Signpost in 3D:

Use of LIDAR in surveying

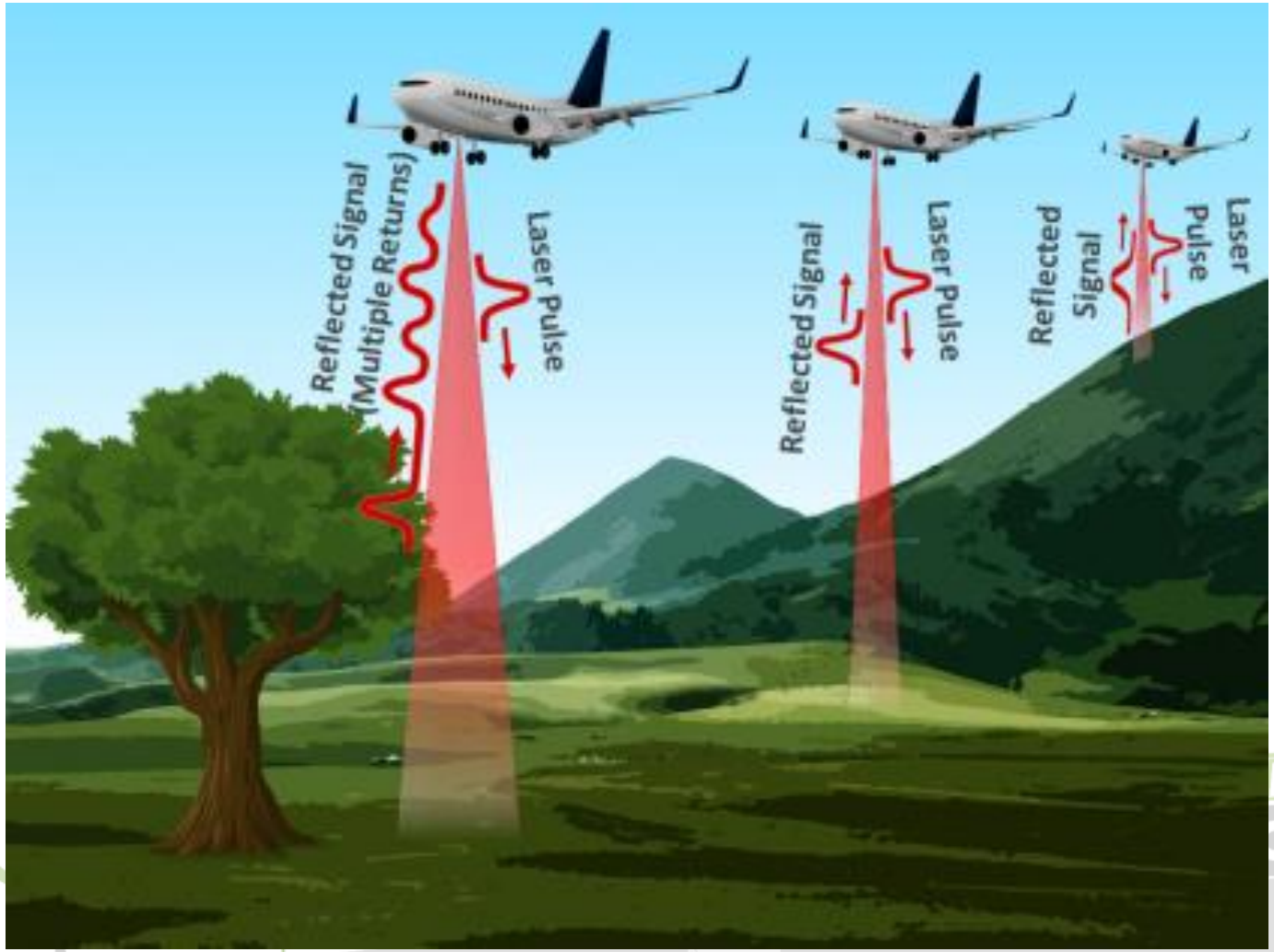
Dr Stuart Green

10th October

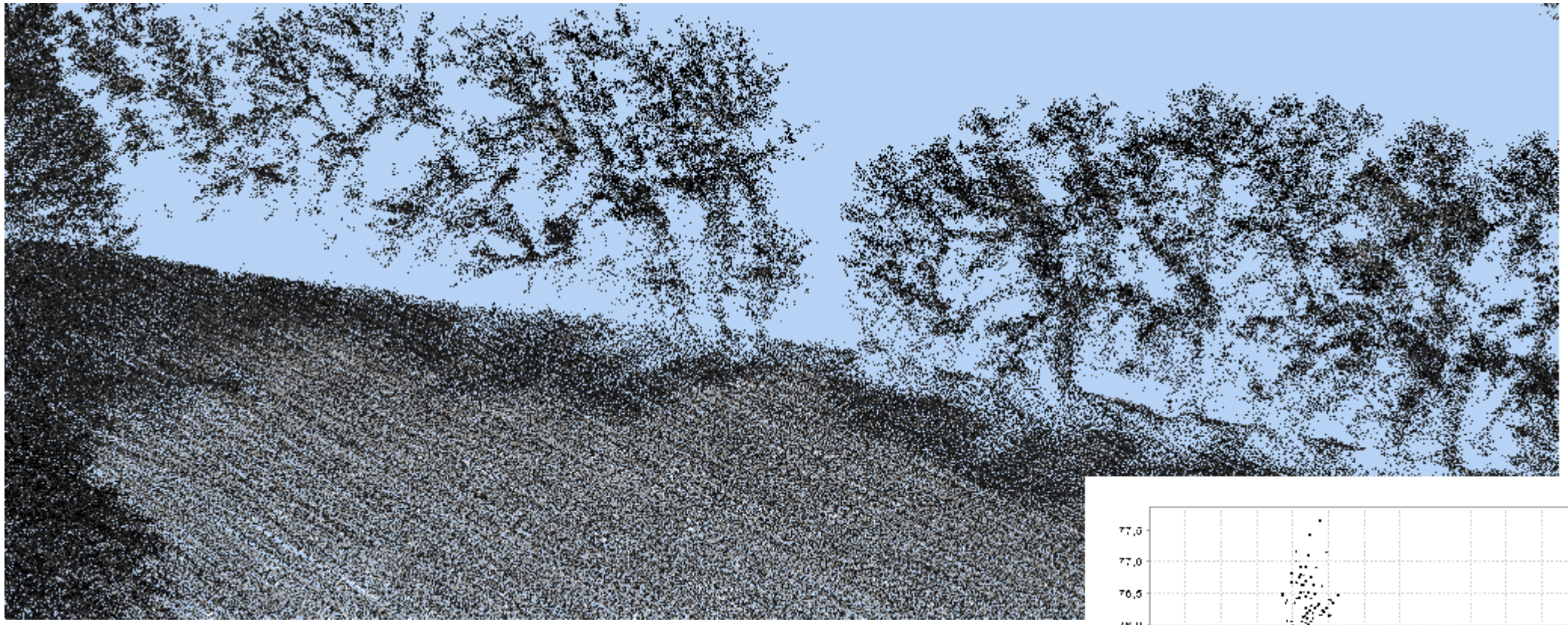
Signpost General Assembly

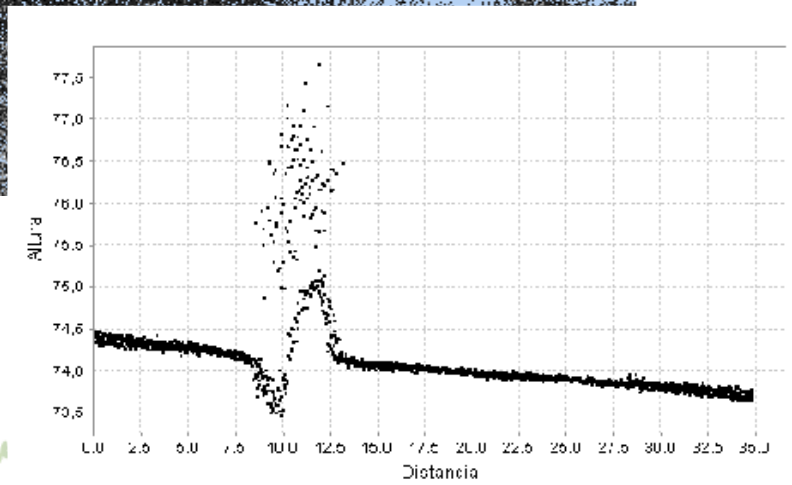
Trim Castle

LIDAR – light distance and ranging

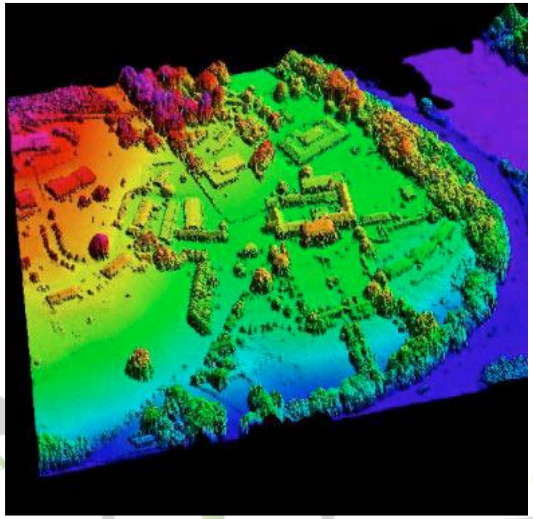


