



Transmission & Distribution

Multidisciplinary
Capabilities





Early stage engagement

Arthian's multidisciplinary teams provide integrated support to our clients, managing client risk and compliance on renewables and transmission and distribution projects.

We are often asked how we add value through our multidisciplinary services and our response is always 'early engagement and an integrated approach'.

We work across all aspects of the gated decision-making process to support clients on the journey from business case to build and through construction and operational start-up.

Our experience in project life cycle management and long-standing client relationships means our teams have gained incredible experience in providing Project Identification and Feasibility Assessments, Early Contractor Involvement, Pre-FEED Development and Options Appraisals, FEED support and Detailed Design Strategies.



Project lifecycle support





Civil engineering design

Arthian's Engineering team are experienced in providing onshore civil engineering design and support across key areas of renewables projects:

- Cable landfall
- Civil Engineering support for underground cable routes
- Substation Site Design & Enabling Works

Our services include:

- CDM Principal Designer duties
- Design Intent Documents
- Horizontal directional drilling (HDD) works design & support
- Duct installation design
- Trenchless and 'open cut' cable installation design
- Drainage & SUDS Design
- Compound & substation design
- Design of transition and joint bays
- Pulling pit design
- Contractor welfare compounds and storage
- Swept Path Analysis
- Haul Roads and laydown facilities
- Road tie-ins and bellmouth junctions.
- Temporary works design
- Services / utility protection
- Ground Investigation





Buildings, Compounds & Operational Depots

Our Buildings team has extensive experience in designing large and complex buildings, compounds, and operational depots to support major onshore cabling and renewables projects. We work with clients delivering offshore wind connections, providing infrastructure for cable landfalls and the critical onshore links to substations. With significant distances often involved between landfall points and substations, the design and delivery of well-located operational depots and support compounds is vital to the success of the project — and it's an area where our team excels.

- Combined office, control room and data centre design capabilities
- Design of workshop and store buildings.
- Substation & switchgear building design.
- Design & specification of modular buildings to support speedy off site construction. This can be beneficial for remote sites where labour can be a challenge.
- Site master planning.
- Operations depot design
- Temporary accommodation and welfare facilities.
- SER Certification (in Scotland.
- Fencing and security
- SUDS drainage design.
- Earthworks including cut and fill analysis.
- Retaining wall design.





Geotechnical engineering

Our geotechnical engineering expertise underpins projects in construction, and onshore renewables. Our team helps prevent project delays and overspends by providing pragmatic solutions and technical advice. Our work helps to form the foundations of planning, design, enabling works and construction choices from the outset.

Engineering design. The interpretation of data and the production of ground models for input into preliminary and detailed engineering designs. The geotechnical engineering design includes bearing capacity, stress and settlement calculations.

Crane pad design and assessments. Design of crane pads and mats/piling platforms.

Temporary works design and certification. Temporary works design and category 3 checks of designs undertaken by others. For example, the design check of rigid inclusions for crane mats.

Investigation Supervisor. Arthian design, procure, manage and supervise ground investigations. We undertake the role of investigation Supervisor to ensure the quality of the ground investigation and provide Ground Investigation Reports (GIR) and Geotechnical Design Reports (GDR).

Wind Turbine Generator Foundations & Load Bearing Capacity. Geotechnical site investigation and foundation design methodology.

Riverbank erosion assessment and remediation. Assessment of riverbank failures adjacent to site infrastructure and loading facilities.





