Forest Measurement
IRELAND

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INDEPENDENT FORESTRY CONSULTANTS · IRELAND

Forest management, inventory and drone LiDAR survey — on the ground and from the air.

Forest Measurement Ireland Ltd (FMI) is an Irish forestry consultancy. Danny Quinn has provided forest measurement services since 2001; the company was registered in January 2012. FMI manages, measures, values and surveys woodland for semi-state companies, a national utility, investment fund managers, wind-farm and solar developers, private forest owners and farmers, in every county in Ireland — and has flown and processed its own drone surveys since 2016.

Since 2001
25 years measuring and managing Irish forests

1,000+ ha
under FMI management for utility and investment-fund owners

400+ pts/m²
LiDAR density across our most recent large mountain survey; 270+ ground points/m² beneath mature spruce

RDS finalist
Irish Forest & Woodland Awards 2025/26, Silvicultural Excellence and Innovation

Services

- **Forest management** — management plans, annual programmes, licensing, timber sales as the owner's agent (tender design, supervision, independent volume reconciliation — we neither buy timber nor harvest it), reporting.
- **Continuous cover forestry & biodiversity** — transformation silviculture, marking, permanent plot networks, Fossitt Level 3 habitat mapping, regeneration protection.
- **Inventory & timber measurement** — pre-sale measurement, inventory, calibration plots, feature collection, boundary marking, establishment and post-thinning surveys.
- **Aerial LiDAR, topographical & multispectral survey** — flown and processed in-house; terrain, canopy, tree health, damage and change.
- **Felling licences & consents** — felling and forest-road licences, Appropriate Assessment inputs, exemptions, replant-elsewhere land.
- **Valuation & crop assessment** — forest appraisal, timber volume assessment and forecasting, windblow, fire and disease assessment.

Sectors

Wind, solar and energy projects (forestry at every stage); funds, utilities and public bodies (estates managed under written plans to the owner's standards); private forest owners and farmers.

Fleet and processing

- **DJI Matrice 400 RTK** with **Zenmuse L2 LiDAR** (up to five returns per pulse, 240 kHz, integrated 20 MP camera) and **Zenmuse P1** 45 MP camera.
- **DJI Mavic 3 Enterprise Multispectral RTK** — 20 MP RGB and four-band multispectral.
- **DJI D-RTK station** — base station and GNSS rover for ground control and checkpoints; network RTK corrections for aircraft and rover.
- Processing in **DJI Terra** on a dedicated workstation; QGIS for mapping and GIS layers; R for tree-level analysis; secure cloud share for delivery.

The topographical survey method

- Ground control on open ground and forest roads, measured twice by survey-grade GNSS; at least 20% of points withheld as independent checkpoints, never used in processing.
- Irish Transverse Mercator (EPSG:2157) and heights to Malin Head datum via the OSGM15 geoid.
- LiDAR at 70–100 m above ground with terrain following, up to five returns per pulse, RTK-corrected throughout; imagery at 120 m.
- Achieved accuracy tested against the withheld checkpoints and reported at 95% confidence, separately for hard detail, open ground and forested ground; density reported from the processing quality reports for open ground and beneath canopy.
- Two-person sign-off before release; field data backed up to two drives on the day; deliverables checksum-verified; secure archive for six years.

Deliverables

Datasets. Raw and classified point clouds (LAS 1.4 / LAZ, tiled, with metadata); DTM and DSM GeoTIFF at 0.25 m or finer; canopy height model at 0.25–0.5 m; orthomosaic and index GeoTIFFs at 1.3–5 cm; contours at 0.5 m and 1 m in Shapefile and AutoCAD DWG; individual-tree and canopy-gap shapefiles; survey control schedule (Excel and PDF); survey report (editable and PDF); fly-through video on request.

Maps (A2/A3 PDF). Orthophotography; terrain model and hillshade; canopy height and gaps; tree detection with top heights and stocking; multispectral indices (NDVI, GNDVI, NDRE, OSAVI, LCI) and tree-health assessment; stocking and productivity grids; flood simulation; fire and windblow damage classification; a plain-English managers' guide.

The team

A team of nine. Every forester holds a degree in forestry; foresters are based in Sligo, Cavan, Kildare, Wicklow, Wexford, Kilkenny, Waterford and Tipperary and work in every county.