Close up to a hedgerow- each dot is a laser return





- One farm a day– but the flight its self is less than an hour
- Need good maps of farm boundaries- more fragmented the farm – the longer it takes.
- Each farm generates large amount of data- which needs processing
- There are three prodcts we create:
  - Digital Surface Model - DSM
  - Digital Terrain Model - DTM
  - Digital Canopy Model - DCM

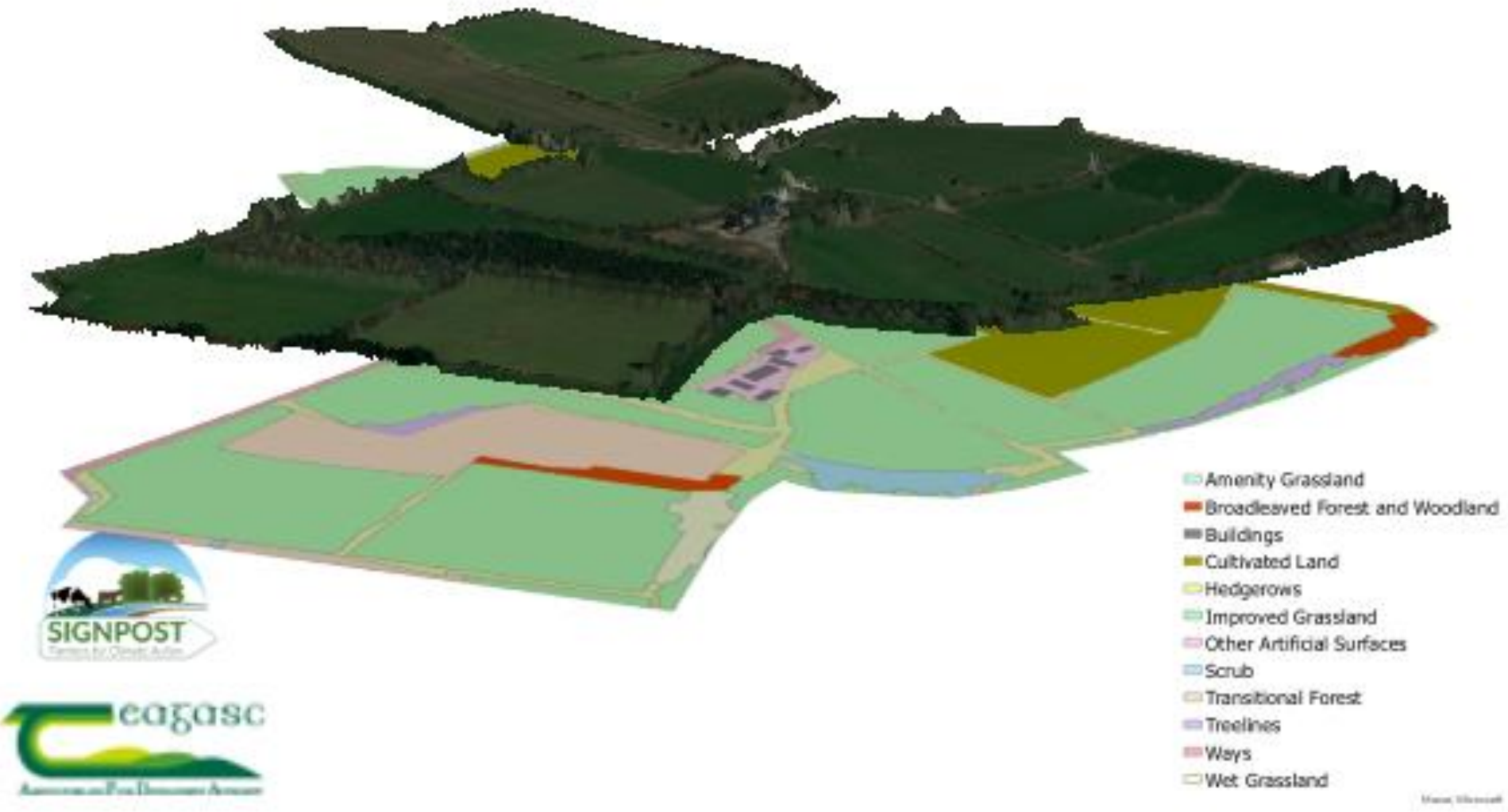


DSM

DTM

DCM

3D Model & Landcover Map



THE SIGNPOST PROGRAMME

Habitat Key

- Bare Soil
- Broadleaf Forest
- Drain
- Hedgerow
- Improved Grassland
- Treeline
- Trees

