

# Quality Assurance (QA) Field Inspection Requirements Manual

Connections and Developer Services

(A Guide for Self-Lay Developers)

August 2020 (Revision 3)

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This QA Manual outlines the approach that Connection and Developer Services' Field Engineering Teams will apply in relation to quality assurance requirements for the construction phase associated with the installation of water supply and wastewater collection infrastructure (the Works) provided by Developer by self-lay installation to confirm its compliance with the requirements of the Codes of Practice and Standard Details for Water Infrastructure and Wastewater Infrastructure.

It will be used in conjunction with the Codes of Practice (COP) and Standard Details which outlines acceptable typical design and construction guidance that is required by Irish Water for the provision of water supply and wastewater collection pipes and related infrastructure (the Works) which are to be connected to the Irish Water Networks.

Ultimate responsibility (including, but not limited to any losses, costs, demands, damages, actions, expenses, negligence and claims) for the detailed design, construction and provision of such pipes and related infrastructure shall rest entirely with the Developer, his/her Designer(s), Contractor(s), or other related party. Irish Water assumes no responsibility for and gives no guarantees, undertakings or warranties in relation to the water supply and wastewater collection pipes and related infrastructure to be provided in accordance with this document or the Codes of Practice.

Irish Water does not have responsibility for surface or storm water drainage systems. These surface/storm water drainage systems are the responsibility of the Local Authority. It is Irish Water's policy not to accept storm or surface water runoff into its wastewater collection systems.

### Revision Log

Date	Revision	Details of Revision
June 2017	0	Initial Issue
September 2017	1	Amended to take account of Strategic Housing Development Legislation (S.I. 271 of 2017)
January 2018	2	Minor Amendments
August 2020	3	General Amendments

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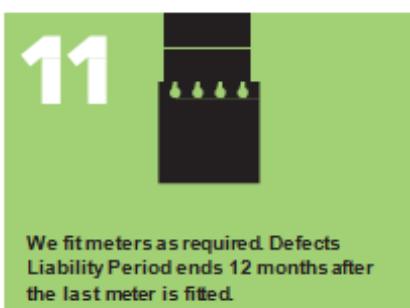
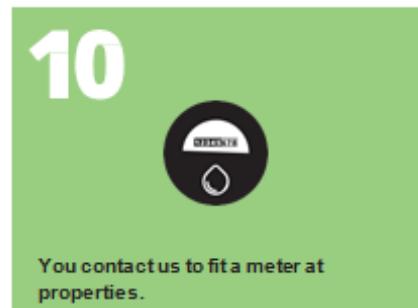
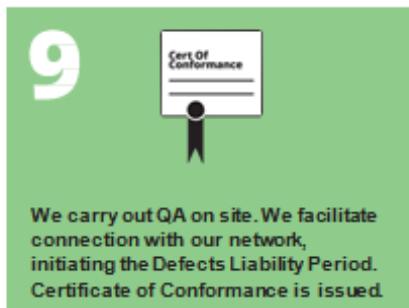
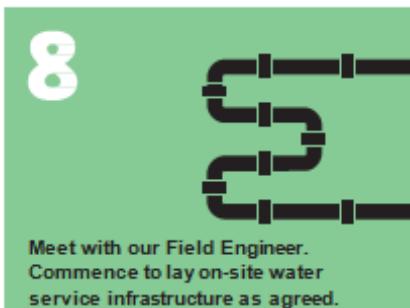
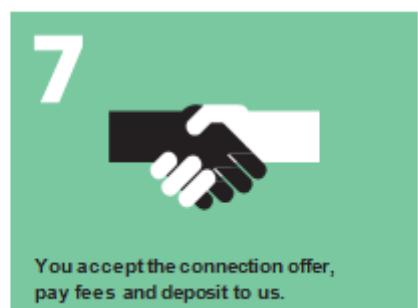
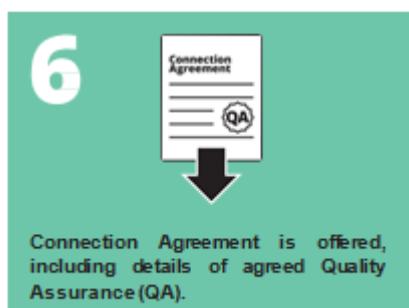
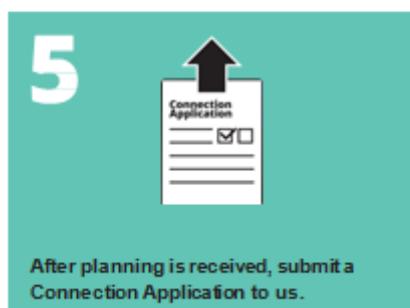
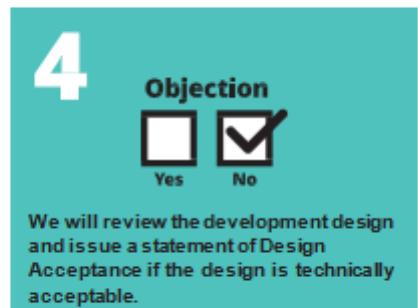
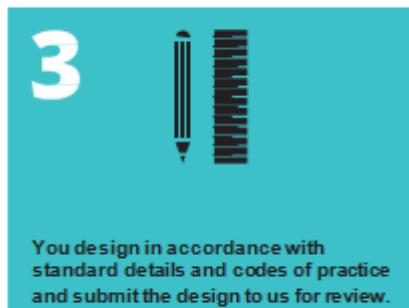
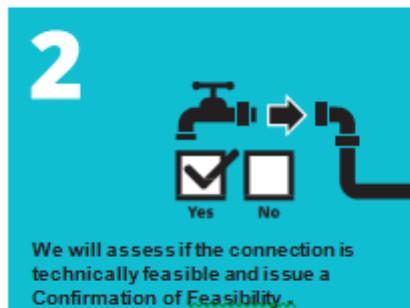
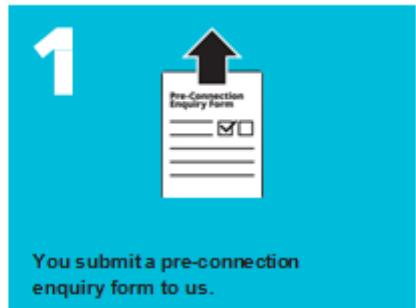
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# Guide to connect

## For developers



This QA Field Inspection Requirements Manual relates to Step 8 to Step 13 of the Guide.

