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**Distributed Energy**

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**Training Course and Seminar Prospectus 2011**



## About Narec

Narec is the national centre for the UK dedicated to advancing the development, demonstration, deployment and grid integration of renewable energy and low carbon generation technologies.

At Narec, we assist the renewable energy and power industries in evolving technology systems and electrical networks to accommodate the changing characteristics of energy resources and usage. Upholding high industry standards for testing and certification, we are dedicated to preserving the integrity of the electrical supply network through technology-led innovation.



Our clients range from large multi-national companies to new market entrants, local authorities and major investors. Our goal is to take commercially viable technology to the market, in the interest of mitigating the impact of CO2 whilst maintaining security of supply at reasonable cost.

We work with partners to generate new intellectual property for subsequent commercialisation and are actively looking to grow our R&D portfolio, through partnerships with industry and universities in the delivery of publicly-funded programmes and contract research.

## Scope

### UK Energy Policy

Faced with carbon reduction targets and the need to secure affordable future energy suppliers, the deployment of renewables is expected to play a growing contribution to the UK energy mix. The feed-in tariff (FiT) scheme, introduced by the UK government in April 2010 to incentivise small scale, low carbon electricity generation is a key driver in encouraging the deployment of renewable energy and low carbon technologies. Similarly, the Renewable Heat Incentive (RHI) is expected to further stimulate the growth of installation of commercial and domestic renewable systems leading to an extension to the current skills gap across the UK.

### Skills and Training

A high quality mix of bespoke and accredited training will play a vital role in ensuring the UK has the necessary skills competences required for working within the renewable energy industry. The skills gap is a key issue for the UK as it ramps up renewable energy generating capacity over the next ten years.

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## Training at Narec

Narec's training centre was established to address the skills gap in the market. Our purpose built training facility offer delegates an opportunity to undertake a variety of courses using a range of high quality training rigs and actual installations. The facility also offers technicians and engineers the knowledge they require to install, operate and maintain renewable energy systems, and gain accredited qualifications recognised by MCS. Class sizes are kept to a minimum to ensure the highest possible level of interaction.

Courses developed for installers will also assist local authorities, organisations, businesses, communities and individuals in understanding and taking advantage of the various financial incentives for renewable energy installation.

Narec's Training Centre is fitted with a range of renewable technologies and systems allowing delegates to gain hands-on training as well as practical demonstration. The technologies installed include:

- A roof mounted photovoltaic array
- A solar thermal system
- An air source heat pump
- LED Lighting

## Training Courses

Narec's practical and industry led training courses are designed to support the skills and knowledge requirements for the new and renewable energy sector. Courses include:

- Accredited installer courses, including - solar thermal, air and ground source heat pumps and solar PV installer courses
- Health and safety training
- Market insight seminars
- Bespoke packages

Courses have been developed to meet the requirements of the Microgeneration Certification Scheme (MCS), an independent scheme that certifies microgeneration products and installers in accordance with consistent standards.

## Narec Training Courses

| Course Title  | Duration                      | Cost       |
|---|-------------------------------|------------|
| Introduction to Renewable Technologies                | 1 Day                         | £195 + Vat |
| Accredited Solar Photovoltaic Installer               | 3 Days (Including Assessment) | £569 + Vat |
| Accredited Heat Pump Installer                        | 3 Days (Including Assessment) | £569 + Vat |
| Accredited Solar Thermal Domestic Hot Water Installer | 3 Days (Including Assessment) | £569 + Vat |
| Photovoltaic System Design and Applications           | 3 Days                        | £895 + Vat |



## Introduction to Renewable Technologies

This basic introduction to renewable technologies course is designed to give delegates an industry overview and understanding of the wider term 'renewable technologies'. Technologies include photovoltaic arrays, solar thermal, wind, biomass and wood fuels as well as an introduction to other technologies. The course also invests time in both the Feed-in Tariff and Renewable Heat Incentive: offering delegates the opportunity to find out more about financial incentives offered by government grants to support the installation of microrenewables on domestic and small scale commercial facilities.

