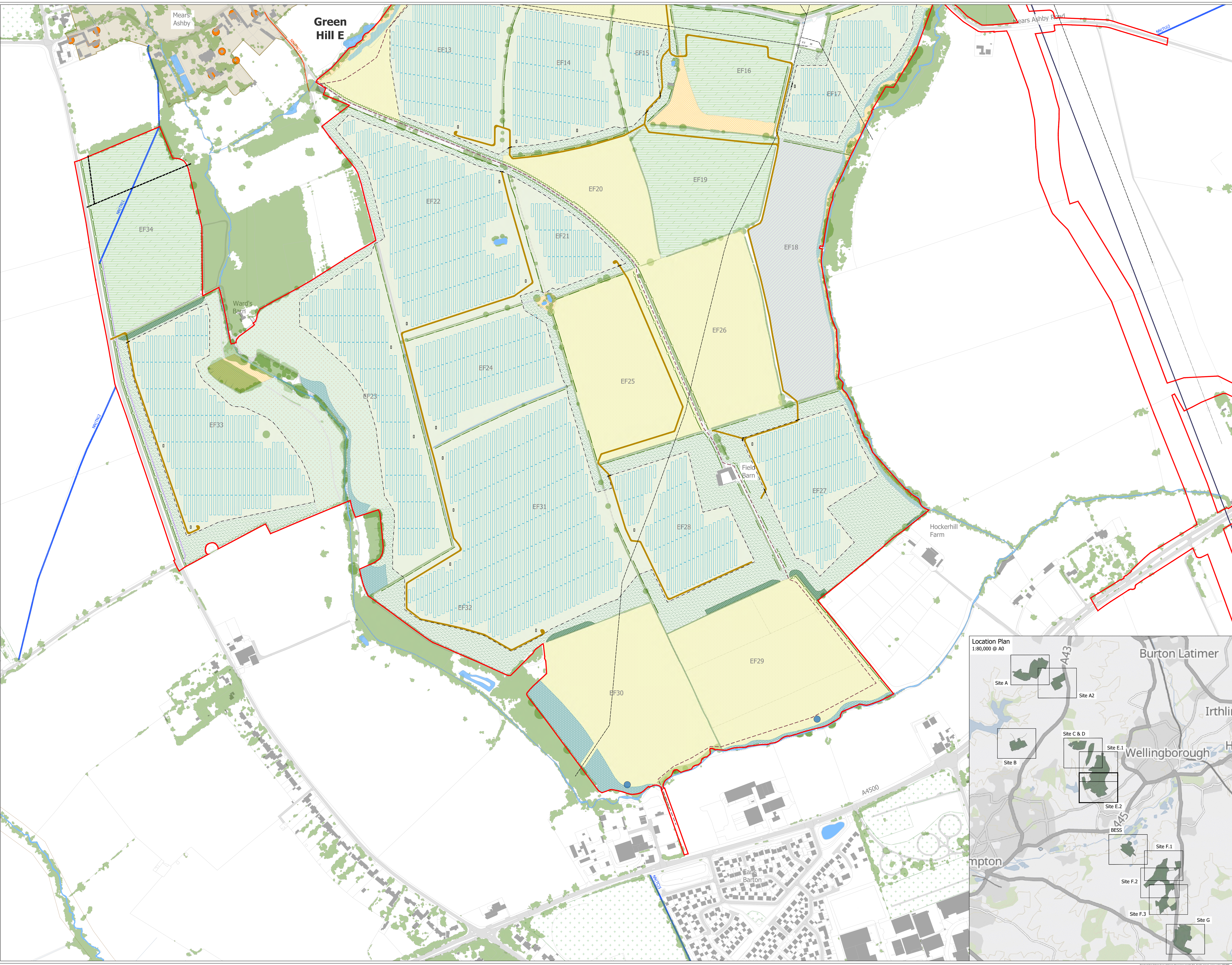
Key



- Area For Solar Panels And Associated Development
- Existing
- Existing Vegetation
- Existing Ditch Verge
- Existing Footpath
- Existing Bridleway
- Existing Byway Open To All Traffic
- Existing Restricted Byways
- Existing Buildings
- Existing Listed Buildings
- Existing Utilities
- Proposed
- Existing Vegetation To Be Retained And Enhanced
- Proposed Meadow Creation (Beneath Panels)
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- Proposed Damp Grassland
- Proposed Ground Nesting Bird Mitigation - Set Aside
- Proposed Ground Nesting Bird Mitigation - Continued Arable Land
- Proposed Diverse Wildflower Meadow
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- Dense Linear Tree Planting (Without Scrub Planting)
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- Proposed River Corridor Planting For Ecology
- Proposed River Corridor Planting For Flooding
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- Proposed Indicative Locations For Ponds
- Potential Location For Proposed Cluster Of Wader Scrapes
- Existing Hedge To Be Reinforced With Irregularly Spaced Native Tree Planting
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- Proposed Solar Arrays
- Proposed Fenceline
- Proposed Access Tracks
- Proposed Inverters
- Proposed Substation
- Proposed Battery Energy Storage Systems
- Proposed Permissive Path For Pedestrians
- Proposed Permissive Path For Pedestrians And Horse Riders
- Existing Vegetation To Be Removed



GREEN HILL SOLAR FARM

Figure 4.14
Green Hill Site E (1)
Landscape and Ecology Mitigation Plan
(END101170/APPGH6.4.4.14)
5/2(a)





Key

Existing

Existing Vegetation

Existing Ditch Verge

Existing Footpath

Existing Bridleway

Existing Byway Open To All Traffic

Existing Restricted Byways

Existing Buildings

Existing Listed Buildings

Existing Utilities

Proposed

Existing Vegetation To Be Retained And Enhanced

Proposed Meadow Creation (Beneath Panels)

Proposed Tussock Grassland Margins

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Proposed Low Density Scrub

Proposed Native Woodland Copes/Shelter Belt (Scrub And Tree Planting)

Dense Linear Tree Planting (Without Scrub Planting)

Native Tree and Scrub Planting - Instant Screening

Native Scrub Planting With Scattered Trees

Proposed River Corridor Planting For Ecology

Proposed River Corridor Planting For Flooding

Proposed River Corridor Planting For Instant Screening

Proposed Indicative Locations For Ponds

Potential Location For Proposed Cluster Of Wader Scrapes

Existing Hedge To Be Reinforced With Irregularly Spaced Native Tree Planting

Existing Hedge To Be Reinforced With Regularly Spaced Native Tree Planting

Existing Hedge To Be Reinforced With Densely Spaced Native Tree Planting

Existing Hedge To Be Reinforced With Densely Spaced Native Tree Planting - Instant Screening