## Foreword

The Quality Assurance Manual relates to on-site quality assurance requirements for the provision of water supply and wastewater infrastructure (the Works) and is based on the requirements set out in the Code of Practice for Water Infrastructure and the Code of Practice for Wastewater Infrastructure (Documents IW-CDS 5020-03 and IW-CDS-5030-03). This QA Manual refers to the Codes of Practice and the Standard Details for technical information relating to water and wastewater infrastructure only.

### 1. Glossary of Terms

In this Quality Assurance Manual the following words and expressions shall have the following meanings outlined below. Other terms and definitions are used also in this Quality Assurance Manual and these are as outlined in the Connection Agreement.

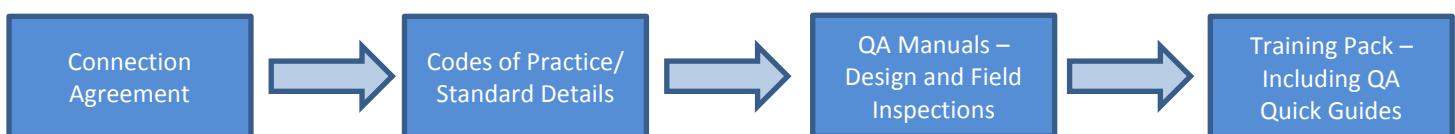
<b>Completion Certificate</b>	means a written certificate issued by Irish Water to the Developer at the end of the Defects Liability Period in accordance with the Connection Agreement;
<b>Conformance Certificate</b>	means a written certificate issued by Irish Water to the Developer following satisfactory completion of construction, inspection and commissioning of the Works and the provision of the Final Documentation pursuant to the Codes of Practice and in accordance with the Connection Agreement;
<b>Conformation of Feasibility</b>	means a response issued by Irish Water on foot of a Pre-Connection Enquiry submission from a Developer indicating if Irish Water can provide a water and/or wastewater services connection for the development at that time;
<b>Connection Agreement</b>	means the written agreement, in this instance a Self-Lay Connection Agreement, entered into between the Customer and Irish Water setting out the commercial and technical terms governing the provision of a Connection;
<b>Defects Report</b>	means a list of correction works that is issued with the Conformance Certificate that Irish Water's Field Engineers have identified and which require remediation by the Developer;
<b>Defects Liability Period</b>	means a minimum period of 12 months or such other period as may be specified by Irish Water in the Connection Agreement, between the issue of the Conformance Certificate and the issue of a Completion Certificate during which the Developer is responsible under the Connection Agreement for the cost of rectification of any defects in or connected to the Works;

<b>Design Engineer</b>	means Irish Water's representative responsible for assessing and/or inspecting the Design Submission and who is the Developer's point of contact in Irish Water during the Design Stage;
<b>Design Submission</b>	means a submission to Irish Water from the Developer setting out the design proposals for the water supply and/or wastewater collection infrastructure on the site. (Before an application for a new Connection or an additional Connection can be considered, appropriate information is required from the Applicant to allow Irish Water or its agents to assess the Developer's Works proposal. For Developments, this should be provided in a Design Submission in advance of a Connection Application. Irish Water will engage with the Developer to vet the design of the Works ahead of the Developer finalising a planning application for housing and mixed use developments to ensure compliance with the Codes of Practice and Standard Details. Details of the Design Submission requirements are further outlined in the Quality Assessment (QA) Design Requirements Manual.);
<b>Developer (also known as Customer)</b>	means the person or entity to whom the Connection Offer is addressed and who has entered into the Connection Agreement with Irish Water;
<b>Field Engineer</b>	means Irish Water's representative responsible for assessing and/or inspecting the Works and who is the Developer's point of contact in Irish Water during the Construction Stage;
<b>Final Documents</b>	means the suite of documents as set out at Section 1.7 of Code of Practice for Water Infrastructure and Section 1.8 of Code of Practice for Waste Water Infrastructure;
<b>Inspection &amp; Test Plan</b>	means a schedule for testing and inspecting of the Works as required in the Codes of Practice, that the Field Engineer or Irish Water's agents will witness, and outlining when these tests and inspections are proposed to take place, and containing any requirements necessary to facilitate these inspections;
<b>Mandatory Inspection</b>	means an inspection of an element of the Works, either during construction or the testing and commissioning stage, that the Developers Construction Engineer must notify IW to request an IW Field Engineer's attendance on site for the purpose of either carrying out an inspection or to witness testing and/or commissioning.

<b>Pre-Connection Enquiry (PCE)</b>	means a process whereby Developers can seek confirmation from Irish Water if a connection to its Networks to provide water services for the development is feasible at the time of the enquiry and by which Developers and their designers are made aware of the impact of their proposed development on Irish Water's water and wastewater Networks, such confirmation to be provided by way of a Confirmation of Feasibility;
<b>QA Folder</b>	means a document that is developed and retained by the Developer on site to include information about on-site quality assurance records of the Works which will be updated as required and shall be made available to the Irish Water Field Engineers on request for inspection and which can be used to facilitate the collation of the Final Documents;;
<b>Regional Contractor</b>	means a Contractor, working on behalf of Irish Water, who carries out Works to provide physical connection between the Works within the Self Lay Development and the Irish Water network(s). Connection to Irish Water network(s) is only permitted following confirmation by IW Field Engineer that the Works are in compliance with the requirements of the Connection Agreement.
<b>Statement of Design Acceptance</b>	means a document that is issued by Irish Water following its examination and vetting of the Developer's Design Submission indicating that Irish Water has no objection to the Developer's design proposals for the water supply and wastewater collection infrastructure of the development;
<b>Strategic Housing Development Legislation</b>	means the Planning and Development (Strategic Housing) Regulations 2017 (Statutory Instrument 271 of 2017) which came into force on 3 <sup>rd</sup> July 2017 under the Planning and Development (Housing) Residential Tenancies Act 2016. These Regulations outline a fast track planning procedure, operated by An Bord Pleanála, for developments proposed within zoned land comprising 100 or more houses or 200 bed spaces for student accommodation, both of which may include a mixture of other uses.
<b>Vesting</b>	means the mode by which the ownership of the Works transfers to Irish Water pursuant to the requirements of the Connection Agreement..

