ATTACHMENT B.8:

IMPROVEMENT PROGRAMME

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1. Introduction

The improvement programme at Bandon involves several elements including:

- Bandon Wastewater Treatment Plant and Glasslinn Road Pumping Station Upgrade (Bandon Sewerage Scheme) – These works were completed in Q2 2021.
- Bandon IDA Laragh WwTP Upgrade - This upgrade project was completed in Q3 2018. As part of this WWDL Review, the Bandon IDA Laragh Agglomeration (A0362-01) is to be amalgamated into the current Bandon agglomeration.
- Bandon Watermain & Sewer Network Project including the removal of 10 no. Storm Water Overflows (SWOs) – These works are due to be completed by the end of Q1 2023.

2. Key Improvement Works

Bandon Wastewater Treatment Plant / Glasslinn Road Pumping Station Upgrade (Bandon Sewerage Scheme)

Upgrades works at Bandon WwTP were required to improve the treatment processes at the WwTP, thereby resulting in an improved effluent discharge quality. The upgraded plant was designed to meet the Emission Limit Values (ELVs) stipulated in the Waste Water Discharge Licence (WWDL D0136-01). The upgrade works also included the replacement of existing plant and equipment that had exceeded their normal operational life. These upgrade works fall under the Bandon Wastewater Treatment Plant and Glasslinn Road Pumping Station Upgrade Project (*i.e.*, Bandon Sewerage Scheme) and this project was completed in Q2 2021.

The Bandon Sewerage Scheme involved the following key infrastructure elements:

WWTP:

- Installation of new inlet screening & grit removal units.
- Construction of a new reinforced concrete stormwater storage tank. The new stormwater storage tank has a capacity of 900 m³ to cater for 2 hours retention of flows (Formula A flow less the Full Flow to Treatment flow). Once the capacity of the stormwater storage tank is exceeded the excess water is discharged to the river Bandon *via* SW002 (NGR 150368E, 055690N).
- Retention and refurbishment of the existing Primary Sedimentation Tanks including replacement of the out-of-date mechanical & electrical equipment.
- Replacement of the surface aeration system in the Aeration Ditch with a more efficient system.
- Upgraded sludge wasting and recycling system. This involved the installation of new Return Activated Sludge (RAS) pumps, new Waste Activated Sludge (WAS) pumps, instrumentation and electrical control.
- Replacement of the sludge dewatering building to house new sludge dewatering equipment.

- Installation of an additional Picket Fence Thickener (PFT) and upgrade of the existing PFT and Sludge Holding Tank, complete with sludge feed pumps to the sludge dewatering plant.
- Provision of a new back-up generator and bunded fuel tanks at the WwTP to provide for continued operation of the WwTP in the event of an interruption in the power supply. The primary purpose for the new generator is to provide additional resilience for the WwTP and reduces the risks of flooding in the Bandon Sewer Network in the event of a mains power failure.
- Hydraulic upgrade of interconnecting pipelines.
- New chemical storage tank (plan area *ca.* 5m²), emergency shower and eyewash, chemical dosing pumps and delivery pipework.

The upgraded Bandon WwTP has a design capacity of 14,456 p.e (population equivalent) and therefore has adequate capacity to treat the current load of 9,744 p.e (AER, 2021). The civil and structural works will also allow for the upgrade of the capacity of the plant to the 30-year design horizon of 18,111 p.e.

Glasslinn Road Pumping Station)

- Upgrade (replacement) works to Glasslinn Road Pumping Station.
- New Rising Mains from the Glasslinn Road Pumping Station to WwTP.
- Screening and pumping of storm water from Glasslinn Road Pumping Station to River Bandon.
- Decommissioning and demolition of existing tanks and structures.
- The Glasslinn Road Pumping Station is designed with the capacity to pump flows up to 217 l/s (Formula A). These flows are pumped to the new inlet works at the upgraded WwTP site.
- During normal operation overflows are not expected.
- Once flows greater than 217 l/s enter the Glasslinn Road Pumping Station, all flows over 217 l/s cascade into the wet well of the storm water Pumping Station *via* a new storm screen.
- Storm water flows up to a 1 in 5 year return period (1855 l/s) are screened. A 6mm solids separation screen with minimum solids capture ratio of 80% (based on "*Formula* A" flow) is present.
- The wet well for the storm Pumping Station also provides overflow storage capacity on-site at Glasslinn Road Pumping Station. The capacity of the wet well of the storm pumping station is 250m^3 which provides over 2 hours of dry weather flow back-up storage.
- When the wastewater Pumping Station discharge flowrate falls below 217 l/s, a storm return pump is mobilised to pump storm flows from the storm wet well back to the wet well of the wastewater Pumping Station to reduce the frequency that stormwater discharges to the Bandon River.
- In the event that the capacity of the storm Pumping Station wet well is exceeded then excess flows are pumped directly to the River Bandon *via* a new overflow pipeline. Any discharges to the receiving water are significantly diluted by stormwater. The capacity of the overflow is sufficient for the 1 in 30-year storm

event arriving at Glasslinn Road Pumping Station from the Bandon Sewer Network minus the Formula A flows being pumped to the WwTP; that is 2568 l/s.