Proposed Native Species Rich Hedgerow With Irregularly Spaced Native Hedgerow Trees

Proposed Secondary Native Species Rich Hedgerow With Densely Spaced Native Hedgerow Trees

Proposed Solar Arrays

Proposed Fenceline

Proposed Access Tracks

Proposed Inverters

Proposed Substation

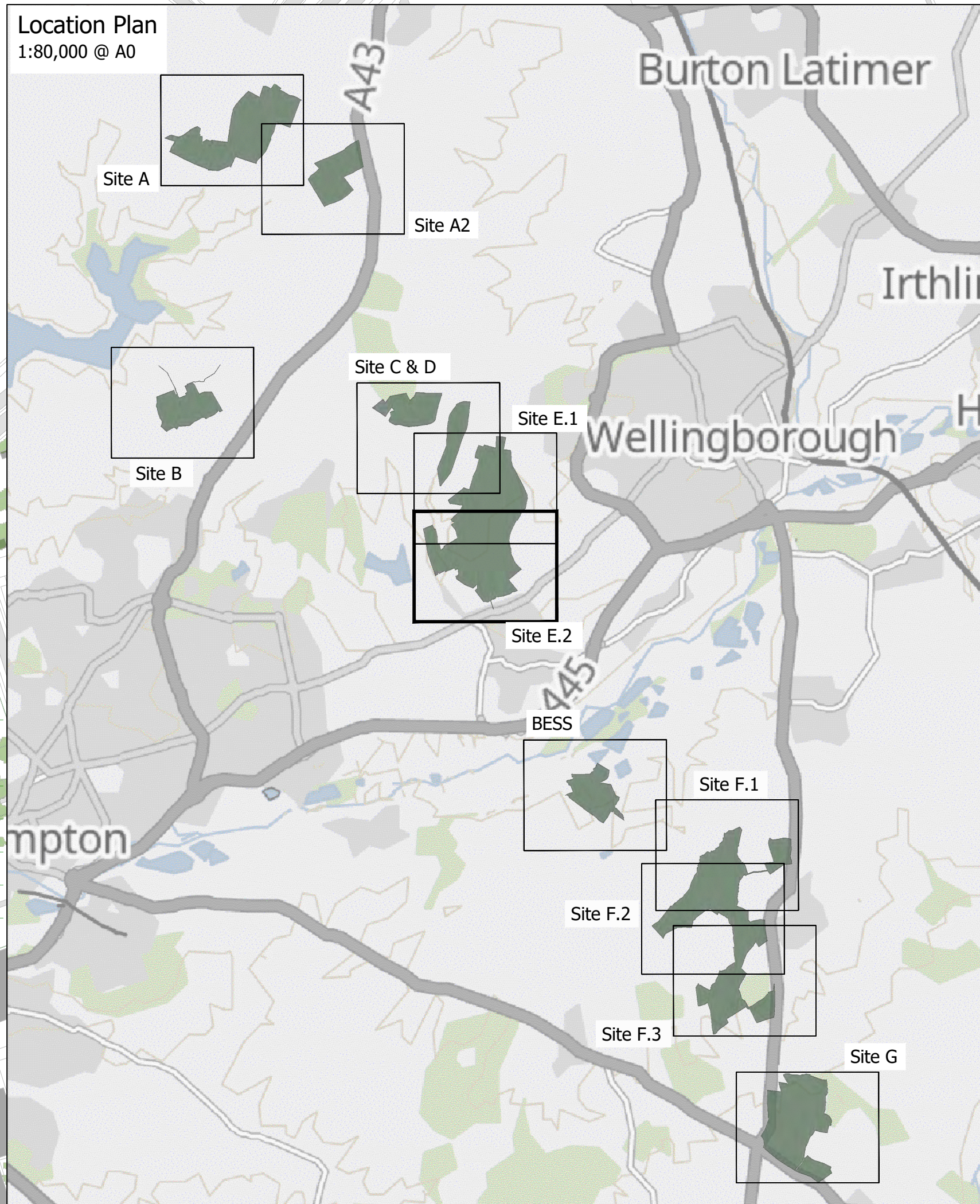
Proposed Battery Energy Storage Systems

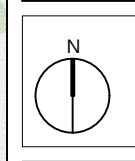
Proposed Permissive Path For Pedestrians

Proposed Permissive Path For Pedestrians And Horse Riders

Existing Vegetation To Be Removed

Location Plan
1:80,000 @ A0





1:2,500 @A0

GREEN HILL SOLAR FARM

Figure 4.15
Green Hill Site E (2)
Landscape and Ecology Mitigation Plan
(END10170/APPG/CHS.4.4.15)
5(2)(a)