<b>Works</b>	means the water supply pipework and the wastewater collection pipework of the Water and Wastewater Services Infrastructure (as defined in the Connection Agreement) which are to be connected to the Irish Water Network(s) and including all related fittings and accessories to be constructed and laid by the Developer within the Development including all connections and pipework extending to the outer boundary of any individual Premises but excluding the Premises Pipe Work;
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This Quality Assurance Manual forms part of a suite of documents made available to Developers to outline the Irish Water's Quality Assurance requirements for Field Inspections. **Figure 1** below shows the document hierarchy of Irish Water's Connections and Developer Services (CDS) QA.



**Fig 1:** Document Hierarchy

## 2. Introduction

### 2.1 Scope

This QA Manual outlines the **Quality Assurance (QA) requirements** for the construction of Works that is described by the Design Submission and that is the subject of a Connection Agreement and installed in accordance the Codes of Practice and Standard Details so that the Works can be vested to Irish Water.

The Quality Assurance approach that Irish Water uses for Developer Self-Lay installations is outlined in two documents which cover the following stages:



- **Pre-Connection Enquiry** (mandatory under the Strategic Housing Development Legislation, Statutory Instrument 271 of 2017 and recommended for all other developments)
- **Design Submission;** (required for all developments)
- **Connection Application;** (required for all developments)
- **Connection Offer** (followed by acceptance and payment).



- **Construction Stage** (including Irish Water inspection, etc.);
- **Commissioning Stage** (including infrastructure documentation, inspection, etc.);
- **Connection of infrastructure to Irish Water assets** (on issue of a Conformance Certificate);
- **Vesting** (on issue of a Conformance Certificate);
- **Defects Liability Stage** (required for all developments);
- **Completion** (including issue of a Certificate of Completion).

This is the overall staged process by which the Developer can obtain a connection to the Irish Water Network(s) and by which vesting of the Water and Wastewater Services Infrastructure, installed as part of the development, is achieved. The Pre-Connection Enquiry and Connection Application Stages are outlined in greater detail in **Quality Assurance (QA) Design Requirements Manual**. Specific information is required in a Design Submission in advance of a Connection Application as outlined in the Codes of Practice. A Connection Agreement is required in all cases before Irish Water advances the provision of a connection to its water and/or wastewater Networks. The document referred to above outlines the acceptable typical minimum QA documentation to be submitted to Irish Water Connections and Developer Services in advance of obtaining a Connection Agreement.

This Quality Assurance Manual document in hand outlines the Quality Assurance requirements from Construction stage to final completion of the Works at the end of the Defects Liability Period.

## 2.2 Codes of Practice and Standard Details

The Code of Practice for Water Infrastructure and the Code of Practice for Wastewater Infrastructure outline Irish Water's **technical requirements** for the design, construction and commissioning of water supply and wastewater collection infrastructure (the Works) for housing and mixed use developments, which are to be vested by Irish Water. Irish Water's Connections and Developer Services also has two suites of Standard Details, one for water infrastructure and one for wastewater infrastructure which also indicate the construction requirements for new infrastructure. The Codes of Practice and Standard Details are available on the Irish Water website @ [www.water.ie/connections](http://www.water.ie/connections).

## 2.3 Roles and Responsibilities

The **Developer** is the proponent of the Works and is responsible for:

- Obtaining all necessary Requisite Consents and other permissions for the proposed Development including the Works.

- Signing and returning to Irish Water the Connection Agreement along with all required fees, charges and surety's as required,
- Providing the Works in accordance with the requirements of the Connection Agreement, the Codes of Practice and Standard Details,
- Appointing a Developer's Design Engineer, a Developer's Construction Engineer and a Contractor to carry out the Works in accordance with the requirements of the Codes of Practice, Standard Details and the Connection Agreement.
- Complying with the Safety, Health and Welfare at Work Act (2005) and associated Safety Health and Welfare at Work (Construction) Regulations.
- Seeking approval from Irish Water for any revisions or alterations to the design of the Works as set out in the Connection Agreement.
- Submitting to Irish Water the Commencement Notice, appended to the Connection Agreement, as well as informing Irish Water prior to the commencement of the Works, of the details of all the parties engaged to deliver the Works.
- Ensuring that a 'Pre-Construction Meeting' with Irish Water's Field Engineer is arranged and held prior to commencing the Works by contacting the Irish Water Call Centre on 1850 238238.
- Provide to Irish Water, all easements, wayleaves, rights of way and land acquisitions as per the requirements of the Connection Agreement.
- Issuing and signing off on the Final Documents and requesting the provision of a Conformance Certificate.
- Responding to all IW correspondences in a timely manner.
- If required, apply to Irish Water for a Temporary water and/or wastewater Connection(s) in a timely manner.
- If applicable, ensure that all Arterial Routes (as outlined in the Connection Agreement) that relate to third party infrastructure which the proposed Works will connect to, is vested to Irish Water and is fit for purpose and that any required easements are provided in favour of Irish Water by whoever has legal title to the relevant land/infrastructure. Irish Water may require additional investigations on such Arterial Routes and request may remedial works be carried out to the Arterial Route to upgrade it to accommodate the Works. Such work will be undertaken by the Developer at the expense of the Developer.

**The Developer's Design Engineer** is responsible for:

- Designing the Works required to service the development in accordance with Irish Water's Codes of Practice and Standard Details.
- Certifying that the design complies with the Codes of Practice and Standard Details.
- Accepting liability for compliance through their professional indemnity insurance which shall be kept in place for a period of 6 years after the completion of the Works.
- Accepting responsibility for the design and ensuring that all aspects of the design meet current Building Regulations, Planning Permission, any other relevant standards and legal requirements.
- Developing a risk assessment to ensure that risks to both the local community and operators of the water supply or wastewater collection and associated treatment system are minimised.
- Forwarding to Irish Water's Design Engineer for approval of any proposed revisions to the agreed/vetted design.