Subjects covered include:

- Introduction to energy and government policy
- Low carbon heating: Biomass
- The Solar source
- Solar thermal domestic hot water
- Solar photovoltaics
- Wind Energy
- The Feed-in Tariff and Renewable Heat Incentive
- Other Technologies: Water Power and Anaerobic Digestions etc

### Target Audience

This course is aimed at, but not exclusively to companies interested in developing a greater understanding of the financial benefits to be gained from installing small scale renewable technologies that generate electricity or heat. Potential installers of these technologies (including electricians, heating engineers, plumbers, roofing contractors) as well as businesses who are considering deploying the technology in their own premises will also benefit from attending. The general public may also be interested in attending to find out more about what these technologies mean for their region.

|                        |  |
|------------------------|--|
| <b>Course Duration</b> | 1 Day  |
| <b>Course Location</b> | Blyth, employer premises, or Nationally according to demand and requests |
| <b>Course Cost</b>     | £195 + Vat   |

## Accredited Solar Photovoltaic Installer Course



The purpose of this installer training is to give candidates an entry level qualification to build upon current electrical knowledge in order to extend their scope to include the installation of solar photovoltaics. This course covers installations up to 5kWp output and includes a unique tour of Narec's world renowned photovoltaic technology centre where solar cells are designed, manufactured and tested.

### Course Outline

Whilst this course is aimed at practicing electricians, it may also be of benefit to building service engineers, electrical designers, structural engineers, energy solution consultants and architects. The logic qualification will only apply to candidates who meet the requirements of the logic scheme. Delegates must have a working knowledge of domestic electrical installations and be able to design, install, inspect, test, and issue documentation for a single phase circuit.

The course will cover the following topics:

- The fundamental aspects of photovoltaics
- Safety requirements relating to the installation of electrical installations
- Basic electrical components and test instruments used
- Simple AC & DC electrical circuit arrangements
- Electrical regulations (17<sup>th</sup> edition) and legal requirements of installations
- Installing, commissioning and testing a fully working system
- Backgrounds into market and grant funding routes
- Regulations and standards
- Health and safety considerations
- Cell types and benefits
- External and internal site survey requirements
- Service and fault finding



### Assessment

The final assessment for the course will take approximately one hour and is in the form of a multiple choice paper with a pass mark of 100%. There is also a practical assessment associated with this certification. Delegates who meet the Logic requirements will receive certification.



### Candidate Entry Requirements

It will be essential that the candidate will be experienced in the design & installation of domestic single phase circuits and issuing the appropriate documentation (electrical installation certificate, schedule of inspections & schedule of test results). It is also essential that the candidate holds a qualification that demonstrates their knowledge and understanding of BS7671:2008 17<sup>th</sup> Edition Wiring Regulations and has a sound knowledge and understanding of the Building Regulations.

Typically eligible candidates will be those who hold an Electrotechnical NVQ Level 3 or a Full Scope Part P qualification and 17th Edition Wiring Regulations and have at least 2 years experience.



|                        |            |
|------------------------|------------|
| <b>Course Duration</b> | 3 Days     |
| <b>Course Location</b> | Blyth      |
| <b>Course Cost</b>     | £569 + Vat |

## Accredited Heat Pump Installer Course

With fuel prices rocketing, rising CO<sub>2</sub> levels and energy supply becoming ever more critical, one technology that is sure to make a positive impact in this country is Heat Pumps. Whether ground source or air source, heat pumps are set to become a major contributor to reducing the amount of CO<sub>2</sub> emitted by the UK when producing heat in the domestic and commercial sector. Most major heating manufacturers are now either actively selling or about to bring heat pumps to the market.

The purpose of this installer training is to give candidates an entry level qualification to build upon current heating or plumbing trade knowledge in order to extend their work scope to include the installation of heat pumps.



### Course Outline

Whilst this course is aimed at practicing heating or plumbing operatives, it may also be of benefit to building service engineers, designers, structural engineers, energy solution consultants and architects. The logic qualification will only apply to candidates who meet the requirements of the logic scheme.