Key

Area For Solar Panels And Associated Development

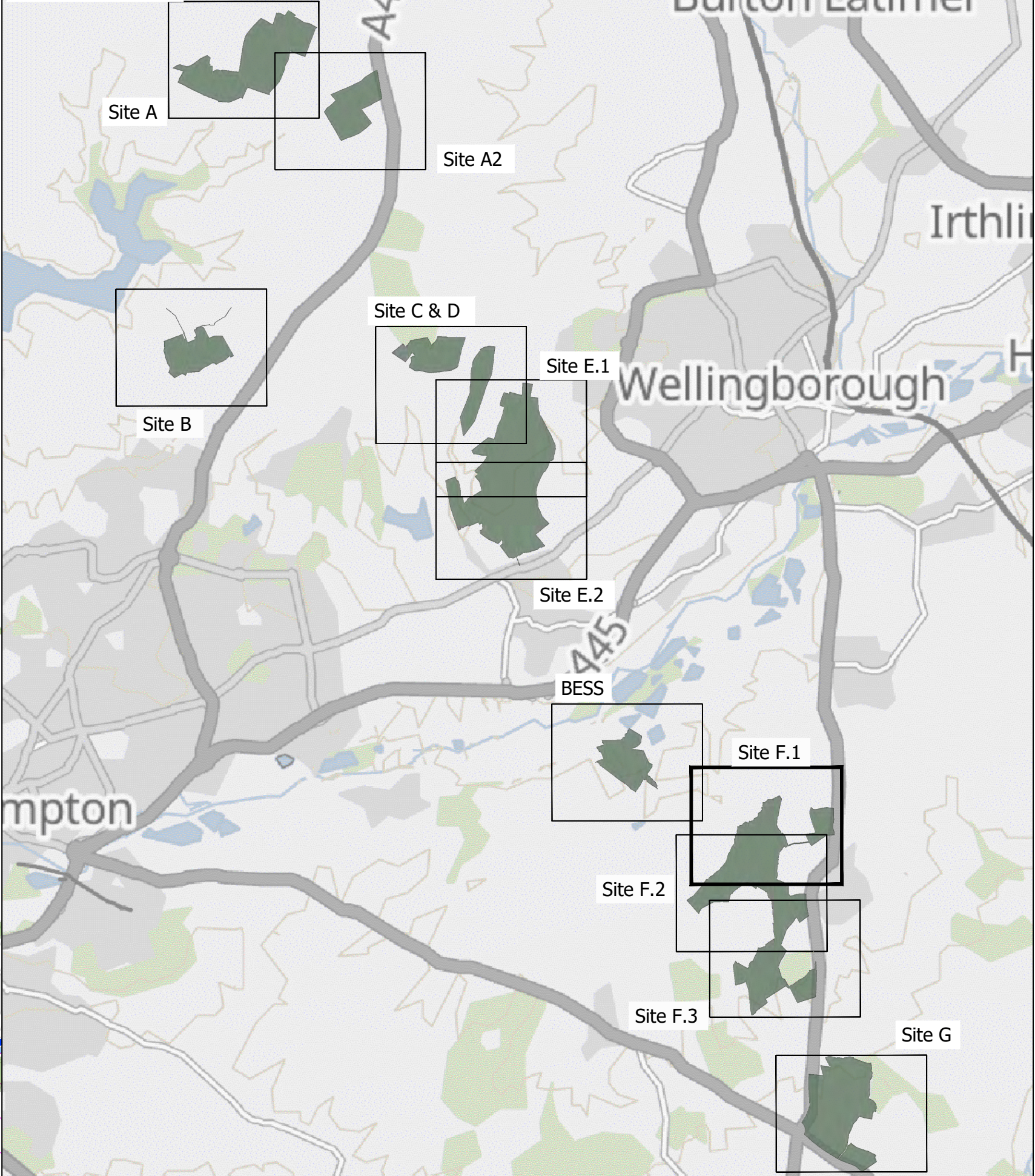
Existing

- Existing Vegetation
- Existing Ditch Verge
- Existing Footpath
- Existing Bridleway
- Existing Byway Open To All Traffic
- Existing Restricted Byways
- Existing Buildings
- Existing Listed Buildings
- Existing Utilities

Proposed

- Existing Vegetation To Be Retained And Enhanced
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- Proposed Damp Grassland
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- Proposed Ground Nesting Bird Mitigation - Continued Arable Land
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- Proposed Substation
- Proposed Battery Energy Storage Systems
- Proposed Permissive Path For Pedestrians
- Proposed Permissive Path For Pedestrians And Horse Riders
- Existing Vegetation To Be Removed

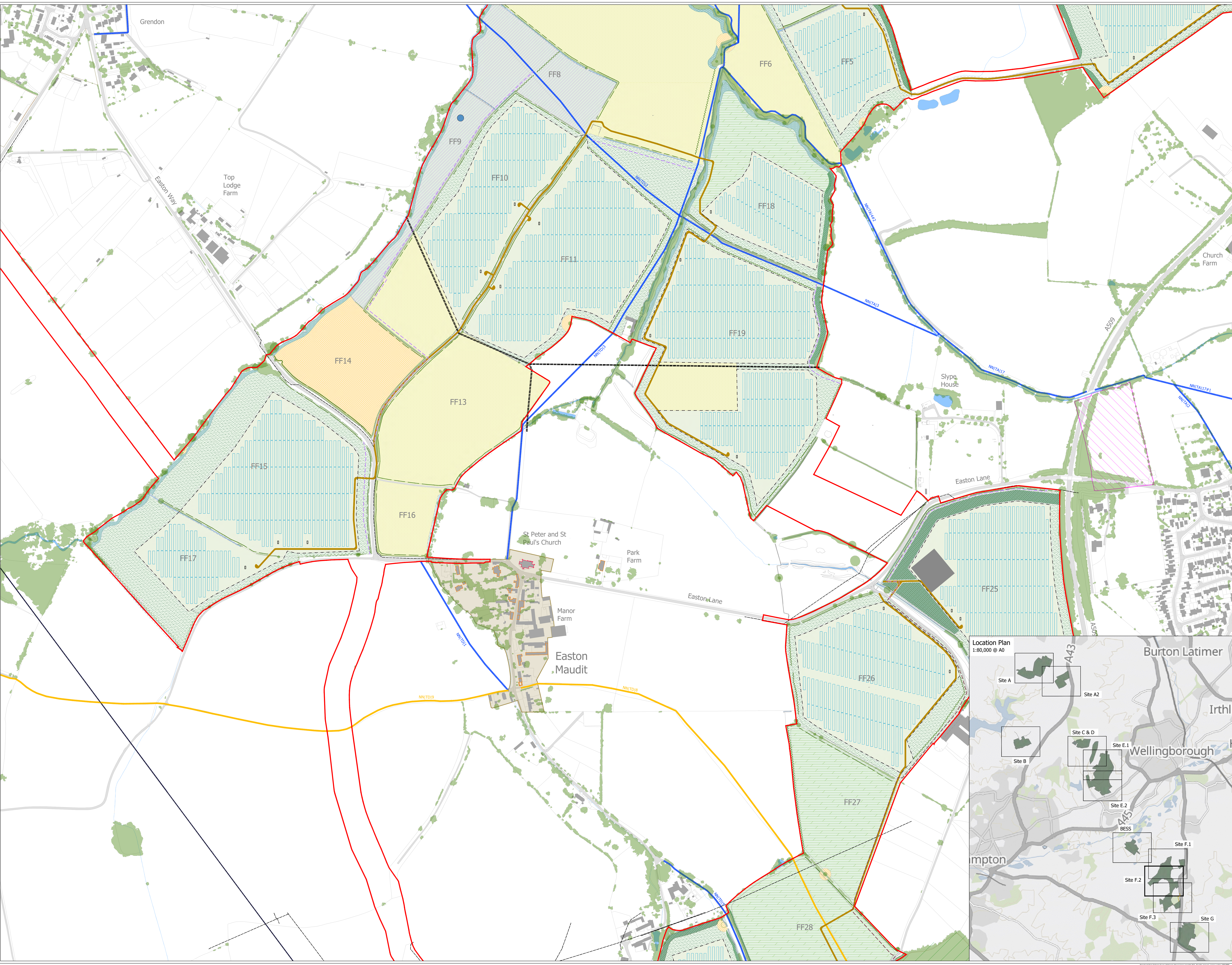
Location Plan
1:80,000 @ A0





1:2,500 @A0

GREEN HILL SOLAR FARM

Figure 4.17
Green Hill Site F (1)
Landscape and Ecology Mitigation Plan
(END101070/APP/GHS.4.4.17)
5(2)(a)