- Assisting in development of the Final Documents.
- Responding to all IW correspondences in a timely manner.

The **Developer's Construction Engineer** is responsible for:

- Managing and arranging the construction of the Works in accordance with the requirements of the Connection Agreement, the Codes of Practice and the Standard Details.
- Prior to starting the Works and following submission of the Commence Notice to Irish Water, arranging and attending a “Pre-Construction Meeting” with the IW Field Engineer.
- Preparing and submitting for review to the IW Field Engineer an Inspection and Testing Plan for the Works, in accordance with the requirements of the relevant Codes of Practice (See **Appendix 5**).
- Requesting the IW Field Engineer’s attendance on site to witness all mandatory testing and commission of the Works – refer to **Appendix 2** and **Appendix 3** of this document for details of mandatory inspections and commissioning / tests.
- Ensuring that the Works are acceptable to Irish Water.
- Maintaining quality assurance documentation and as-built records on site (in the form of the **QA Folder**).
- Facilitating site inspections by the Irish Water Field Engineers.
- Ensuring as-constructed information is accurately recorded.
- Assisting in the development of the Final Documents.
- Submitting the Final Documents to the Field Engineer along with a completed **Appendix 4**, thereby requesting the provision of the Conformance Certificate.
- Responding to all IW correspondences and any Non-Conformance Notices issued in a timely manner

The Irish Water **Field Engineer** is Irish Water’s representative as well as the Developer’s point of contact during construction of the Works and is responsible for:

- Attending the “Pre-Construction Meeting” with the Developer’s Design and Construction Engineers prior to commencement of the Works,
- Reviewing the Developers Inspection and Tests Plan
- Inspecting the Works during construction, such inspections can be both scheduled and unscheduled,
- Reviewing the quality assurance records held on site (A QA Folder is provided by IW to the Developers Construction Engineer at the “Pre-Construction Meeting” (refer to **Appendix 1**)).
- Witnessing both the testing and commissioning of the Works.
- Issuing Non-Conformance Notices to the Developer when required and following up with close-out inspections.
- Carrying out a Site Walk-Off Inspection prior to issuing a Conformance Certificate.
- Reviewing the Final Documents (See **Appendix 4**) and making recommendations for the issue of the Conformance Certificate.
- Issuing the Defects Report, if required.
- Undertaking inspections during the Defects Liability Period.
- Carrying out a Final Inspection and making recommendations in respect of issuing a Completion Certificate and release of the Self-Lay Surety.

- Assessing any revisions or alterations proposed by the Developer and escalating these, where relevant to the relevant Irish Water Design Engineer.
- Liaising with the Developer and with Irish Water’s Asset Delivery Function in respect of the delivery of the physical connection of the Works to the Irish Water Network(s) by Irish Water’s Regional Contractor or Agents of Irish Water.

The Field Engineer is appointed by Irish Water as an **Authorised Person** pursuant to the Water Services Act 2007 (as amended) and the Local Government (Water Pollution) Act 1977 (as amended).

#### **2.4 Notification**

Prior to commencing the Works, the Developer shall provide the details of all the parties engaged to deliver the Works by completing and returning to Irish Water the Commencement Notice, appended to the Self-Lay Connection Agreement, outlining the commencement of the construction of the Works.

The Developer must also arrange a ‘Pre-Construction Meeting’ with the IW Field Engineer.

Reference is to be made to **Appendix 2** and **Appendix 3** of this Quality assurance Manual for a list of all mandatory inspecting, testing and commissioning for the Works that require the Developers Construction Engineer to request the IW Field Engineer’s attendance on site.

The requirements of the Safety, Health and Welfare at Work Act 2005 and associated Safety, Health and Welfare at Work (Construction) Regulations shall apply in respect of the appointment of competent designers, Project Supervisor Design Process (PSDP) and Project Supervisor Construction Stage (PSCS).

### **3. Irish Water Contacts**

Requests for the IW Field Engineer’s attendance on site and attendance at the “Pre-Construction Meeting” must be made via the dedicated call-center on **1850 238238** or by email to [developerscheduling@water.ie](mailto:developerscheduling@water.ie), quoting the relevant IW CDS Reference Number for the Development which can be found on Page 1 of the Connection Agreement. The IW Field Engineers require a **minimum of 5 business days notice** to attend site inspection meetings. All such requested made by phone or e-mail are forwarded to the assigned IW Field Engineer and the requester as a calendar invite.

If the assigned IW Field Engineer is not available at the requested time and/or date, IW will endeavor to provide an alternative time and /or date for the meeting/inspection.

### **4. Construction Phase – Start-up**

Prior to the commencement of the construction of the Works, the Developer’s Construction Engineer shall arrange and attend a ‘Pre-Construction Meeting’ with the

Irish Water Field Engineer. The Developer is required to submit a Commencement Notice for the Works to Irish Water, as set out in the Connection Agreement. The Commencement Notice is appended to the Connection Agreement. The Pre-Construction Meeting can also be requested by contacting the dedicated IW Developer Scheduler on 1850 238238. An invitation will be forwarded to the assigned IW Field Engineer to attend the meeting.

Irish Water requires a **minimum of 10 business days' notice** in advance of the Pre-Construction Meeting. The Developer's Construction Engineer shall ensure that minutes of the meeting are prepared and made available. This record shall detail any key information and agreements reached. It is recommended that the Developer's Design Engineer along with any relevant sub-contractors also attend this meeting.

The following matters shall be addressed at the 'Pre-Construction Meeting':

- The programme of Works including dates for the start and completion of the Works.
- Review of the **Inspection and Testing Plan** (refer to **Appendix 5**) prepared by the Developers Construction Engineer and this is to be in line with the programme for the Works and the requirements of IW's Codes of Practices. This Plan should include dates when tests and inspections are proposed to take place and details of any requirements necessary to facilitate these inspections such as specialist contractors and/or preparation of method statements, etc.
- How QA records are to be retained on site (preferably in the form of the **QA Folder** as is outlined in **Appendix 1**) and made available to the IW Field Engineer for review. These records will facilitate the collation of the **Final Documents** required prior to the issue of the **Conformance Certificate**.
- Nomination of additional Irish Water staff or agents of Irish Water that will access the site of the proposed Works to carry out Inspections.
- Contact, reporting and communicating arrangements including notification of testing or commissioning, signing of site inspection reports, witnessing of tests, etc.
- Outline of the most common non-compliance trends found on self lay sites.
- Procedure relating to IW Non-Compliant Notices
- Arrangements for the protection of Irish Water assets.
- Arrangements for the connection of new work to existing infrastructure.
- Arrangements for inspection and testing processes.
- Identify proximity of existing sewer and water mains and protection measures required
- Irish Water requirements for as-built drawings.
- Issues relating to Arterial Routes, if applicable.

