



National Tree Map[™] - Mapping Great Britain's vegetation

Bluesky International Ltd.

Alice Hilton, Environmental Product Specialist

About Bluesky



- •Leading aerial survey company in the UK
- •Headquarters in Ashby-De-La-Zouch, Midlands
- Privately owned
- •Established in 2003
- •Over 100 members of staff
- •History serving public and private sector, and academia
- Provide data to public sector through Aerial Photography for Great Britain Contract
- Unique products such as the National Tree Map™



National Tree Map[™] (NTM[™])

- •Trees above 3m in height
- •Created from Bluesky core products
- •National coverage across Great Britain and the Republic of Ireland
- •Updated in line with 2-year national flying programme
- Tree canopy map





NTM[™] specifications

- •3 layers:
- 1. Canopy Polygons
- 2. Idealised Crowns
- 3. Point
- •11 attributes including date of capture
- •Vector format shapefile as standard
- •British National Grid EPSG:27700









Applications of NTMTM





- Carbon capture calculations
- Tree management, including TPO's
- Urban Planning
- Insurance risk assessment
- Environmental modelling
- Tree inspections
- Canopy cover analysis
- Asset management











NTM[™] for biodiversity mapping

NTM[™] with mapping for planning





NTM[™] for statistical analysis



Urban Planning





- •Birmingham City Council
- •First Urban Forest Master Plan (UFMP) in the UK
- •Establish a baseline
- •Systematically monitor progress
- •Combining NTM with other datasets to ensure equitable tree cover across the city centre



Environmental Modelling





- •Relationship between trees, buildings, air flow and visual impact
- •Air quality modelling software
- •Modelling trapping pollutants, to aiding air circulation

•Other modelling:

- 1. Flood risk
- 2. Noise
- 3. Public health



Carbon capture calculations





•United Bank of Carbon, University of Leeds, White Rose Forest

•Single and small groups of trees

- •Traditionally used National Forest Inventory which missed 40% of tree cover
- More accurate and improved carbon estimations when using NTM[™]



Next steps for NTM[™]

- 1. Continually improving the process
- 2. National Hedgerow Map[™] (NHM[™])
- 3. NTM[™] services
- 4. Species identification





Trees in cities

- •High resolution input data 5cm
- •NTM[™] Premium for urban areas
- Increased accuracy and precision
- •Better segmentation
- •Increased applications





Shade mapping

1st of January 08:43 GMT to 16:35 GMT





1st of May 06:05 GMT to 21:00 GMT





•Using NTM[™] and DTM

- •Analysis of sun angle throughout the year
- •Shade analysis
- •Solar planning



Biodiversity Net Gain legislation



- •10% net gain of biodiversity for new developments
- Any loss must be compensated for
- •Encourages ecosystem protection and restoration
- •Size, quality, location and type
- •Vegetation mapping important now more than ever
- •Regularly updated geospatial data allows for planning pre-development and monitoring postdevelopment



Tree Planting Opportunity Mapping



- •Government target to plant 30,000 hectares a year
- •Using NTM[™] to calculate tree equity for planting prioritisation
- •Combining datasets to create a priority score public health, flood risk, heat islands
- •Other applications for tree planting
- 1. Tree planting for new developments
- 2. Tree planting to reduce environmental issues

National Hedgerow Map[™] (NHM[™])

- •Vegetation between 0.5m 2.99m in height
- •Created from Bluesky core products
- •National coverage across Great Britain and the Republic of Ireland
- •Updated in line with 2-year national flying programme
- Packaged with the NTM[™]





NHM[™] specifications

•2 layers:

- 1. Vegetation Polygons
- 2. Centrelines
- 3 NTM[™] layers
- •12 attributes including date of capture

Volumetrics

- Vector format shapefile as standard
- •British National Grid EPSG:27700



NHM_ID	NHM_SP8916
Max	2.53 m
Mean	1.62 m
Area	142.69 m ²
Length	29.96 m
Volume	231.15 m ³
Date	04-06-2023



Applications of $\mathsf{NHM}^{\mathsf{TM}}$





- Hedgerow restoration projects
- •Carbon storage calculations
- •Hedgerow monitoring and management
- Low vegetation mapping
- Habitat monitoring
- •Flood risk modelling
- Noise mitigation mapping
- Agroforestry management
- •Biodiversity Net Gain planning









Vegetation below 3m ≤ NHM[™]

Vegetation above 3m = NTM[™] ∖

bluesky

External

11/11/2024 SLIDE 20





Centrelines given to features over 20m in length, and less than 6m wide



3+30+300 analysis tool





- •Research based rule providing a guideline for urban greening
- 1. 3 trees
- 2. 30% canopy cover in neighbourhood
- 3. 300m from urban greenspace
- •Standard rule for monitoring urban greening across Europe
- Analysis by neighbourhood and building
- •Additional attributes overall score
- •GIS layers, PDF report, guidance documents



Buildings scored from 0 – 3 depending on how many of the components in 3+30+300 are met







Neighbourhoods attributed with information on number of buildings that meet each rule, and an average score

Census code	E00118937
# of buildings	35
Rule 3 Yes %	94.29
Rule 30	YES
Rule 300 Yes%	100
Avg. score	2.94
CC%	30.94

Future of vegetation mapping

- •NTM[™] continues to be a focus for Bluesky
- •Bringing new vegetation products to the market
- •Research and funding opportunities
- •Engagement with national and global organisations