Key

Existing

Existing Vegetation

Existing Ditch Verge

Existing Footpath

Existing Bridleway

Existing Byway Open To All Traffic

Existing Restricted Byways

Existing Buildings

Existing Listed Buildings

Existing Utilities

Proposed

Existing Vegetation To Be Retained And Enhanced

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Proposed Tussock Grassland Margins

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Proposed Low Density Scrub

Proposed Native Woodland Canopy/Shelter Belt (Scrub And Tree Planting)

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Native Tree And Scrub Planting - Instant Screening

Native Scrub Planting With Scattered Trees

Proposed River Corridor Planting For Ecology

Proposed River Corridor Planting For Flooding

Proposed River Corridor Planting For Instant Screening

Proposed Indicative locations For Ponds

Potential Location For Proposed Cluster Of Water Scrapes

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Existing Hedge To Be Reinforced With Densely Spaced Native Tree Planting - Instant Screening

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Proposed Solar Arrays

Proposed Fenceline

Proposed Access Tracks

Proposed Inverters

Proposed Substation

Proposed Battery Energy Storage Systems

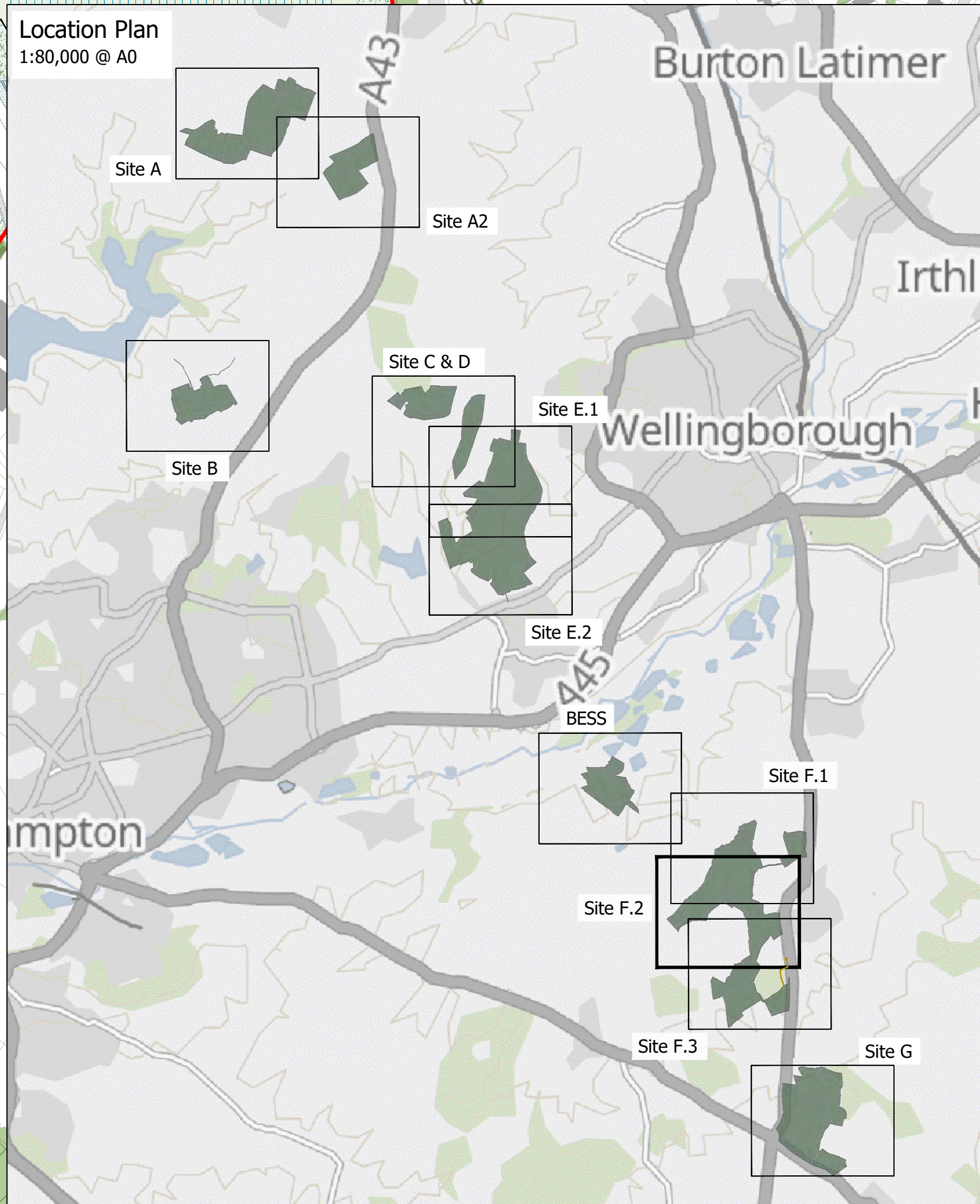
Proposed Permissive Path For Pedestrians

Proposed Permissive Path For Pedestrians And Horse Riders

Existing Vegetation To Be Removed

Location Plan

1:80,000 @ A0



1:2,500 @A0

GREEN HILL SOLAR FARM

Figure 4.18

Green Hill Site F(2)