The course will cover the following topics:

- Market insight and background
- Regulations and Guidance
- Principles of heat pump operation
- Collector types
- Heat distribution
- Pre-installation requirements and design guidance
- Insulation materials and methods
- Filling, flushing and testing
- Setting to work and commissioning
- Servicing and fault finding

Please note that this course does not include bore hole drilling or significant ground work, use of heavy plant and equipment or handling of refrigerants. Units covered in this course are pre-charged sealed units and do not require the refrigerant circuits to be broken.

### Assessment

The final assessment for the course will take approximately one hour and is in the form of a multiple choice paper with a pass mark of 100%. There is also a practical assessment associated with this certification. Delegates who meet the Logic requirements will receive certification.

### Candidate Entry Requirements

It will be essential that the candidate will be able to demonstrate their competencies as a qualified heating or plumbing operative

|                        |            |
|------------------------|------------|
| <b>Course Duration</b> | 3 Days     |
| <b>Course Location</b> | Blyth      |
| <b>Course Cost</b>     | £569 + Vat |



## Accredited Solar Thermal Domestic Hot Water Installer Course



Solar thermal installations have seen a marked increase in the past year and with the introduction of the Renewable Heat Incentive (RHI), these numbers are set to increase dramatically.

The purpose of this installer training is to give candidates an entry level qualification to build upon current heating or plumbing trade knowledge in order to extend their work scope to include the installation of Solar Thermal Domestic Hot Water Systems.

This installer course covers the predominant North European fluid filled, indirect heating systems. The course does not cover all possible variants of this subject and in many cases, the support and guidance of the manufacturer would be sought upon fitting the equipment.

The course covers the following main types of system collector types:

- Fully filled sealed systems
- Drain back systems
- Flat plate collector
- Evacuated tube collector
- Direct flow evacuated tube collector



### Course Outline

Whilst this course is aimed at practicing heating or plumbing operatives, it may also be of benefit to building service engineers, designers, structural engineers, energy solution consultants and architects. The logic qualification will only apply to candidates who meet the requirements of the logic scheme.

The course will cover the following topics:

- Market insight and background
- Regulations and Standards
- Solar heated storage types (storage cylinders)
- Solar primary system types

- Basic system design and integration
- External and Internal site survey, Installation methods and materials
- Filling and commissioning
- Servicing and fault finding

Note this course does not include roof work in detail but does cover the legislative requirements and working at height requirements. Wherever practical we would suggest the use of an experienced roofer to install the collectors although collectors will require connection at roof level by a qualified plumber so those wishing to carry out the work should be comfortable working at height.

### Assessment

The final assessment for the course will take approximately one hour and is in the form of a multiple choice paper. There is also a practical assessment associated with this certification Delegates who meet the Logic requirements will receive certification.



### Candidate Entry Requirements

It is essential that the candidate is experienced in the installation of domestic hot and cold water systems and will hold a G3 certificate in Unvented Hot Water Systems. It is also essential that the trainee holds one recognised competency in a conventional fuels i.e. gas, oil, or solid fuel: or for those in the plumbing field with and NVQ 2 or equivalent and/or experience. Experience in basic electrical practice would also be desirable. A basic knowledge of the water (fittings) regulations is also desirable.

|                        |            |
|------------------------|------------|
| <b>Course Duration</b> | 3 Days     |
| <b>Course Location</b> | Blyth      |
| <b>Course Cost</b>     | £569 + Vat |

## Photovoltaic System Design and Applications

This intensive course is aimed at providing system specifiers, planners, architects and other building professionals a detailed and current knowledge of photovoltaic system installations on domestic and small scale commercial properties.

This course has been specifically designed by technical specialists in the photovoltaic field at Narec to assist in the knowledge transfer of such professionals to meet the specialist needs of an ever growing industry. Further to this, whilst considering the release of financial incentive schemes such as the Feed-in tariff and the renewable heat incentive, and the cross cutting issues of the Green Deal, there has never been a better time to prepare for the opportunities which lie ahead.