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Agriculture and Food Development Authority

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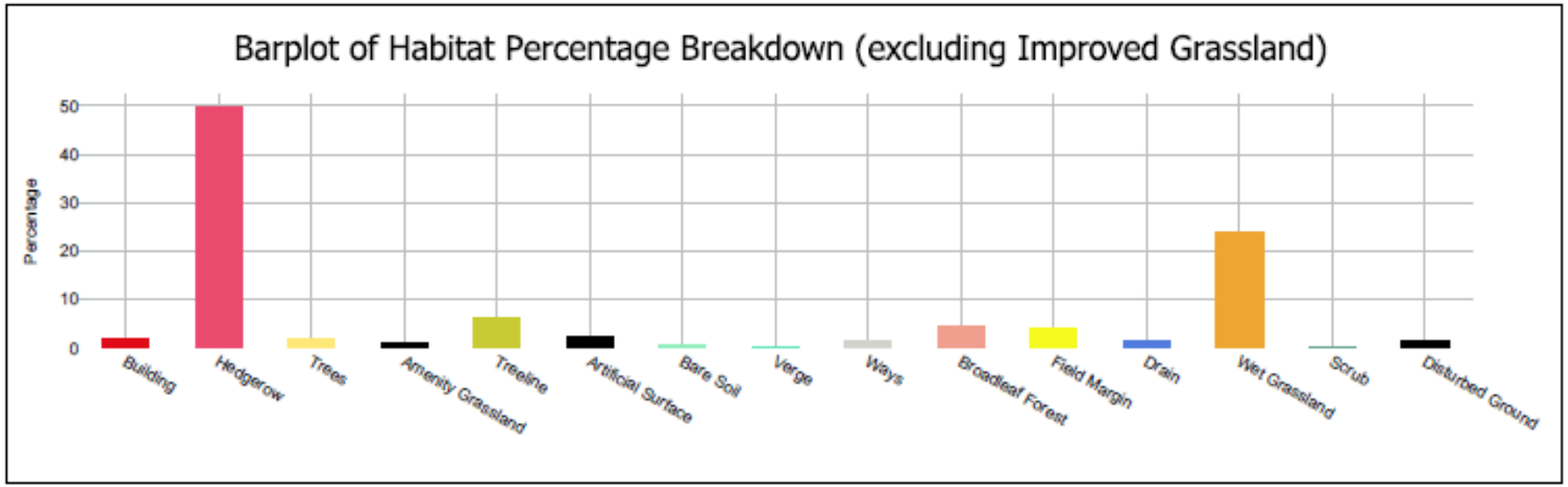


Habitat	Area	Percentage
Improved Grassland	116.2	87.4
Hedgerow	8.3	6.2
Wet Grassland	4	3
Treeline	1.1	0.8
Broadleaf Forest	0.7	0.5
Field Margin	0.7	0.5
Artificial Surface	0.4	0.3
Building	0.3	0.3
Disturbed Ground	0.2	0.2
Drain	0.2	0.2
Trees	0.3	0.2
Ways	0.2	0.2
Amenity Grassland	0.2	0.1
Bare Soil	0.1	0.1
Scrub	0	0
Verge	0	0

Habitat Percentage

This farm contains:

12% Habitat - the largest habitat present on this farm is Hedgerows at 6.2%

87% Improved Grassland

1% Other - this includes ways (roads), Buildings and Artificial Surfaces.