Temporary & enabling works

Arthian has designed a wide range of geotechnical, temporary and enabling works solutions to support onshore renewable projects. With more than 25 years of experience, our team has helped our clients to define requirements and restrictions and identify where time and cost

- **Temporary access tracks and haul roads.** Access from public road networks, temporary haul road design & construction alongside cabling route to access the installation worksites.
- **Temporary Crossings & Culvert Design and Assessments.** In cases where crossing local water features and ditches is a requirement for site access.
- **Security, Fencing & Traffic Management.** Management of public rights of way, diversions and signage.
- **Load-bearing working platforms for converter stations**
- **Mobile crane access & crane pad designs.** Assessment of ground conditions & advising on ground improvements for safe crane operations. Development of site-wide ground loading guidance for crane operations.
- **Temporary storage landscape bunds.**
- **Temporary access structures.** Including ramps and bridges over pipes and services





Surveying services

All site surveying works are conducted under stringent HSE and Risk Assessed Method Statements (RAMS) procedures. Our team provide key stage 1 inputs to engineering and environmental teams for design, land modelling, EIA areas and volumes.

Our Services include:

- Topographic Surveying with area, volume and section details coordinated to OS National Grid
- Site & Project Boundary surveys
- Laser scanning
- Utility Detection & Mapping Surveys
- PAS 128 GPR (Ground Penetrating Radar) Survey Categories Type B, C & D. We can support category A studies if required.
- Depth of cover surveys
- Aerial Drone Lidar Surveys for Environmental Impact Assessments of corridors including:
 - Extents of existing structures
 - External eaves and ridge levels of all buildings within survey area including overhead power line and telegraph wires.
 - Street furniture and visible ground features including manholes, covers, gullies & lighting columns
 - Tree line extents
 - Water & drainage features
 - Location & levels of roads, tracks, soft landscaping, hard standings and paved areas including kerb





Planning Support

Screening & Scoping

Using our multi-disciplinary in-house teams, coupled with consultation, regulator liaison and stakeholder engagement, Arthian can help to develop the design criteria for the project, tailoring baseline studies and assessments to the level of information available and the likelihood of significant impacts.

Planning Support

In support of planning applications, our EIA management services also include:

- Preparation/co-ordination of introductory chapters to the ES
- Cumulative effects assessment
- Schedule of mitigation
- Non-technical summaries
- Project co-ordination and planning support

Consultancy & Technical Services

Our integrated teams can also provide support with the following services:

- Landscape, townscape and visual impact assessments
- Archaeological/cultural heritage/historic environment studies
- Flood risk assessments, and assessment of impacts to water resources and hydrology
- Transportation assessments
- Air quality assessments





Ecological surveys & assessments

- Preliminary Ecological Appraisals: Identifying constraints and opportunities, Phase 1 Habitat Surveys, Protected Species Walkover Surveys, Building and Tree Inspections, Invasive Species Surveys, & Ecological Constraint Reports
- Specialist Ecological Surveys: Protected Species Surveys, Habitats Regulations Assessments, Biodiversity Accounting & Offsetting, Ecological Risk Registers, Licenced Species Monitoring & Tree Climbing.
- Ecological Impact Assessments: Screening, scoping and consultations, Baseline Ecological Surveys, Ecological Impacts & Mitigation, and Environmental Statements.
- Licensing and Mitigation: We have extensive experience supporting rail client's in Development Licensing Advice, Species Protection Plans, Enhancement and Mitigation Design, Bat Roost Exclusion, Habitat and Species Translocation, and Badger Setts Exclusions and Artificial Setts Design.
- Ecological Clerk Of Works (ECOW) & Project Management: Client/Regulator Liaison, Toolbox Talks and Site Supervision, Scheme Constraint Management, Site Auditing and Data Capture, Protected Species Compliance, and Works Programme Advice.