The following items shall be provided at or after the Pre-Construction Meeting:

- A set of appropriately scaled A3 Construction Drawings for the use of the Field Engineer.
- A copy of the meeting record shall be forwarded to the IW Field Engineer within five days of the 'Pre-Construction Meeting' having taken place.
- Details of the proposed Works which shall be in accordance with the vetted design and for which the Developer has received the Statement of Design Acceptance

from Irish Water.

A sample Agenda for the ‘Pre-Construction Meeting’ is included in **Appendix 8**.

#### 4.1 Site Safety

Irish Water’s Field Engineers will comply with the site safety procedures of the Developer’s Contractor while on site, on the basis that the Developer’s Contractor will be the Project Supervisor Construction Stage (PSDS). Irish Water Field Engineers will not enter sites that are considered by them to be unsafe. Where safety issues relating to the inspection cannot be resolved between the Developer’s Construction Engineer and the IW Field Engineer they shall be referred to Irish Water HSQE for advice/resolution.

### 5. Construction Phase – Construction Requirements

Developer’s Construction Engineer and Contractor shall ensure that:

- During construction of the Works the Developer’s Construction Engineer shall liaise with the Irish Water Field Engineer for any matters that arise,
- Work is carried out in accordance with the requirements of the Connection Agreement, the relevant Code of Practice and Standard Details, relevant Acts, Regulations and by-laws and with the QA approach that is outlined in this Manual,
- Irish Water is informed and has issued a ‘**Statement of Design Acceptance**’ to any revisions or alterations to the design or Works as set out in the agreed Connection Agreement,
- If a change of contractor becomes necessary, Irish Water is notified of the new contractor’s name and contact information,
- The contractor is aware of, and agrees to comply with, the requirements of any authority in regard to the protection, diversion or relaying of any service affected by the Works,
- The contractor is aware of any agreement with any authority into which the Developer’s Design Engineer, the Developer or Irish Water may have entered for the Works,
- As-constructed information of the Works is accurately recorded during the construction phase and transferred to the QA Folder and Final Documents,
- The IW Field Engineer is provided with adequate notice of any proposed test or commissioning Works,
- The contractor verifies by survey the location and level of the point of connection of the Works to the existing Irish Water Network(s).

**Appendix 2** below summaries the construction activities associated with the installation of water and wastewater infrastructure on site and details the roles and responsibilities of both the Developer and the IW Field Engineer.

#### 5.1 Protection of Irish Water Assets

Irish Water assets shall not be interfered with or disturbed without the prior notification and approval of Irish Water on each and every occasion. No excavation or construction work shall be performed in close proximity to any existing Irish Water asset until:

- A joint inspection of the asset has been performed by IW Field Engineers and Developer's Construction Engineer to ascertain the condition of the asset;
- Method statements, insurance confirmation and details of work completed of a similar nature has been submitted to Irish Water for its consideration;
- Irish Water has been given 10 working days' notice of the intention to commence working; and
- Irish Water has given written permission for the proposed Works.

The Developer's Construction Engineer shall ensure that adequate measures are taken to protect Irish Water's assets from damage during construction of the Works.

**If any damage occurs to existing Irish Water assets, the Developer's Construction Engineer shall immediately notify Irish Water.**

**Irish Water will assess the damage and advise what action is to be taken. This may include the Developer being charged the costs to repair any damage.**

## 5.2 Construction of Assets without all relevant approvals

Irish Water is not obliged to connect infrastructure to its Networks which has not received a Statement of Design Acceptance from the design vetting stage or is considered non compliant by Irish Water with the Codes of Practice or Standard Details. Where Irish Water becomes aware that construction has commenced and due process has not been followed, the following actions will result:

- Irish Water will advise the Developer that the Works is not acceptable and may decline to connect the Works to the Irish Water Network(s).
- The IW Field Engineer will inspect the Works. If this assessment identifies non-compliance with the relevant technical documentation or vetted design, the Works shall be remedied to the satisfaction of Irish Water or, if not possible, removed and the defective elements replaced with Works in conformance with the Codes of Practice and Standard Details.
- An Irish Water nominated third party certified assessment of the Works already constructed may need to be carried out at the Developer's cost, for Irish Water's review.
- Irish Water reserves the rights to refuse to accept the assessment of the third party assessor.
- Where the third party assessment identifies non-compliance with the relevant technical standards, the Works shall be remedied to the satisfaction of Irish Water or, if not possible, removed and the defective elements replaced in conformance with the Codes of Practice and Standard Details.
- Only after the points above have been resolved and the requirements of Irish Water have been met, will the Works be allowed considered acceptable for connection to the Irish Water Network(s).
- The Defects Liability Period for the Works may be increased by an additional 12 months.

**Any part of the Works which is advanced by the Developer without the approval of Irish Water are progressed at the Developer's risk as connection to the IW Network may not be permitted.**

## **6. Construction Phase – Inspection of Works during construction**

Irish Water reserves the right to carry out an inspection of the Works, including inspection of relevant site records, at any time for the purposes of auditing for compliance with the requirements of the Connection Agreement, Codes of Practice and Standard Details. In this regard the following applies:

