



MPI Discovery at the Rampion site with components for eight full turbines onboard ©MPI Offshore

South coast residents and visitors may have already seen the significant milestone that we announce in this seventh edition of our newsletter, the installation of the first wind turbine.

## First turbine on the horizon

One of the most eagerly awaited milestones for the Rampion project was achieved in March, the installation of the first offshore wind turbine. The turbine, located approximately 14 kilometres from shore and visible on the horizon, is the first of the 116 MHI Vestas V112-3.45 megawatt (MW) models that will together make up the south coast's first wind farm.

Reaching 140 metres to the tip of the blade, which is roughly the same as the peak of the viewing pod of Brighton's landmark i360, the turbine marks the start of the construction phase that brings the wind farm to life. Following the years of development, engagement and planning, it is only once the turbines start to rise above the water that the wind farm really takes shape.

The turbines are being installed by jack-up vessel MPI Discovery, which Rampion watchers will recognise that this vessel led on

the installation of the site's 116 foundations last year. A second vessel, the MPI Adventure, will join the MPI Discovery to operate in parallel from June.

The installation of turbines will carry on from now until late 2017, when all the turbines are expected to be in place.

Wind turbine facts	
Number of turbines	116
Turbine height to hub	80m
Turbine height to blade tip	140m
Length of blades	55m
Diameter of blades	112m
Size of nacelle	6.9m high by 12.8m long by 4.2m wide
Operational wind speeds	Between 3 metres per second and 25 metres per second



First turbine installed

# Winter slow down enables cable planning

Since our previous newsletter was published in October last year, work on the construction of the onshore cable has slowed in line with the winter season. As anticipated, conditions over this period have been wet and cold, leading to a shift in some activity from on-site to indoors with planning and scheduling for the coming milder weather.



Drums of cable ready for installation

However progress has been made on the works and at the time of printing, almost all the trenching and duct laying will be finished and most of the joint bays constructed. Cable in large drums will be delivered to worksites along the cable route ready for pulling through the ducts. Approximately 50 per cent of the cables are already installed.

In the coming months activity will shift towards returning the soil to fill remaining open trenches, and towards reinstatement. This means planting grasses and other vegetation when the season is right, or returning the land to its agricultural use.

## Substation at Bolney takes shape

Traffic was temporarily interrupted in Shoreham in November to allow for the delivery of the two large transformers bound for the new substation at Bolney.

The transformers, each weighing 210 tonnes and measuring almost 10 metres long and 4.4 metres high, are an integral component of the substation, which is now really taking shape.



A police escort along the A23 for one of two transformers heading to the Rampion substation

Along with the transformers, most of the deliveries of electrical equipment and parts to site have been made and the control building is finished to the point that control equipment can be installed. The retaining wall is finished and ground and foundation works are nearing their completion too.

The coming months will see the focus of work shift to the GIS building which, as the name suggests, will house the gas-insulated high-voltage switchgear (GIS). Installation of components such as circuit breakers, switches and disconnectors, along with associated troughs and cables, is now underway and ongoing.

Despite heavy rains interrupting activity during winter, the construction work is set to be substantially complete in summer, although reinstatement works will continue until later in the year.

## Base joins Newhaven Port's push for clean, green and marine

Hove-based Hemsley Orrell Partnership (HOP) Engineers have played a major role in the design of Rampion's new operations and maintenance base, which is now under construction at the East Quay in Newhaven Port. That section of the quay has been renamed Rampion Quay by the port for ease of reference.

The base will be home to the 60 strong Rampion team who will operate the wind farm once it is constructed. The brand new modern base will incorporate offices and welfare facilities, as well as an industrial warehouse for storage of parts and equipment for the maintenance of the wind farm.

HOP Engineers carried out the structural engineering design for the steel framed building, civil engineering design for the site and the detailed design for new marine infrastructure, including the foundations for vessel refueling facilities and intricate water

drainage. It was key to find innovative ways to preserve and maintain the existing port infrastructure.

The new base is a flagship project helping to spearhead the revitalisation of the port. It is sited within one of the eight sites making up the new Newhaven Enterprise Zone, which will initially focus on the 'clean, green and marine' sectors and aims to build on the town's historic maritime strengths.



From left: Rampion's Stefan Robson and Pete Andrews with Geoff Hill of Raymond Brown Construction, contractor for the quayside works and Will McGrath, HOP Engineers



# Installing the Rampion wind turbines

The first turbine arrived from Esbjerg, Denmark on board the jack-up vessel MPI Discovery. At 138 metres long, the jack-up vessel can transport the components of eight turbines per trip, so that means eight 80m towers, eight nacelles that hold the electrical generators, and 24 blades (three per turbine) that extend to 55m in length.



Once the vessel arrives on site and positions itself next to the foundation, it lowers its six steel legs and lifts itself out of the water, therefore creating a stable platform for the installation. Unlike the foundations, there is no piling required for turbine installation, rather the components are precisely lifted into place before being secured with bolts. First the tower is lifted on to the foundation, next the nacelle, which is slightly larger than a new double-decker Routemaster bus, is placed on top and finally the three blades are installed one by one.

It takes roughly a day to install one turbine, from the time the vessel is jacked-up to its jack-down, when it will transit to the next foundation to start the process over again. Once all eight turbines are in place, MPI Discovery will return to Esbjerg to collect the components for the next eight turbines, in a continuous operation.

Turbine Engineering Manager Huw Rees said that once a turbine is installed the next stage is commissioning, which is the work required to connect it to the power grid.