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|-----------------|-----------------------|-----------------------------|
| • Badgers | • Wildcats | • Water voles |
| • Bats | • Invasive Plants | • Beavers |
| • Birds | • Great Crested Newts | • Fish Habitats |
| • Red Squirrels | • Reptiles | • Fresh Water Pearl Mussels |
| • Pine Martens | • Otters | • White Clawed Crayfish |





ENVIRONMENTAL CLERK OF WORKS

We provide proactive compliance solutions, starting early in the project lifecycle to ensure seasonal surveying windows are observed to produce considerable programme savings and minimise scheduling delays. Through regular liaison with planning and environmental regulators, Arthian successfully develops client solutions that allow key project performance objectives to be met. Our staff are fully CSCS Qualified and can provide:

- Compliance with permits/consents/licences
- Onsite training
- Auditing
- Compliance monitoring
- Bespoke mitigation strategies
- Environmental management documents
- Pollution Prevention Plans (PPP)
- Development of risk registers
- Liaison with Regulators / Stakeholders
- Advice on Restoration Plans
- Post Construction Monitoring / Close out reports
- Incident response plans and monitoring

SAFETY

Our staff are fully trained and competent in the environmental management of onshore renewables projects. Our long standing client relationships are reflective of our safety standards.

EFFICIENCY

We understand that CAPEX projects rely on programme efficiency. We'll work to keep your project on schedule through proactive management of surveying windows, and licensing & permitting requirements.

EXPERIENCE

Our team have over 25 years of varied experience in the industry and our senior members of staff have previous regulator experience. This knowledge allows us to provide best in class advice to ensure planning requirements are successfully met.



Environmental management

NOISE & VIBRATION ASSESSMENTS & MONITORING

- Baseline noise assessments – construction and operation
- Predictive calculations for construction noise – NIA / NMP (to support section 61), and noise time plans
- Noise predictions for operational noise
- Road traffic noise predictions
- Vibration calculations for construction – VIA and VMP
- Vibration calculations to protect utilities/sensitive plant and pipelines
- Stakeholder liaison
- Dilapidation Surveys by Chartered Engineers
- Construction phase NV monitoring and strategies.

LICENSING, CONSENTS & PERMITS

- Protected Species Licensing
- HRA support for designated areas SAC's, RAMSAR sites, SPA's
- EIA Guidance and support
- SSSI Consents
- Tree Preservation Orders (TPO's)
- Demolition Warrants
- Listed Buildings
- CAR Authorisations including Pollution Control (including Construction Run-off Permits), Engineering, Abstraction, and Impoundments
- WFD Standard and Bespoke Permits including Exemption
- Marine Licences and Exemptions
- Pollution Prevention Control Permits
- Waste Management Licences and Exemptions





Environmental management

WATER MANAGEMENT

- Flood Risk Assessments
- Early design input and consent requirements
- Regulator Liaison & Licensing Support
- Stakeholder Engagement
- Pollution Prevention Plans
- Production of support documentation such as Detailed Construction Method Statements & Surface Water Management Plans
- Mitigation design and advice, Tool Box Talks
- Construction Environmental Management Plans (CEMPs & Design EMPs)
- EnCoW including water quality monitoring, surface water and PWS
- Pre- and post- construction monitoring

WASTE & MATERIALS MANAGEMENT

- Land Contamination Assessments
- Material Management Plan (MMP)
- Rapid soil testing for metals and hydrocarbons
- Waste management advice
- Site Waste Management Plans





Biodiversity accounting & offsetting

Onshore renewables and transmission corridor's are often places of natural refuge for ecosystems comprised of different plant and animal habitats.

The embankments, tree lines and overhead structures are a haven not only for protected and priority species but also act as connecting corridors between habitats. Arthian are committed to helping our clients preserve these areas of biodiversity through careful planning, inspection and remediation strategies including:

- Biodiversity accounting tools to capture losses, degradations & gains in habitats impacted by project works
- Biodiversity Accounting for 'no net loss' or 'net gain' outcomes
- Biodiversity Offsetting & Conservation activities designed to deliver measurable biodiversity benefits in compensation for losses
- Habitat Management



TRANSMISSION & DISTRIBUTION SERVICES

Related services

Buildings & Blast Resistant
Structures

Occupational Health & Safety

Accoustics/Noise Assessments

Landscape & Heritage
Assessments

Climate & Carbon

Sustainability Strategies

Energy Engineering &
Decarbonisation Strategies



16 Locations across the UK & Ireland



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