- The Developer's Construction Engineer shall make provision for access by Irish Water's Field Engineer, Irish Water officers or its Agents to inspect the Works during construction when requested.
- The IW Field Engineer (or their Agents) shall have access to the site at any reasonable time.
- Inspections by IW Field Engineers do not in any way relieve the Developer's Construction Engineer of the responsibility for ensuring that construction of the Works is in accordance with the vetted design proposal and that it complies with the requirements of the Connection Agreement, Codes of Practice and Standard Details.
- The Developer's Construction Engineer shall arrange for the provision of all personnel and equipment required for any scheduled inspection and testing.
- Where it is deemed that non-compliance with the Connection Agreement, Codes of Practice or Standard details arises, the IW Field Engineer may issue a Non-Conformance Notice (refer to **Appendix 6**) to the Developer, the Developers Design Engineer and the Developers Construction Engineer detailing the nature of the non-compliance item(s).
- The Developers Construction Engineer shall respond to the Non-Compliance Notice within 5 working days giving details of the necessary remedial actions to be performed. On completion of the remedial actions works the Field Engineer shall be notified so that the Works will be re-inspected. All correspondences relating to Non-Conformance Notices shall be filed in the QA Folder.
- **Failure to address any non-conformance item may result in causing a delay to the connection or refusal by IW to permit connection to the IW Network(s).**

The Table in **Appendix 3** below summarises the **Testing and Commissioning** activities associated with the installation of water and wastewater infrastructure on site and details the rolls and responsibilities of both the Developer and the Developer's Construction Engineer and the IW Field Engineer.

### **6.1 Log of Inspections and Tests**

The Developer's Construction Engineer shall arrange and undertake inspection and testing of the Works to ensure that the requirements of the Codes of Practice are satisfied. The Developer's Construction Engineer shall maintain a log of all inspections and tests undertaken and shall include this in the QA Folder where it can be reviewed by Irish Water. The log shall record the following information:

- Inspections and/or tests witnessed by the Developer's Construction Engineer of the Works, which were considered satisfactory. To this effect the Developer's Construction Engineer shall sign the following statement on the Developer's Construction Engineer's log: "I am satisfied that the above inspection and tests have been carried out and are satisfactory."

- Inspections and / or tests witnessed by the Developer's Construction Engineer of the Works, which were considered unsatisfactory.
- Any remedial action undertaken to the Works as a result of an unsatisfactory inspection prior to re-inspection.

The Log of Inspections and Test forms part of the Final Documents and must be submitted to the IW Field Engineer prior to a final inspection prior to issuing of the Conformance Certificate being undertaken. The Log shall include, but shall not be limited to, the date, time, item tested, type of test, result of test and the name of the witness.

The Irish Water Field Engineer can request the Developer's Construction Engineer to test or re-test any part of the Works as they deem necessary.

## **7. Commissioning Phase**

### **7.1 Final Documents**

The Developer's Construction Engineer must submit to the Irish Water Field Engineer the **Final Documents** for review. The required form and content of the **Final Documents** are outlined in the IW technical guidance documentation, particularly in Section 1.7 of the Code of Practice for Water Infrastructure and in Section 1.8 of the Code of Practice for Wastewater Infrastructure and are also outlined in summary in **Appendix 4** of this document. Collation of the Final Documents will be facilitated by records held in the site QA Folder. The as-constructed drawings, required as part of the Final Documents, shall be certified 'as-constructed', signed and dated by the Developer's Construction Engineer. The as-constructed drawings shall be in accordance with the requirements set out in the relevant Codes of Practice.

The Final Documents shall be submitted to the Field Engineer along with a duly completed **Appendix 4**, thereby representing a request by the Developer for the provision of the Conformance Certificate.

Once the set of Final Documents have been submitted, the Developers Construction Engineer shall arrange a Walk-Off Inspection of the Works with Irish Water's Field Engineer.

Connection to the IW network(s) will not be permitted without the submission of the Final Documents as per the requirements of the relevant IW Codes of Practice. Failure to provide the required documents may delay the connection.

All Deeds of Easement for the Works must be submitted as per the requirements set out in the Connection Agreement.

## **8. Conformance Certificate**

### **8.1 Walk Off Inspection**

Following a satisfactory review the Final Documents by the IW Field Engineer, the

Developer's Construction Engineer shall contact Irish Water's Field Engineer and request a Walk-Off Inspection of the Works. The Developer's Construction Engineer shall give a minimum of 5 business days' notice in advance of this meeting. Irish Water's Field Engineer will inspect the Works with the Developer's Construction Engineer in attendance. If minor corrections are required to the Works (snags) a '**Defects Report**' will be issued to the Developer's Construction Engineer by the IW Field Engineer.

## **8.2 Issue of Conformance Certificate**

Following Irish Water's examination of the Final Documents and completion of Walk-Off Inspections of the Works, the Developer will be made aware of the outcome of these inspections in writing and may be required to revise the Final Documents or undertake remedial work to address deficiencies found during the Walk-Off Inspection. An additional inspection will be carried out if deemed necessary and, if the Works and Final Documents are deemed acceptable, Irish Water will issue a **Conformance Certificate** and complete the connection of the Works to the Network(s) within the timeframe indicated in the Connection Agreement. If minor corrections are required to the Works (snags) a '**Defects Report**' will be issued with the Conformance Certificate outlining these minor defects. These minor corrections shall be addressed by the Developer within a reasonable timeframe before the connection is completed.

If the Developer does not attend to the listed remedial requirements outlined in the "Defects Reports" or if these remedial works are not carried out or undertaken in a reasonable timeframe, Irish Water will have recourse to call upon the Self-Lay Surety of the Connection Agreement to procure remedial works or may not connect the Works to the Irish Water Network(s).

Irish Water reserves the position that Vesting of the Works in Irish Water or provision of a connection for the Works to the Network(s) will not take place until all Final Documents relating to the Works have been provided to Irish Water and are deemed acceptable.

## **9. Connecting of Infrastructure to Irish Water Network(s)**

The Developer will be required to undertake any remedial Works outlined in correspondence with the **Conformance Certificate** within seven days in advance of the connection of the infrastructure to the Irish Water Network. When the Works are deemed to be acceptable, IW's Field Engineer or an Irish Water Agent will initiate the connection of the Works upon the request from the Developer's Construction Engineer. Details of the connection arrangements are generally provided in **Appendix 3 – Special Conditions Part 1 of the Connection Agreement**.

The **Defects Liability Period** commences at the date of issue of the **Conformance Certificate**. Irish Water will vest the Works on its connection to the Network(s). The Developer will be deemed to remain responsible under the Connection Agreement for the cost of remediation of any defective Works that are deemed necessary during the **Defects Liability Period**. The Developer will also be responsible for the operation and

maintenance of the Works during the Defects Liability Period.