- The overflow pipeline was installed in order to control spills from the Pumping Station wet well and to avoid flooding of the pumping station site, neighbouring land and Bandon Town.
- Construction of a new ESB substation to cater for the increased electrical load.
- Provision of a new back-up generator and bunded fuel tanks at the Pumping Station to provide for continued operation of the Pumping Station in the event of an interruption in the power supply. The primary purpose for the new generator is to provide additional resilience for the Pumping Station. It also reduces the risks of flooding in the Bandon Sewer Network in the event of a mains power failure.
- A minimum of 2 no. suitable openings were provided in each of the covers of the wet wells of the storm and wastewater Pumping Station to facilitate the removal of grit/sedimentation that may build up in the deep chambers.
- Installation of an additional HDPE diameter rising main from the Pumping Station to the WwTP inlet works. The new rising main was sized to cater for the full flow to preliminary treatment (*i.e.,* 217l/s) and has the minimum internal diameter required to achieve compliance with the relevant IW standards and Code of Practice.
- Both the existing 350mm diameter (*ca*. dia*.* only) rising and the 175mm diameter (*ca*. dia. only) rising main were retained and integrated into the permanent works as stand-by delivery pipework to the new inlet works.
- Flow measurement on new rising main; existing 350mm diameter rising main and on existing 175mm diameter rising main.

Bandon IDA Laragh WwTP upgrade

As part of this WWDL Review, the Bandon IDA Laragh Agglomeration (A0362-01) is to be amalgamated into the current Bandon agglomeration. The Bandon IDA Laragh WwTP upgrade, which was completed in Q3 2018, comprised of the provision of a new Pumping Station to collect wastewater from the existing industrial estate and the pumping of the collected load to the Bandon WwTP for treatment. As part of this work, the Bandon IDA WwTP was decommissioned.

The Bandon Laragh Pumping Station has been designed with the capacity to pump stormwater ("*Formula A*") flows. Therefore, during normal operations or during storm events, overflows are not expected. In addition, tanks associated with the IDA WwTP were retained to provide overflow storage on-site. The storage capacity of the on-site WwTP tank is 80m^3. This provides a minimum of 24 hours future dry weather flow storage and up to 84 hours existing average flow storage. In the context of best practice this volume of storage is considered an extra-large volume of storage for a Pumping Station. A 6mm solids separation screen with a minimum solid capture rate of 80% (based on "*Formula A"* flow) has been installed at the SWO point. This provides primary treatment in the event that effluent spills to the outfall (SW017).

The existing outfall was converted into the emergency overflow for the new Pumping Station. This outfall is only used in the case of a "*catastrophic breakdown*" of the Pumping Station. This overflow controls spills from the sump and avoids flooding of the site and neighbouring land. Although these spills would be extremely rare, measures were included

in the design in order to avoid such spills during emergency breakdown events. These measures are in accordance with established best practice. The measures include:

- Duty/Standby pump arrangement with automatic changeover;
- Additional on-site storage capacity in excess of the industry standard 2-hour Dry Weather Flow storage of the pump sump;
- Call-out alarm system to notify the caretaker of failure of the pumps/loss of power supply/high water level/overflow;
- A bauer connection is provided on the rising main in order to facilitate over pumping (whereby a mobile pump could be brought to site as a temporary measure during repair);
- Uninterruptible Power Supply for up to 30 minutes is provided for all instrumentation, controllers, alarms and data storage systems. This ensures alarms are sent in the event of a loss of power.
- The SWO operates to meet the definition of '*Storm Water Overflow*' as per Regulation 3 of the Waste Water Discharge (Authorisation) Regulations, 2007, as amended and the criteria as set out in the DoEHLG '*Procedures and Criteria in Relation to Storm Water Overflows'*, 1995.

Bandon Watermain & Sewer Network Project

The Bandon Watermain & Sewer Network Project will increase flow capacity in the system, reduce sewage discharges to the Bandon River and will reduce surcharging of drainage pipe networks in the town. Works relating to this project are due to be completed by the end of Q1 2023 and are included in Irish Water's 2020-2024 Capital Investment Programme.

The existing Bandon agglomeration contains 14 no. SWOs on the sewer network which frequently discharge untreated wastewater to the River Bandon in the absence of any stormwater storage.

The removal of the SWOs in the existing network and installation of new combined sewers as part of the Bandon Watermain and Sewer Network Project will result in an increased flow to the Glasslinn Road Pumping Station during flood conditions.

The project consists of the following:

- The removal of 10 no. SWOs in Bandon Town and its environs.
- New sections of combined sewer.
- New sections of storm drains.
- New sections of water mains.
- Replacement of defective water mains.
- Associated ancillary works.

3. Improvement Completion Timeframes

The Bandon WwTP Upgrade and Glasslinn Pumping Station (*i.e.,* Bandon Sewerage Scheme) was completed in Q2 2021.

The Bandon IDA Laragh Pumping Station and rising main to Bandon was completed in Q3, 2018.

The Bandon Watermain & Sewer Network Project are due to be completed by the end of Q1 2023.