### Course Outline

This intensive three day course is designed to offer delegates an opportunity to gain an in depth understanding of solar photovoltaic installations whilst furthering their knowledge on many of the planning and installation issues associated with such systems. A wide range of topics covered include:

- PV History and background
- System technology, components and manufacturing
- System positioning and design Issues
- Electrical Installation
- Roof Mounting
- Site Issues and Practicalities
- System efficiencies and losses and yield (Including SBEM and SAP)
- Feed-in Tariff
- Cell Manufacture (Including a tour of Narec's world renowned photovoltaic technology centre)

### Assessment

There is no formal assessment attached to this programme however the course is certified by Narec (Subject to the presentation of professional body membership information) and can be used for CPD purposes with most professional bodies.

### Candidate Entry Requirements

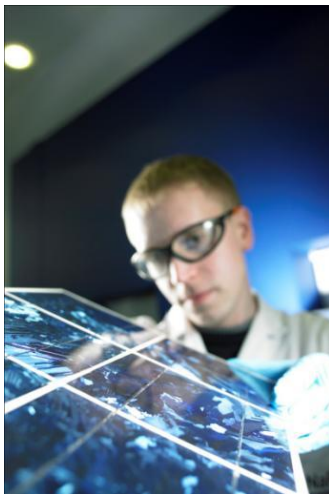
There are not entry requirements for this course however due to the technical and detailed nature of the programme, Narec would subject that this course is not suitable for those who wish to learn how to install PC systems. This course is aimed at system designers, specifiers, architects, planners and other building professionals.



|                        |            |
|------------------------|------------|
| <b>Course Duration</b> | 3 Days     |
| <b>Course Location</b> | Blyth      |
| <b>Course Cost</b>     | £895 + Vat |

## Narec Specialist Seminars and Workshops

| Seminar/Workshop Title  | Duration                   | Cost             |
|---|----------------------------|------------------|
| The Renewable Heat Incentive  | Breakfast Seminar (3 Hrs)  | £95 + Vat        |
| MCS Coaching  | Varied – 3-4 Days on site  | Individual Costs |
| Financial Incentives for Renewable Energy Installations                                       | 1 Day                      | £195 + Vat       |
| Financial Incentives of Renewable Technologies: A Workshop for Independent Financial Advisors | Breakfast Workshop (3 Hrs) | £95 + Vat        |
| Technology Installation for Estate Agents and Property Sale Professional                      | Breakfast Seminar (3Hrs)   | £95 + Vat        |



## The Renewable Heat Incentive



Increasing renewable heat is key to the UK meeting its renewable energy targets, reducing carbon emissions, ensuring energy security and helping to build a low carbon economy. The Renewable Heat Incentive (RHI) will help accelerate deployment by providing a financial incentive to install renewable heating in place of fossil fuels.

This breakfast seminar offers delegates an opportunity to gain the

latest information with regards to the RHI, and an insight into the most recent and relevant information available to the consumer. Delivered by industry specialists, this seminar also offers the opportunity for delegates to participate in an open forum discussion, enabling them to share their own views and dealings with the RHI so far.

### Target Audience

This course is ideal for anyone interested in developing a greater understanding of the financial benefits associated with the RHI either for their own information or the benefit of their own clients. This is a general seminar and may be of interest to a wide range of individuals and companies.

### Course Outline

This course is delivered over the course of a morning and investigates information on:

- Key proposals laid out by the government
- Financial support available for residential and commercial installations
- Technologies supported by the RHI
- Tariffs levels and eligibility
- Investment and returns
- System design and scheme registration
- Latest updates and changes
- Open discussion and questioning

|                        |                    |
|------------------------|--------------------|
| <b>Course Duration</b> | Breakfast Seminar  |
| <b>Course Location</b> | Blyth, or national |
| <b>Course Cost</b>     | £95 + Vat          |

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## MCS Coaching

MCS application processes and timescales can vary depending on the size and complexity of an organisation. The key to a successful MCS application is to integrate the requirements with your existing management system. Many organisations have well developed management systems that meet the requirements of ISO9001:2000 and there are a number of parallels between MCS and ISO that can be exploited. The key is using an expert eye to capture and utilise the parallels: A service readily available at Narec and a service heavily utilised by organisations such as local authorities and housing associations.