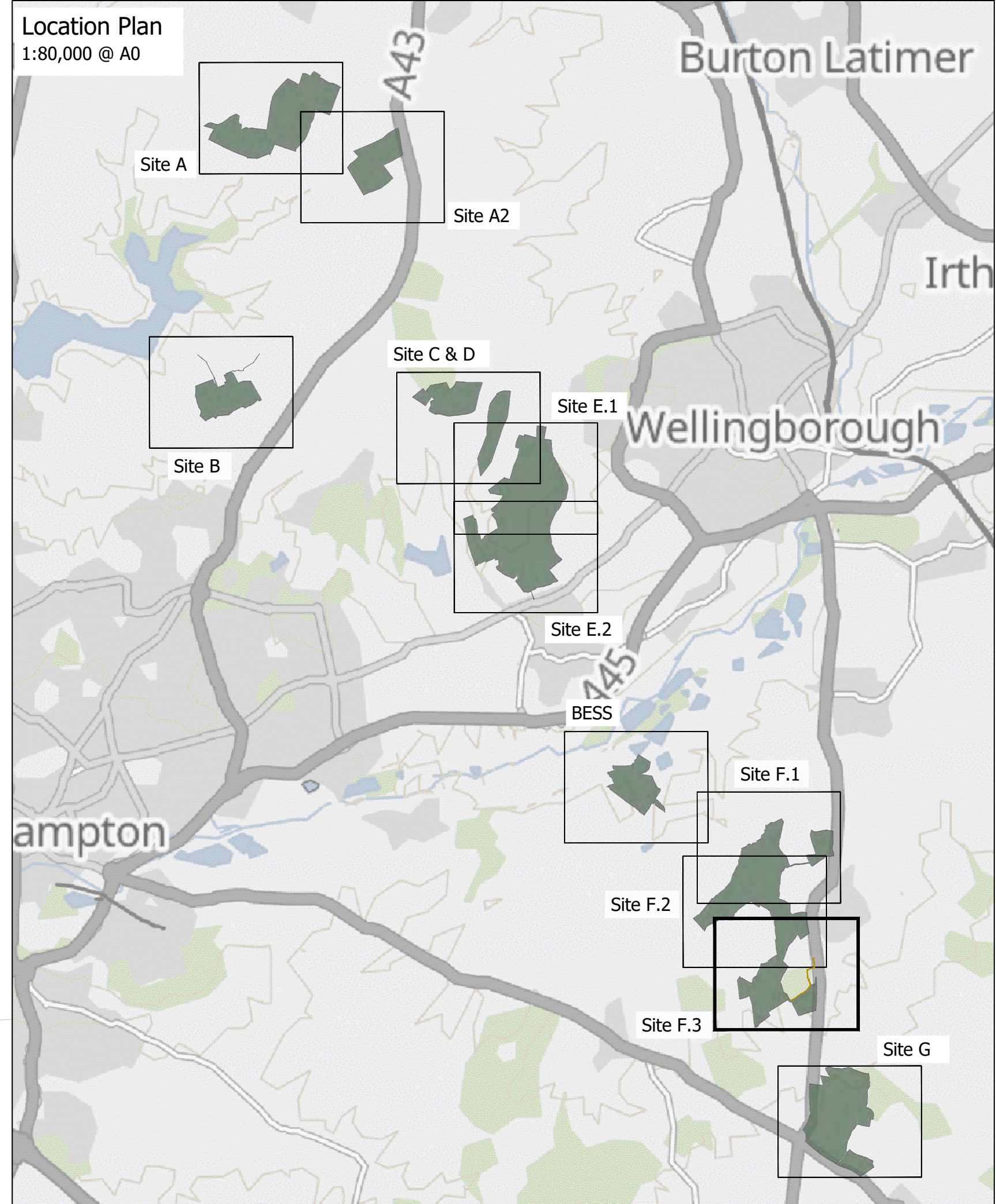
Landscape and Ecology Mitigation Plan

(END1010170/APPP/GHS.4.4.18)

5(2)(a)

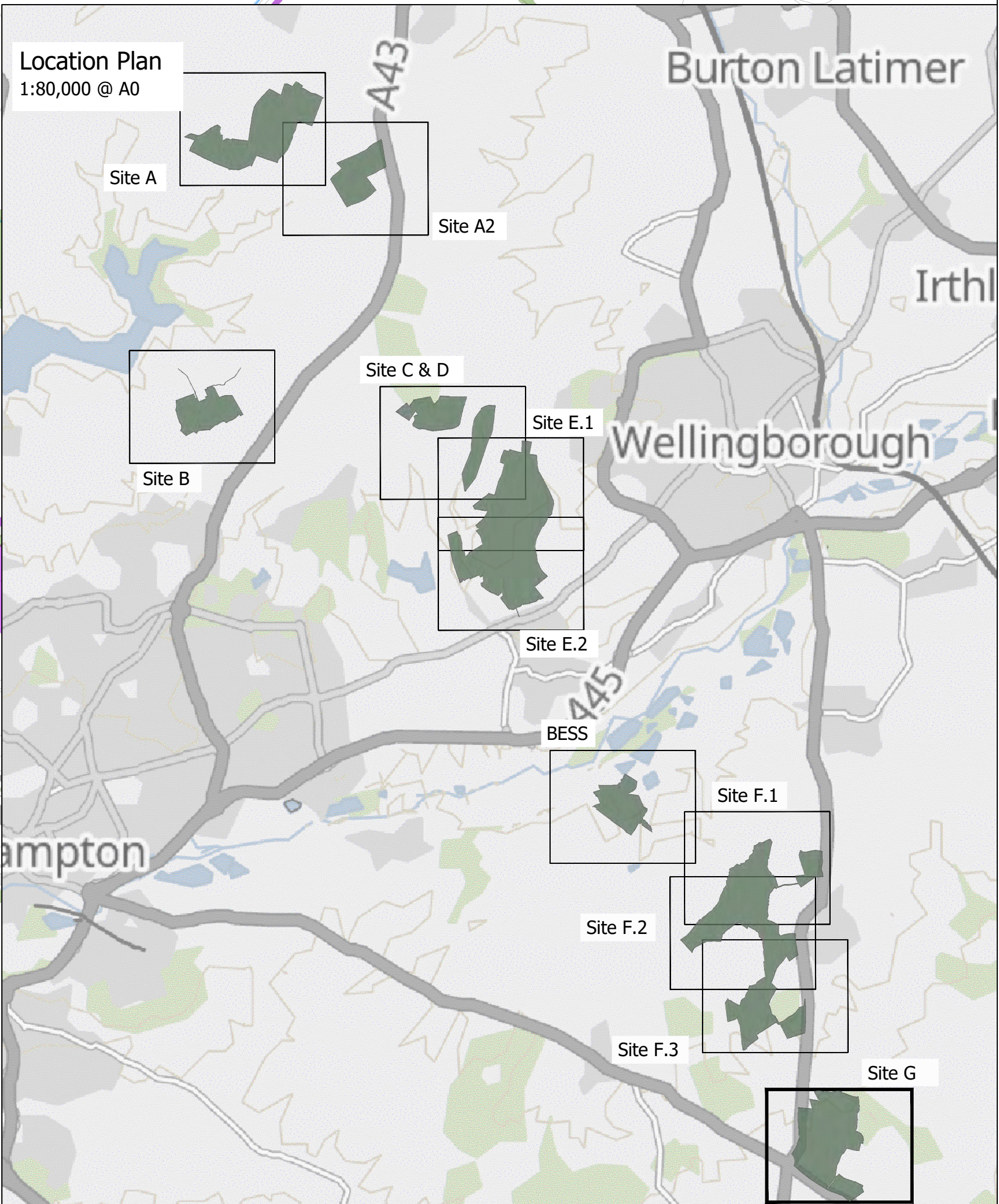
Key

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 - Proposed Substation
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 - Proposed Permissive Path For Pedestrians
 - Proposed Permissive Path For Pedestrians And Horse Riders
 - Existing Vegetation To Be Removed



