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Overall Description of Works

The Works to be carried out to install and commission the Corrib Gasfield pipeline system will be undertaken in phases, as described below. The application for Consent to Install and Commission will therefore consist of a number of sections.

Phase 1: Nearshore Trench Construction

Phase 1 works consist of excavation of a trench from the High Water Mark westwards for approximately 1200m along the proposed pipeline route (to a water depth of –11m LAT). The shallow bedrock, which is present for approximately 200m of the route, will be removed with a jack-up barge by mechanical means. A dredger will clear all spoil in conjunction with a split-hopper barge that transfers it to an agreed area of the seabed for temporary storage.

Phase 2: Landfall

This includes the continuation of the trench from Phase 1 through the High Water Mark and eastwards via a cutting through the cliff-face at Glengad, using conventional land based excavators and rock breakers; and the installation of a pull-in winch for the initiation of pipe pulling from the offshore vessel. The winch wire will be pulled from the seaward end of the trench referenced in Phase 1 to shore from a barge. Foundations for umbilical pull-in equipment, to be used in Phase 5, may also be installed. To facilitate access to the site, temporary access roads will be constructed.

Phase 3: Onshore Pipeline and Umbilical

This includes installation of the pipeline, umbilical and outfall pipe along the previously consented route from the landfall to the Terminal at Bellanaboy. The work originally intended to take place under this phase of the works is now subject to new applications for consents to An Bord Pleanála under the Strategic Infrastructure Act and to DCENR under Section 40 of the Gas Act. An application will also be made for a Licence under the Foreshore Act in respect of the foreshore elements of these works. These applications are made in the context of a modified onshore pipeline route and the implementation of Advantica's recommendations including an enhanced modified landfall valve installation.

Phase 4: Offshore Pipeline

Installation of the 20" pipeline will be undertaken by a dynamically positioned pipe laybarge which will set up at the end of the trench constructed in Phase 1, pick-up the pull-in wire and lay a pipe bundle as the winch pulls from shore. The bundle will comprise the 20" pipe, with the PE outfall pipe and umbilical conduit strapped to it. Pipelay will continue with the laying out of the pipe and outfall in a combined operation as the laybarge moves offshore. The vessels used in Phase 1 will return and commence the backfilling of the nearshore trench. All the rock will be returned before capping the trench with sand. Regular surveys will confirm that the seabed is restored to its original level.

The laybarge will be supported by a number of supply boats, including a survey boat and a trenching support vessel, which will undertake trenching operations out to KP 70.1 (approx. 13.3 km from the landfall). As-built surveys will be conducted to record the number and extent of freespans along the whole length of the pipeline. Those freespans not meeting the maximum allowable height criteria of 0.57m will be corrected by pipe lowering using the trencher or rock emplacement, or a combination of both. The final as-built surveys will also

be conducted to verify the depth of burial of the mechanically back-filled trench (between KP 82.2 and KP 83.4) and the depth of lowering elsewhere (from KP 82.2 to KP 70.1).

Phase 5: Offshore Umbilical

Laying of the offshore umbilical will be carried out by a lay vessel starting at Broadhaven Bay and laying out to the Corrib field. The umbilical lay will be initiated by pulling the shore end into a protective conduit that runs for at least 1700m from a water depth of 15m to the landfall. Immediately ahead of the umbilical installation a vessel will use a towed seabed plough to prepare a trench for the umbilical to a depth of 0.6m below the seabed. The offshore end of the umbilical will be laid down with its termination assembly located close to the manifold for subsequent pull-in and connection. An as-built survey will be carried out on the entire umbilical checking for depth of cover. Any further protection of the umbilical will be carried out as part of the Phase 6 works.

Phase 6: Manifold Installation And Infield Works

The subsea facilities at the offshore location comprise of a manifold, up to 7 wellhead protection structures, interconnecting umbilicals and flowlines. All items will be installed from Construction Vessels using diverless techniques. The structures will be transported to site on the vessel deck and lowered with a crane and winch. Similar Construction Vessels will also carry out the laying of the infield umbilicals and flowlines, and be used for the support of a seabed trenching machine that will bury the lines. A combination of tunnel structures, mattresses and rock placement will be used to protect the end terminations that cannot be accessed and buried by the trencher. As-built surveys will be carried out to confirm depth of cover of the buried lines.

Phase 7: Hook-Up, Testing and Commissioning

The 20" pipeline, the infield flowlines and the umbilicals will be connected to the seabed structures by means of ROV mounted tooling which will be carried out from one of the construction vessels. The integrity of the pipeline and flowline connections will be tested by flooding them and applying pressure to the entire system. Controls equipment will be function tested from onshore and a visible check made by the vessel offshore. Once the facilities are proven as mechanically complete, the test water will be displaced from the flowlines with methanol (or an alternative fluid) and the pipeline will be dewatered by a train of pigs launched from shore and collected in the manifold subsea pig receiver.