In large enterprise organisations, it can be very difficult and time consuming to make changes to a current management system and it is common for divisional managers to attempt to avoid this by creating a ‘bolt on’ to current systems which is an approach which Narec would strongly advise against.

Narec’s specialists can spend time with key staff within the organisations to carry out an audit to understand current systems and practices, and work closely with them to develop a management system which would be fit for purpose when applying form MCS, and carrying out a coaching session with key staff to ensure everything is in place correctly. Narec also carry-out a pre-assessment check prior to an MCS visit.

### Coaching Format

Narec aims to have companies ready for approval within six weeks and work with the company to work towards MCS audit within six weeks as follows:

- Understanding the requirements of the process and determining how to integrate with existing system (1-2 weeks)
- Amend existing management system documentation (2-3) weeks
- Training needs analysis of existing staff i.e. identifying relevant staff to up-skill and train in line with the programme (3 days per individual)
- Complete an initial installation on a low risk building (e.g. one from existing building and housing stock) (2-3 days)
- Pre-audit checking (1 Week)

|                        |  |
|------------------------|--|
| <b>Course Duration</b> | Approx 6 weeks                                       |
| <b>Course Location</b> | Client site  |
| <b>Course Cost</b>     | Varies depending on individual company circumstances |

## Financial Incentives for Renewable Energy Installations



The FIT scheme, launched on the 1<sup>st</sup> April 2010 is designed to encourage deployment of additional low carbon electricity generation, particularly by organisations, businesses, communities and individuals who are not traditionally engaged in the electricity market. This “clean energy cash-back” will allow many people and companies to invest in small scale low carbon electricity, in return for a guaranteed payment for the electricity they generate.

These feed-in tariffs will work alongside the Renewables Obligation (RO), which will remain the primary mechanism to encourage deployment of large-scale renewable electricity generation, and the Renewable Heat Incentive (RHI) which will incentivise generation of heat from renewable sources at all scales. The Government launched the Renewable Heat Incentive consultation on the 1st February 2010.

### Target Audience

This course is ideal for anyone interested in developing a greater understanding of the financial benefits to be gained from installing small to medium scale renewable technologies that generate electricity.

### Course Outline

This course is delivered over a full day and includes a buffet lunch and site tour (subject to client testing) around Narec’s technology park across the Blyth quayside giving a unique industry insight into the progress of each of the technologies under research, development and/or testing.

Small-scale low-carbon electricity technologies eligible for FITs include:

- Wind
- Solar photovoltaics (PV)
- Hydro
- Anaerobic digestion
- Domestic scale microCHP (with a capacity of 2kW or less)

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The course will cover the following topics:

- An explanation of the FIT process
- Challenges of small wind systems in the built environment
- Solar PV installation issues
- The Microgeneration Certification (MCS) scheme
- An illustration of how the FIT can work using a variety of case studies
- Current update on the RHI
- Possibilities for creation of Energy Supply Companies ESCOs
- Questions and answers

|                        |            |
|------------------------|------------|
| <b>Course Duration</b> | 1 Day      |
| <b>Course Location</b> | Blyth      |
| <b>Course Cost</b>     | £195 + Vat |



## Financial Incentives of Renewable Technologies: A Workshop for Independent Financial Advisors



Narec is an independent, not for profit organisation, part funded by the Regional Development Agency, One North-East. This specialist workshop has been designed specifically for financial advisors and aims to deliver unbiased expert advice in the investment opportunities available when installing renewable technologies.