“Commissioning involves several phases, including connecting the pre-installed array cable to the turbine and completing mechanical works to join the main components and systems. The electrical, control and protection systems need testing before finally all the safety measures are put in place to prepare the turbine for generating power.”

## Action off Worthing Beach

Worthing visitors may wonder what is going on just off their beach in March and April as they see a digger operating out in the sea.

It will be a 90 tonne CAT 374DL elevated excavator busy backfilling the cable duct trenches that were dug last year for the cable installation. The work by contractor Snijder should take approximately six weeks.



## Offshore substation heads south

A pivotal component of the Rampion Offshore Wind Farm, the offshore substation, is nearing completion and will soon be sailing south towards Brighton from Rosyth in Scotland where it has been built.

The 2000 tonne structure, known as the “topside”, is due to load out from contractor Babcock International Group’s facility at the Firth of Forth in spring. From there it will make the 500 nautical mile journey to the Rampion site for installation on top of the jacket foundation that was installed in September 2016.

The complex structure houses the electrical components at the heart of the wind farm including transformers, switchgear and control systems as well as auxiliary equipment such as cranes, back-up power systems and amenities.

Construction of the substation has taken almost two-years and involved a wide range of skilled workers including welders, steel workers, structural and electrical engineers, procurement and integration specialists and its completion marks a major milestone in the Rampion project.

The main role of the offshore substation is to transform the generated electricity from 33 kilovolts (kV) up to 150kV and therefore reduce any losses when it is transmitted to shore. Networks of undersea cables, called array cables, will connect strings of wind turbines to each other and then to the offshore substation.

Rampion’s OSP structure manager Andrew Leadbetter said the offshore substation is the largest and most complex single component of the wind farm and has required an enormous effort and depth of experience to bring it to fruition.

“There remains significant commissioning work to do offshore but preparing for its departure from Rosyth does represent a significant step in the delivery process and an important achievement.”



Wind turbine technician Sam Smith

## Wind farm technicians are go

One group more keenly watching the progress of the turbine installation than others is the team of Rampion wind turbine technicians. While others see a wind farm taking shape, for them it is not just a wind farm but also their new workplace, as they will spend up to 10 hours each day inside the turbines, ensuring the blades keep turning.

So far 24 wind turbine technicians have been employed on the project, training and working on other existing wind farms to ensure they are fully prepared when the Rampion turbines are commissioned and operational.

As each turbine is commissioned, the responsibility for its performance transfers to the operations and maintenance team, whose home will be in the Newhaven base that is now under construction. A 60 strong workforce will manage the day-to-day running of the wind farm, with the majority of that workforce being wind turbine technicians.

### Wind turbine technician Sam Smith said:

"Seeing the wind turbines being installed is an exciting time for all the technicians as they can soon get started on the important role of ensuring the turbines are efficiently producing renewable energy."

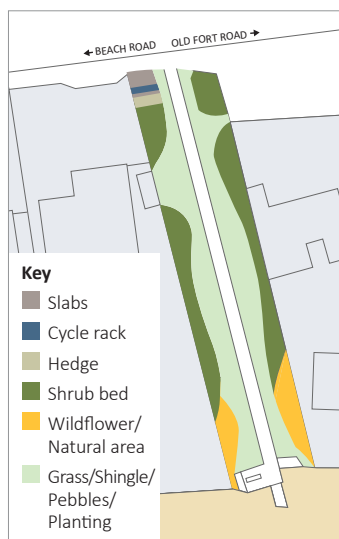
## Rampion in the community

### Major facelift for Shoreham Beach gateway

The Ferry Road entrance to Shoreham Beach Local Nature Reserve will receive a much-needed facelift after Rampion agreed to fund a landscaping scheme to enhance this important footpath, which directly links Shoreham Town Centre to the beach via the pedestrian ferry bridge.

Rampion's support will fund the redesign and upgrade of the walkway with work to include sensitive and appropriate landscaping and planting, a bicycle rack and signage, to create an impressive new public gateway.

At present the walkway is overgrown and unkempt and as the prime entrance to the beach, is ripe for improvement. The work will aim to ensure beachgoers have a positive welcome as they arrive at the beach, with a view of the wind farm straight ahead.



The project will be coordinated by the Parks & Open Spaces Department of Adur & Worthing Council and will include consultations and involvement of all the relevant community groups with an interest in the beach and local area. Work is likely to start onsite in autumn this year, subject to relevant planning permissions being in place.

Initial plan for the Shoreham Beach gateway upgrade

### Watching the construction

South coast residents and visitors are likely to notice Rampion's wind turbines seemingly sprout from the sea as they are installed one by one in the coming months. Those curious for a closer view will soon be able to see the action through telescopes funded by the project and supplied by Winchester-based Tourist Telescopes. The robust steel telescopes will be installed at strategic coastal locations including Lancing, Shoreham and Newhaven, they will be permanent fixtures and will be free to use.

### Children join the Fish Festival parade

Rampion Offshore Wind Farm will provide funding to local charity the Sussex Community Development Association (SCDA) so they can coordinate a parade that aims to ensure Newhaven school children are key participants in the town's Fish Festival to be held in June this year.

The Children's Parade will be a highlight of the 2017 event as children in themed and eye-catching costumes make their way through the streets to celebrate the town's maritime heritage. The SCDA's work will involve workshops with local secondary and primary schools and nurseries in advance of the day, as well as coordination at the event.

## Getting in touch

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