Managing Director	Danny Quinn, MSc Forest Industries Technology, BSc Forestry, MSIF; Diploma in AI for Business (UCD, 2025). Forester since 2001; member of the Society of Irish Foresters; IAA-registered pilot; consultant forester to a national utility's wind and generation businesses.
Senior forester & operations manager	Data management and processing lead — 13 years in GIS and remote sensing (ArcGIS/QGIS, DJI Terra, R, Python, individual-tree segmentation); IAA-registered pilot.
Aerial operations consultant	Mission planning and aviation safety — a serving airline captain and former Air Corps helicopter pilot, UAS instructor and examiner, aviation lead auditor; has overseen FMI's operations manual since 2021; IAA-registered pilot.
Forester / assistant operations manager	Site lead for ground crews, ground control and visual observation; author of a utility estate's management plan; licence applications; replacement-land valuation.
Foresters (three)	Field survey, ground control and visual observation; 7–10 years' experience each.
Director / safety advisor	BSc (Hons) Safety Management; 20+ years as HSE manager in forestry, engineering, pharmaceutical and medical-device sectors; FMI's safety system since 2011.

Environment, social and governance

- Greenhouse-gas inventory, March 2025–March 2026, aligned with ISO 14064-1 and the GHG Protocol: 92.7 tCO_2e; 2.87 kg CO_2e per hectare surveyed; vehicle travel the main source.
- Drone LiDAR replaces manned aircraft for acquisition and reduces inspection-path cutting; site work grouped geographically.
- Nature-positive practice on the estates we manage: an 82-plot biodiversity network, Fossitt Level 3 habitat mapping, native regeneration protected with recorded shelters rather than fencing, deadwood retention; a hen harrier habitat plan for an operating wind farm.
- An Irish SME whose foresters live locally; training and support for further study; members of the Society of Irish Foresters and ProSilva Ireland; drone hardware part-funded by Kilkenny County Council.
- Named author and reviewer on every plan and report; data limitations disclosed; just-culture reporting for aerial operations.

Compliance and accreditation

- **Aviation** — IAA-registered drone operator, Operator ID IAA-2021-28153; three IAA-registered pilots (Open category); operations manual overseen by a commercial pilot since 2021; documented risk assessment for every task; flights logged; survey flights in controlled airspace under IAA permission and ATC coordination.
- **Insurance** — aviation liability, professional indemnity, public liability and employer's liability; motor on all vehicles. Certificates on request.
- **Safety** — Safety Statement under the Safety, Health and Welfare at Work Act 2005; quarterly risk assessments and audits; site-specific RAMS; crews Safe Pass, first-aid, manual-handling and environmental-risk trained; registered contractors with the state forestry company and the national utility.
- **Quality** — documented procedures aligned with ISO 9001; integrated management system aligned with ISO 9001, 14001 and 45001 (not third-party certified); two-person sign-off on every dataset; 100% on-time delivery on our national measurement contracts since 2017.
- **Registration** — DAFM Registered Foresters; CRO 508010; VAT 9815611D; tax clearance held.
- **Data protection** — GDPR and the Data Protection Act 2018; survey imagery used solely for the commissioned purpose, held on access-controlled systems in Ireland; privacy notice on our website.
- **On site** — protected-species checks, Natura 2000 / Appropriate Assessment conditions, aquatic setbacks, biosecurity; no vehicles off forest roads; ground-control targets the survey's only footprint.

Recent work

Mountainside forest, Connacht — LiDAR-enhanced inventory, 2025/26

Nearly 300 ha of mature spruce with no forest road: 1.19 billion points at over 400 per m^2, more than 270 classified ground points per m^2 beneath the canopy; terrain and canopy models, tree segmentation, revised subcompartments and volumes.

Estuary-side forest, south-east — multi-sensor survey, 2026

LiDAR, 45 MP and multispectral imagery; ground-classified terrain model referenced to Malin Head datum; canopy height, gaps and tree detection; flood simulation that located a weak embankment section to a grid reference.

Operating wind farm, Munster — restock assessment and habitat plan, 2025-26

Multispectral survey inside the operating wind farm, field inspection and soil investigation: 4.02 ha for remedial work; a hen harrier habitat plan with volumes, zones and the licensing route.

Utility forest estate, Leinster — forest manager since 2019

A 640 ha lakeside estate, 418 ha of it forest, in a drinking-water catchment beside an SPA: management plan, continuous cover from 2025, timber sales by scored tender, 82-plot biodiversity network, habitat mapping, repeat orthophotography; RDS finalist 2025/26; host site of the EU Nature Directors' visit, September 2026.

Also

One of the largest single-layer continuous raster outputs generated by drone in Ireland — over 1,000 ha of fire-damaged forest in one orthophoto layer (2020); road and access planning for a land-locked property; a 121 ha inventory benchmarked against ground plots; larch Phytophthora surveys of nine properties; solar projects nationwide.