Key

- Area For Solar Panels And Associated Development
- Existing
 - Existing Vegetation
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 - Potential Location For Proposed Cluster Of Water Scapes
 - Existing Hedge To Be Reinforced With Irregularly Spaced Native Tree Planting
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 - Proposed Solar Arrays
 - Proposed Fenceline
 - Proposed Access Tracks
 - Proposed Inverters
 - Proposed Substation
 - Proposed Battery Energy Storage Systems
 - Proposed Permissive Path For Pedestrians
 - Proposed Permissive Path For Pedestrians And Horse Riders
 - Existing Vegetation To Be Removed



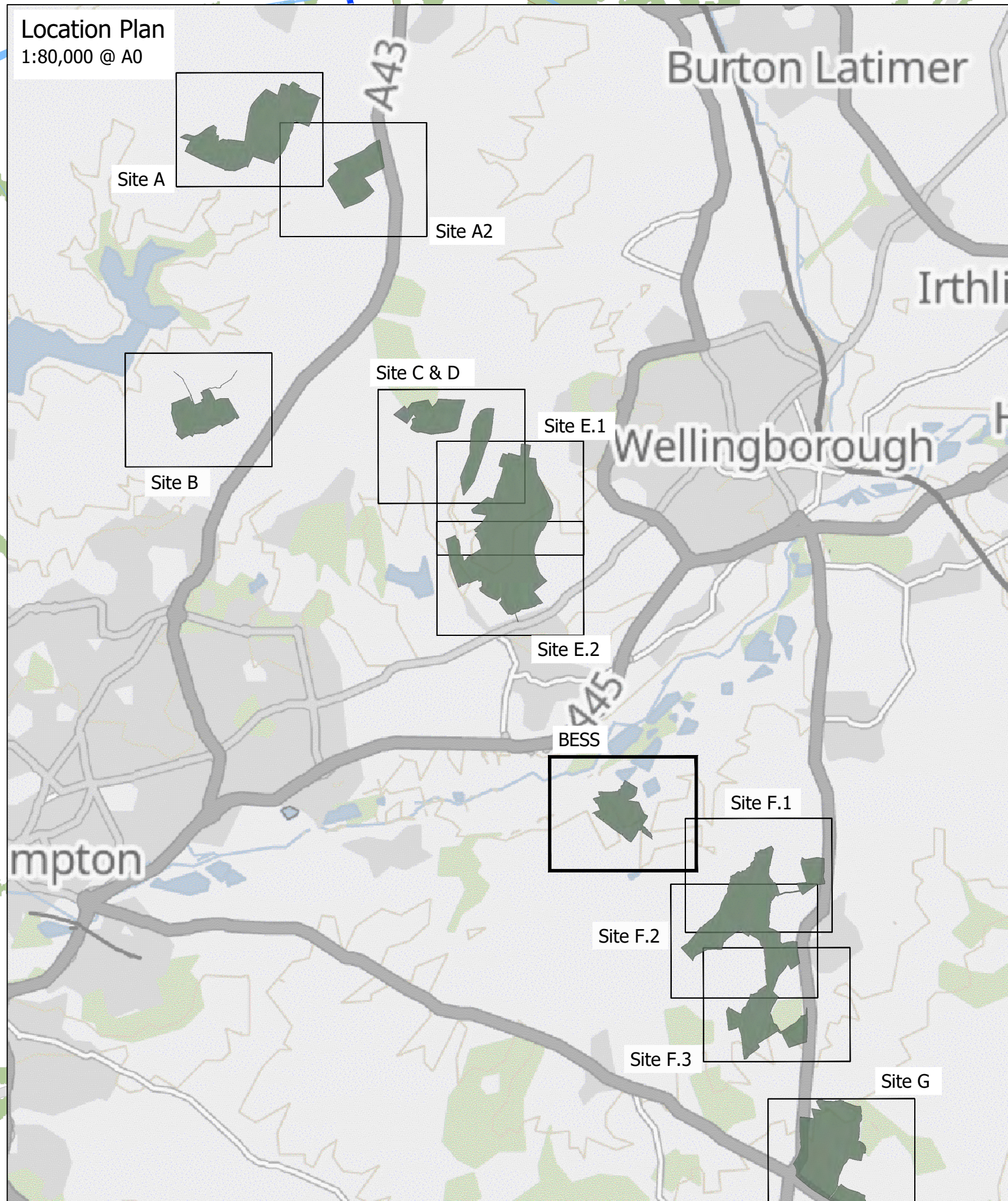
1:2,500 @A0

GREEN HILL SOLAR FARM

Figure 4.20
Green Hill Site G
Landscape and Ecology Mitigation Plan
(END101170/APP/GHG4.4.20)
5(2)(a)

Key

- Area For Solar Panels And Associated Development
- Existing
 - Existing Vegetation
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 - Existing Bridleway
 - Existing Byway Open To All Traffic
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 - Proposed Ground Nesting Bird Mitigation - Continued Arable Land
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 - Proposed Indicative Locations For Ponds
 - Potential Location For Proposed Cluster Of Wider Scrapes
 - Existing Hedge To Be Reinforced With Irregularly Spaced Native Tree Planting
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 - Existing Hedge To Be Reinforced With Densely Spaced Native Tree Planting - Instant Screening
 - Proposed Native Species Rich Hedgerow With Irregular Spaced Native Hedgerow Trees
 - Proposed Secondary Native Species Rich Hedgerow With Densely Spaced Native Hedgerow Trees
 - Proposed Solar Arrays
 - Proposed Fenceline
 - Proposed Access Tracks
 - Proposed Inverters
 - Proposed Substation
 - Proposed Battery Energy Storage Systems
 - Proposed Permissive Path For Pedestrians
 - Proposed Permissive Path For Pedestrians And Horse Riders
 - Existing Vegetation To Be Removed
 - Proposed Acoustic Barrier North Of BESS 2 Comprising Bund With Scattered Scrub And Trees And Acoustic Barrier



1:2,500 @A0

GREEN HILL SOLAR FARM

Figure 4.16.1
Green Hill BESS Option A
Landscape and Ecology Mitigation Plan
[END010170/APP/GH4.4.4.16.1]
5(2)(a)