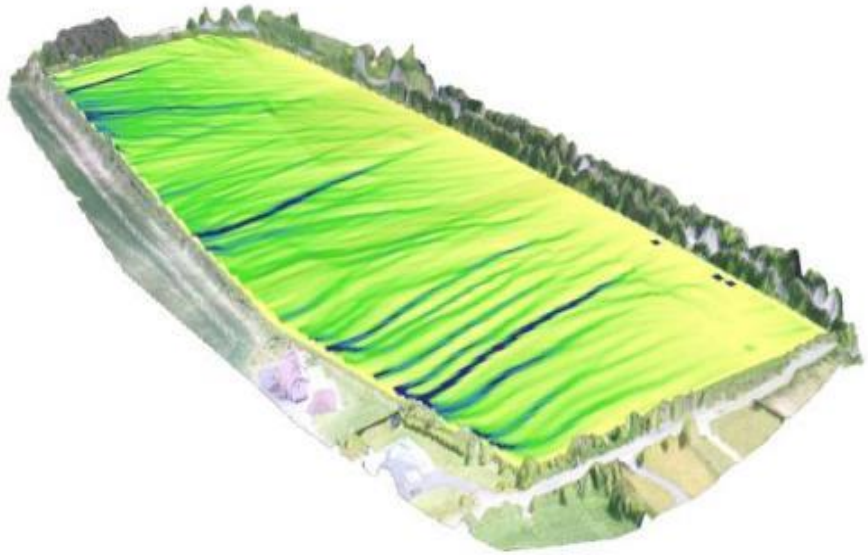
Comments:

Hedgerow Carbon

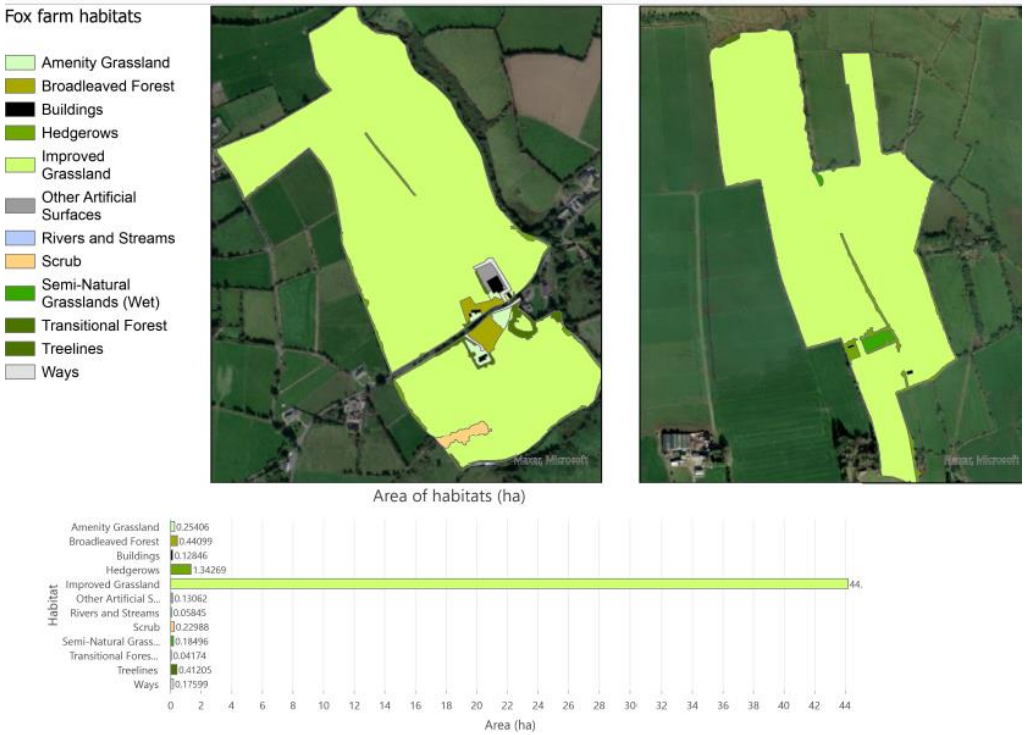
- We use the DCM to measure the Volume of hedgerows
- Using factors created in the Farm Carbon project we estimate the amount of Biomass
- Finally we convert Biomass to Carbon
- There is wide range of Carbon stored in Hedgerows over the Farm flown but the range over the farms flown is but 200-300 tons Carbon in the hedgerows per farm.
- This is NOT the same thing as the amount of EXTRA carbon stored each year (sequestration) – this depends on how the hedgerow is managed – if you top or heavily cut back a hedge your hedgerows stop being a SINK and Instead become a SOURCE

Future work: DRAINAGE FROM LIDAR

LIDAR, allows us to map 3D surface of a farm with great accuracy- meaning we can identify source of potential overland flow and we hope it will allow us to map DITCHES, even under Hedgerows



Assessing Quality of Biodiversity



Know your number for Biodiversity and Carbon

This work gives you a baseline for biodiversity and carbon, allowing you to assess the effectiveness of what changes you make over time.