As part of a series of specialist workshops, Narec offers a breakfast workshop on renewable energy and the feed-in-tariff and Renewable Heat Incentive. Dedicated to independent financial advisors who may wish to offer their clients an alternative type of investment whilst helping the UK to achieve its ambitious carbon reduction targets, this course aims to support the latest increase in investments being made into the installation of micro-renewables on domestic and small scale commercial properties.

### Target Audience

This workshop is aimed at, but not exclusively for independent financial advisors, however those interesting in investing in the installation of such technologies on their own properties or land lords interesting in investing further in their housing stock may also find this workshop of interest.

### Course Outline

The workshop will cover the following topics:

- An introduction to renewable energy for homes
- Solar thermal and solar photovoltaic systems
- Wind turbines
- The feed in tariff
- Case studies
- Where to get more information

|                        |                    |
|------------------------|--------------------|
| <b>Course Duration</b> | Breakfast Workshop |
| <b>Course Location</b> | Blyth, or national |
| <b>Course Cost</b>     | £95 + Vat          |

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## Additional Information

### Bespoke Services

Narec is committed to high quality, flexible delivery and has developed a specialist training centre to meet the rising demand of the industry. In addition to this, Narec offers a wide portfolio of training modules reaching all levels and across most renewable technologies to enable companies across the country to build their own course based on the unique training needs of their business. Similarly, specialists at Narec are able to develop unique packages to suit the specific needs of employers of businesses. Courses can be delivered on site or Narec can source conferencing facilities nationwide through their Network of clients and associates.

Current units include:

- Introduction to Anaerobic Digestion
- Basic Energy Awareness
- BREEAM and SAP
- Your Carbon Footprint
- Energy Champions for the Workplace
- Energy and Climate Change for Management
- Climate Change Impacts and Mitigation

### Course Requirements

Seminars and workshops will be delivered in Narec's own conferencing suite or similar such venues. There is no dress code for such training. Any PPE required for site visits will be provided by Narec for the duration of the training.

Practical and Installer courses combine a mixture of classroom work and practical demonstrations. Narec suggests that candidates wear comfortable clothing suitable for practical working.

Where candidates are offered a site tour as part of their training, suitable safety information will be given on the day. All candidates are asked that they wear flat, closed to, sensible footwear whilst visiting site. Narec retains the right to refuse anyone access to the site as they see necessary.

Narec operates a no smoking site. Smoking bins are provided in suitable areas for those who wish to smoke.

Refreshments are readily available for each course, and a buffet lunch will be provided for courses over half a day in duration. Bacon Rolls will be served for breakfast seminars only.

Course start and finish times vary however delegates will receive a course agenda one week prior to the course commencing.

## Technology Installation for Estate Agents and Property Sale Professionals



Solar panels are becoming a familiar sight in social housing as well as private dwellings, largely because of the attractive financial incentives that have been introduced over the last 12 months. There are important implications for property values, ongoing maintenance and the contractual arrangements associated with these systems. Narec is running a breakfast seminar tailored to the needs of Estate Agents and property conveyance professionals. The seminar will cover the following:

- The different types of solar panel: solar thermal and solar photovoltaics
- Installation costs, system lifetime and maintenance requirements
- An overview of the Feed in Tariff and Renewable Heat Incentive
- Energy savings, financial incentives and payback periods
- Ownership and legal aspects of solar systems