APPENDIX 1.3: SURVEY EQUIPMENT

SPECTRA[®]
GEOSPATIAL

SP80



THE MOST CONNECTED
GNSS RECEIVER

spectrageospatial.com

SPECTRA[®]
GEOSPATIAL

SP80

- GNSS CHARACTERISTICS**

- 240 GNSS channels
 - GPS L1C/A, L1R/Y, L2C, L2P(Y), L5
 - GLONASS L1C/A, L1P, L2C/A, L2P, L3
 - BeiDou (Phase II) B1, B2
 - Galileo E1, E5a, E5b
 - QZSS L1C/A, L1-SAIF, L1C, L2C, L5
 - SBAS L1C/A, L5 (WAAS, EGNOS, MSAS, GAGAN, SDCM)
 - IRNSS L5
 - Support for Trimble RTX[™] real-time correction services
 - Patented Z-Blade technology for optimal GNSS performance
 - Full utilization of signals from all 6 GNSS systems (GPS, GLONASS, BeiDou, Galileo, QZSS and SBAS)
 - Enhanced GNSS-centric algorithm: fully-independent, GNSS signal tracking and optimal data processing, including GPS-only, GLONASS-only or BeiDou-only solution (Autonomous to full RTK)
 - Fast Search engine for quick acquisition and re-acquisition of GNSS signals
 - Patented SBAS ranging for using SBAS code & carrier observations and orbits in RTK processing
 - Patented Strobe[™] Correlator for reduced GNSS multi-path
 - Up to 20 Hz real-time raw data (code & carrier and position output)
 - Supported data formats: ATOM, CMR, CMR+, RTCM 2.1, 2.2, 2.3, 3.0, 3.1 and 3.2 (including MSM), CMRx and sCMRx (rover only)
 - NMEA 0183 messages output

REAL-TIME ACCURACY (RMS)⁽¹⁾⁽²⁾

SBAS (WAAS/EGNOS/MSAS/GAGAN)

- Horizontal: < 50 cm
 - Vertical: < 85 cm

Real-Time DGPS position

- Horizontal: 25 cm + 1 ppm
 - Vertical: 50 cm + 1 ppm

Real-Time Kinematic Position (RTK)

- Horizontal: 8 mm + 1 ppm
 - Vertical: 15 mm + 1 ppm

Network RTK (N)

- Horizontal: 8 mm + 0.5 ppm
 - Vertical: 15 mm + 0.5 ppm

REAL-TIME PERFORMANCE

- Instant-RTK[®] Initialization
 - Typically 2 sec for baselines < 20 km
 - Up to 99.9% reliability
 - RTK Initialization range: over 40 km

POST-PROCESSING ACCURACY (RMS)⁽³⁾⁽²⁾⁽⁸⁾

Static & Fast Static

- Horizontal: 3 mm + 0.5 ppm
 - Vertical: 5 mm + 0.5 ppm

High-Precision Static⁽⁹⁾

- Horizontal: 3 mm + 0.1 ppm
 - Vertical: 3.5 mm + 0.4 ppm

DATA LOGGING CHARACTERISTICS

Recording Interval

- 0.05 - 999 seconds

PHYSICAL CHARACTERISTICS

Size

- 22.2 x 19.4 x 7.5 cm (8.7 x 7.5 x 3.0 in)

Weight

- 1.17 kg (2.57 lb)

User Interface

- Graphical PMOLED display
 - WEB UI (accessible via WIFI) for easy configuration, operation, status, and data transfer

I/O Interface

- RS232 serial link
 - USB 2.0/UART
 - Bluetooth 2.1 + EDR
 - WIFI (802.11 b/g/n)
 - 3.5G quad band GSM (850/900/1800/1900 MHz) / penta-band UMTS module (800/850/900/1800/2100 MHz)

Memory

- 2 GB Internal memory NAND Flash (1.5 GB user data)
 - Over a year of 15 sec. raw GNSS data from 14 satellites
 - SD/SDHC internal memory card (up to 32GB)

Operation

- RTK rover & base
 - RTK network rover: VRS, FKP, MAC
 - NTRIP: Direct IP
 - CSD mode
 - Post-processing
 - RTK bridge
 - UHF repeater
 - UHF networking
 - Trimble RTX (Cellular/IP)

Environmental Characteristics

- Operating temperature: -40° to +85°C (-40° to +193°F)⁽¹⁰⁾
 - Storage temperature: -40° to +85°C (-40° to +193°F)⁽¹⁰⁾
 - Humidity: 100% condensing
 - IP67 waterproof, sealed against sand and dust
 - Drop: 2m pole drop on concrete
 - Shock: ETS300 D19
 - Vibration: MIL-STD-810F

Power Characteristics

- 2 Li-Ion hot-swappable batteries, 38.5 Wh (2 x 7.4 V, 2600 mAh)
 - Battery life time (two batteries): 10 hrs (GNSS On, and GSM or UHF Rx On)
 - External DC power: 9-28 V

Standard System Components

- SP80 receiver
 - 2 Li-Ion batteries
 - Dual battery charger, power supply and International power cord kit
 - Tape measure (3.6 m / 12 ft)
 - 7 cm pole extension
 - USB to mini-USB cable
 - Hard case
 - 2 year warranty

Optional System Components

- SP80 UHF Kit (410-470 MHz 2W Trx)
 - SP80 Field Power Kit
 - SP80 Office Power Kit
 - Data collectors
 - Ranger 3
 - T4i
 - MobileMapper 50
 - Nomad 1050
 - Field software
 - Survey Pro
 - FAST Survey
 - Survey Mobile (Android)
 - SPlace control app for 3rd party devices (Android)

1 Accuracy and TTFB specifications may be affected by atmospheric conditions, signal multipath, satellite geometry and corrections availability and quality.

2 Performance values assume minimum of five satellites, following the procedures recommended in the product manual. High multi-path areas, high PDOP values and periods of severe atmospheric conditions may degrade performance.

3 Long baselines, long occupations, precise ephemeris used

4 At very low temperatures UHF module should not be used in the transmitter mode.

5 Without batteries. Batteries can be stored up to +70°C.

6 Network RTK PPM values are referenced to the closest physical base station.

7 Receiver initialization time varies based on GNSS constellation health, level of multipath, and proximity to obstructions such as large trees and buildings.