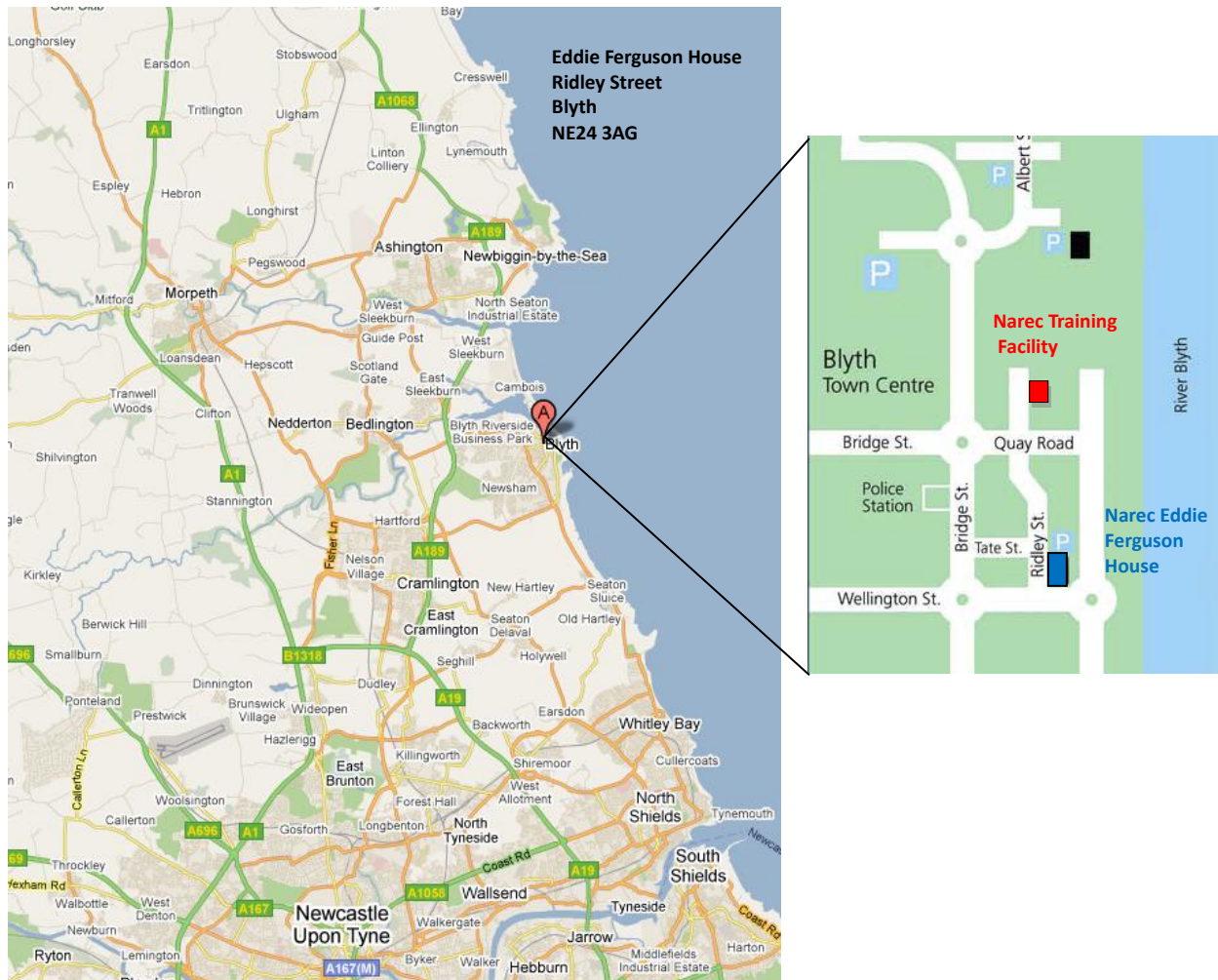
Narec is an independent, not for profit organisation, part funded by the Regional Development Agency, One North-East. This specialist workshop has been designed specifically for financial advisors and aims to deliver unbiased expert advice in the investment opportunities available when installing renewable technologies.

|                        |                    |
|------------------------|--------------------|
| <b>Course Duration</b> | Breakfast Seminar  |
| <b>Course Location</b> | Blyth, or national |
| <b>Course Cost</b>     | £95 + Vat          |

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## Narec at Blyth



**By Car:** Follow signs to Blyth taking the A1061 junction on the A189 and follow the road straight onto Blyth Quayside

**By Bus:** X24 and Z11 buses leave the Haymarket bus station in Newcastle every 15 minutes during the day. Journey time approx. 45 minutes

**By Rail:** Newcastle central station on the East Coast Min Line is 15 miles away. Taxis are available

# Advancing Renewable Energy

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