	Horizontal (RMS)	Initialization	GNSS
CENTERPOINT [®] RTX	<4 cm	<30 mins, <5 mins	L1 + L2

CONTACT INFORMATION: Americas 10366 Westmoor Drive Westminster, CO 80021 • USA +1-720-587-4700 Phone 888-477-7516 (Toll Free in USA)	Europe, Middle East and Africa Rue Thomas Edison ZAC de la Fleurilaye - CS 60433 44474 Carquefou (Nantes) • FRANCE +33-(0)2-28-09-38-00 Phone	Asia-Pacific 80 Marine Parade Road #22-06, Parkway Parade Singapore 449269 • SINGAPORE +65-6348-2212 Phone	Please visit spectrageospatial.com for the latest product information and to locate your nearest distributor. Specifications and descriptions are subject to change without notice.
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Green Hill Solar Farm

APPENDIX 1.3: SURVEY EQUIPMENT

SP80 GNSS RECEIVER

The Spectra Geospatial SP80 is a next generation GNSS receiver that combines decades of GNSS RTK technology with revolutionary new GNSS processing. Featuring the new 240-channel "6G" chipset combined with the patented Z-Blade technology, the SP80 system is optimized for tracking and processing signals from all GNSS constellations in challenging environments.

As the most connected GNSS receiver in the industry, the SP80 offers a unique combination of integrated 3.5G cellular, Wi-Fi and UHF communications with SMS, email and anti-theft technology.

These powerful capabilities, packaged in an ultra-rugged housing and patented antenna design with unlimited operation time (hot-swappable batteries), make SP80 an extremely versatile turnkey solution.



KEY FEATURES

- Patented Z-Blade technology
- 240-channel 6G ASIC
- Hot-swappable batteries
- Internal TRX UHF radio
- 3.5G cellular modem
- Built-in WiFi communication
- SMS and e-mail alerts
- Anti-theft technology
- Backup RTK
- RTK Bridge
- eLevel technology
- Trimble RTX correction services

UNIQUE 6G GNSS-CENTRIC TECHNOLOGY

Patented Z-Blade processing technology running on a next generation Spectra Geospatial 240-channel 6G ASIC fully utilizes all 6 GNSS systems: GPS, GLONASS, BeiDou, Galileo, QZSS and SBAS. Unlike GPS-centric technology which requires a minimum number of GPS satellites for GNSS processing, Z-Blades unique GNSS-centric capability optimally combines GNSS signals without dependency on any specific GNSS system; this allows SP80 to operate in GPS-only, GLONASS-only or BeiDou-only mode if needed. In addition, SP80 supports the recently approved RTCM 3.2 Multiple Signal Messages (MSM), a standardized definition for broadcasting all GNSS signals from space, regardless of their constellation. This protects the surveyor's investment well into the future by providing superior performance and improved productivity as new signals become available.

SMS AND EMAIL MESSAGING

SP80 has a unique combination of communication technologies including an integrated 3.5G GSM/UMTS modem, Bluetooth and Wi-Fi connectivity, and optional internal UHF transmit radio. The cellular modem may be used for SMS (text message) and e-mail alerts as well as regular Internet or VRS connectivity. SMS (text messages) can be used to monitor and configure the receiver. Likewise, SP80 can use all available RTK correction sources and connect to the Internet from the field using WiFi hotspots, where available. The internal UHF transmit/receive radio allows for quick and easy setup as a local base station. This saves time and increases the surveyor's efficiency.

ANTI-THEFT PROTECTION

A unique anti-theft technology secures SP80 when installed as a field base station in remote or public places and can detect if the product is disturbed, moved or stolen. This technology allows the surveyor to lock the device to a specific location and make it unusable if the device is moved elsewhere. In this case, SP80 will generate an audio alert and show an alert message on its display. Furthermore, a SMS or e-mail will be sent to the surveyor's mobile phone or computer and provides the receiver's current coordinates allowing tracking of its position and facilitating recovery of the receiver. SP80's anti-theft technology provides surveyors with remote security and peace of mind.

TRIMBLE RTX CAPABLE

Trimble RTX correction services offer a wide range of accuracy requirements ranging from better than 4 cm accuracies, up to sub-meter accuracies, without the need of an RTK base station. Trimble RTX is available for the SP80 GNSS receiver via cellular/IP delivery. The premium service, CenterPoint® RTX is the most accurate satellite-delivered correction service available today. With the SP80 GNSS receiver and a Trimble RTX correction, achieve high-accuracy positioning nearly anywhere in the world.

THE MOST POWERFUL TOOL FOR RELIABLE FIELD USE

The SP80's rugged housing, created by Spectra Geospatial's engineering design lab in Germany, incorporates a host of practical innovations. Dual hot-swappable batteries can be easily exchanged in the field as a one hand operation for an interruption-free working day, ensuring surveyors remain productive until the job is done. The impact-resistant glass-fiber reinforced casing, designed to withstand 2m pole drops and waterproof to IP67, ensures that SP80 can handle the toughest outdoor conditions. The patented UHF antenna, set inside the rugged carbon fiber rod, extends the range of RTK radio performance at the same time as armoring protection. The sunlight-readable display offers instant access to key information like the number of satellites, RTK status, battery charge and available memory. With eLevel technology, the user is able to focus in one place when leveling and measuring as well as automatically store measurements when the receiver is level. These powerful design features combine to make SP80 the most capable, most reliable GNSS receiver, backed by a comprehensive standard 2 year warranty.



Patented
inside-the-rod
mounted UHF
antenna design



THE SPECTRA GEOSPATIAL EXPERIENCE

With the most advanced and rugged field data collectors from Spectra Geospatial, surveyors get maximum productivity and reliability every day. Spectra Geospatial Survey Pro or FAST Survey software is specifically tailored for the SP80 GNSS receiver providing easy-to-use, yet powerful GNSS workflows, letting the surveyor concentrate on getting the job done. Spectra Geospatial Survey Office Software provides a complete office suite for post-processing GNSS data and adjusting survey data, as well as exporting the processed results directly back to the field or to engineering design software packages. Combined with Spectra Geospatial field and office software, SP80 is a very powerful and complete solution.

APPENDIX 1.4: CAMERA EQUIPMENT (CANON 5D MARK IV)



Canon
EOS 5D Mark IV

APPENDIX 1.4: CAMERA EQUIPMENT (SIGMA 50mm f/1.4)



 Design detail



Incredible resolution ideal for the high-megapixel era. Introducing the new benchmark large-aperture standard lens

In 2008, Sigma released a large diameter standard lens designed for digital SLRs, "SIGMA 50mm F1.4 EX DG HSM". At that time, products for film cameras were prevalent, yet we spent enormous effort to set a new benchmark for the 50mm lens that optimizes the characteristics of digital cameras, such as compensating peripheral brightness, controlling the point images in the corners, and improving the image drawing, not only around the focusing point, but also other areas in the image.

APPENDIX 1.4: CAMERA EQUIPMENT (MANFROTTO 303 SPH)