Connections or alterations required to Irish Water's existing infrastructure as a result of new Works shall be made by prior arrangement with Irish Water and may be subject to a separate IW Diversion Agreement.

## **10. Vesting of the Works**

Subject to Irish Water issuing a Conformance Certificate for the Works and the provision of a connection of the Works to the Irish Water Network(s) being available, vesting of the infrastructure will take place. The date that the Works are vested to Irish Water will be the date that the Conformance Certificate has been issued to the Developer.

## **11. Defects Liability Period**

The Defects Liability Period will apply for a minimum of 12 months or such other period as may be specified by Irish Water in the Connection Agreement, between the issue of the Conformance Certificate and the issue of the Completion Certificate during which the Developer is responsible under the Connection Agreement for the cost of rectification of any defects in or connected to the Works. Any defects found during the Defects Liability Period are also the responsibility of the Developer and shall be remedied by them.

During the Defects Liability Period the Developer shall be responsible for the execution or procurement of all work of repair, reconstruction, rectification and making good of defects, imperfections, shrinkages or other faults as may be required for the Works. Irish Water may undertake additional inspections, surveys and investigations to assess the continued adequacy of the Works during this period. Irish Water will notify the Developer in writing of the need for such repair reconstruction or rectification work. All such work shall be carried out at the Developers expense.

In the event of the existence of deficiencies in the Works during the Defects Liability Period, Irish Water will identify areas of deficiencies and also a programme of remedial works to rectify these deficiencies. Repairs of these deficiencies shall be carried out by the Developer.

If the Developer fails to execute or procure the execution of repair works Irish Water shall be entitled to carry out such repair works and shall be entitled to recover from the Developer the expenses reasonably incurred by way of deduction from the Self- Lay Surety provided under the Connection Agreement.

The Self-Lay Surety shall be returned to the Developer twenty eight (28) days after the issuing of a Completion Certificate confirming the completion of the Defects Liability Period subject to any deductions made pursuant to the Connection Agreement and

subject to the Works being deemed adequate and satisfactory.

Following the completion of any additional modifications of the Works within the development during the Defects Liability Period, additional record documentation shall be provided by the Developer to Irish Water. This shall comprise updated “As Constructed” records of service pipe installation, location of inspection chamber, Boundary Boxes, etc. This information may be provided on a phased basis as blocks of houses are made ready for occupation by the Developer.

## **12. Completion**

### **12.1 Final Inspection at Defects Liability Termination**

Irish Water will carry out a Final Inspection of the infrastructure nearing the end of the Defects Liability Period. This inspection will establish if any additional work has been carried out by the Developer that might impact on the integrity of the Works since the issue of the Conformance Certificate and commencement of the Defects Liability Period. Such impacts may be associated with the installation of other utility services without proper horizontal and vertical separation, installation of structures closer to the Works than allowed, damage to the infrastructure by building works, etc.

If defects are observed, additional CCTV or dye surveys may be required on the wastewater collection system to identify and locate such defects. Additional water audit surveys shall be carried out on water supply systems. If leaks are identified in the water supply infrastructure, tests shall be carried out to locate the deficiencies in the pipework. The cost of such surveys shall be recovered through any Self-Lay Surety associated with the Connection Agreement. The undertaking of the CCTV surveys shall be as outlined in Section 1.9 of the Code of Practice for Wastewater Infrastructure. The water audit and additional surveys on the water supply infrastructure shall be carried out in accordance with Section 1.13 of the Code of Practice for Water Infrastructure.

Additional works may have to be carried out by the Developer to rectify these defects if deemed necessary by Irish Water. If this is not executed by the Developer, it will be carried out by Irish Water and its funding recovered by the Security or the Self-Lay Surety that is in place via the Connection Agreement.

### **12.2 Deductions from the Self-Lay Surety**

Irish Water may deduct from the Self-Lay Surety any costs which Irish Water may incur:

- in undertaking any work of construction, reconstruction, maintenance, rectification or repair or making good of defects, imperfections, shrinkages or other faults by reason of the Developer or the Contractor failing to complete the Works in a good and workmanlike manner and in accordance with the requirements of the Connection Agreement; or,
- Towards invoices or sums payable by virtue of any actions, claims or demands

made against Irish Water by any third party as a result of any act or default by the developer.

### **12.3 Issue of Completion Certificate**

If the infrastructure is deemed adequate after the Defects Liability final inspections, Irish Water will release the Completion Certificate to the Developer and return the Self-Lay Surety to the Developer subject to any deductions that might arise due to monies owed for remedial Works or other costs incurred by Irish Water.

The Developer will remain responsible for the repair to the final road restoration of trenches. It is to be noted that the Developer will be responsible for the upkeep of roads, footpaths, etc. until such time as the development is taken in charge by the Local Authority. The Developer shall alert Irish Water of the proposed Taking in Charge schedule for the development by the Local Authority

## Appendix 1 – QA Folder Content Requirements

### To be made available for inspection by IW Field Engineer or Agents of IW

QA Folder shall be held on site and comprise the following typical non-exhaustive scope of documentation:

No.	Document description
1	Copy of IW New Connection Agreement including associated drawings and specifications Copies of all revisions to Works approved by IW & shall include all drawings & associated documents
2	Copy of Granted Planning Permission including Planning Conditions, associated drawings, reports (environmental, G.I., etc.)
3	Construction programme for development & agreed IW Inspection & Test Plan (agreed with IW at pre-start meeting)
4	Training Records for Site Personnel engaged in pipe installation, pipe welding & other site activities where specialist training or equipment is required: <ul style="list-style-type: none"> <li>• WSTG Hygiene Training</li> <li>• Electro fusion Welding operators Certification</li> </ul>
5	Copies of equipment Certification <ul style="list-style-type: none"> <li>• Electro fusion Welding equipment</li> <li>• Pressure testing equipment</li> </ul>
6	Materials Records: <ul style="list-style-type: none"> <li>• Certification of compliance with Specifications</li> <li>• Aggregates</li> <li>• Concrete</li> <li>• Pipes &amp; jointing</li> <li>• Valves</li> <li>• Details of suppliers</li> <li>• Precast MH rings, gaskets, biscuits, frames &amp; covers, pumps, meters, etc.</li> <li>• Record of any material changes including IW approvals where appropriate</li> </ul>
7	As-constructed records of pipelines: <ul style="list-style-type: none"> <li>• Up-dated drawings of constructed works</li> <li>• Pipeline record sheets</li> <li>• Photographic records</li> <li>• GPS surveys</li> <li>• Manhole cards</li> <li>• Crossing points/separation distance details &amp; records (including photographic records)</li> <li>• CCTV surveys</li> <li>• Record of Connection to existing IW infrastructure</li> <li>• Ground conditions / ground water records</li> <li>• Trench, pipe bedding, haunching, depth of cover, compaction &amp; backfill records</li> <li>• Record <u>all</u> electro fusion pipe welds/joints &amp; GPS locations, include printouts</li> <li>• Consumer connections &amp; locations</li> <li>• Thrust block locations &amp; details</li> <li>• Details of storm water network</li> <li>• Record of any revisions to original IW approved design (to include IW approval of changes)</li> </ul>

8	<p><b>Testing &amp; Commissioning:</b></p> <ul style="list-style-type: none"> <li>• Schedule of testing pipework – wastewater (to include all record sheets of air/water tests carried out, signed &amp; witnessed)</li> <li>• Schedule of testing manholes – wastewater (to include all record sheets of water tests carried out, signed &amp; witnessed)</li> <li>• Schedule of testing pipework – water (to include all record sheets of pressure tests carried out, signed &amp; witnessed)</li> <li>• Schedule of testing chambers – water &amp; wastewater (to include all record sheets of water tests carried out, signed &amp; witnessed)</li> <li>• Schedule of testing pipework – consumer connections (to include all record sheets of air tests carried out, signed &amp; witnessed)</li> <li>• Flushing/swabbing of pipelines</li> <li>• Details of all PE pipe/weld tests including details of test laboratory, data loggers, copies of all printouts, details of witnessing.</li> <li>• Materials test records (aggregates, concrete cubes, etc.)</li> <li>• Plant test results (pumps, etc.)</li> <li>• Chlorination/disinfection/de- chlorination (to include all record sheets, signed &amp; witnessed)</li> <li>• Water quality testing (to include all record sheets, signed &amp; witnessed)</li> </ul>	
9	Wayleaves /Land acquisition	
10	<p><b>Correspondence</b></p> <ul style="list-style-type: none"> <li>• Minutes of Start-up meeting</li> <li>• Non-compliance Notices</li> <li>• Miscellaneous</li> </ul>	

## Appendix 2 - Construction Activities - Water and Wastewater Infrastructure Inspections – roles & responsibilities

Element of Work	Developer's Responsibility	Field Engineer's Responsibility
Materials including pipes, valves, fittings, aggregates, covers, frames, precast units, etc.	Adhere to IW Code of Practice /Standard Detail /Connection Agreement. On-site QA Folder to contain records of all materials used in the construction of the water/waste water infrastructure. Inspect all materials ahead of construction & certify compliance	Check for confirmation by a Developer's Construction Engineer that the water/wastewater infrastructure has been installed using appropriate material & workmanship. Carry out audit & inspection of QA records & materials.
Storage & Transportation	Developer must demonstrate to Irish Water that they have correct storage and transportation methods in place. Developer must Inspect prior and during construction works.	Carry out inspections of materials, check for damage, contamination, etc. Review method statements for transporting materials, e.g. strings of Pre-welded PE pipe.
Material Changes	All material changes must be approved by Irish Water. Written record to be filed on site by Developer. Developer's Design Engineer to seek approvals in writing from IW CDS Design Engineer.	Check QA folder that 'Statement of Design Acceptance' has been issued by CDS for the material change.
Vertical & Horiz. alignment & gradients	Developer to construct infrastructure as per design submitted at Connection Agreement that has received a Statement of Design Acceptance from IW CDS.  Maintain records of as-constructed work, including GPS survey data & photographs. Inspect & certify compliance with Connection Agreement Plans.	Compare as-built drg.'s against Connection Agreement plans. If non-compliance is identified, check QA folder for CDS 'Statement of Design Acceptance'. Monitor works during construction and carry out spot checks.
Ground Conditions	Do not construct pipelines in unsuitable ground conditions. Inform Irish Water if ground conditions prove to be unsuitable/ submit revised construction details to IW Design Engineer.	Monitor ground conditions during construction. If design revised check QA folder for CDS 'Statement of Design Acceptance'. Note presence of ground water when encountered.
Pipe Jointing	Competent staff to be employed for the construction of water/waste water pipelines. Adhere to IW Code of Practice and Standard Details. Inspect & certify compliance	Carry out site inspections of materials, pipe joints, pipe jointing methods, check for damage to pipes, fittings, joints, check for material contamination, etc.  Check QA folder for specifications /compliance with IW Codes of Practice and Standard Details
Electrofusion Welding	Competence Certificate for operatives & plant to be available on site QA Folder for inspection. A printout of the joint details, with a GPS location of each joint shall be retained for QA purposes on site. Developer to provide IW Field Engineer with a copy of printouts. Developer to provide Test welds which will be chosen at random by the IW Field Engineers to be tested by an Independent Laboratory. (Frequency 1 test per 30).  Inspect & certify compliance. Audit Inspections Independent test company to forward results of test weld to Developer and Irish Water	Countersign test weld ahead of delivery to Independent Laboratory.  Audit QA Folder & check Operatives & Equipment Certs for compliance. Check that Test Report is provided and indicate that the joint is satisfactory. <b>Mandatory Inspection required</b>

<b>Element of Work</b>	<b>Developer's Responsibility</b>	<b>Field Engineer's Responsibility</b>
Separation Distance	Developer to maintain photographic record to prove that separation distances are achieved ahead of backfilling, in compliance with separation requirements in the Codes of Practice. Maintain GPS survey data & photographs of all crossing points with other services. Inspect & certify compliance.	Carry out site Inspections & check separation distances on site. Photographic records held in QA Folder to be inspected on site.
Trench width & base	Adhere to IW Codes of Practice /Standard Details requirement. Inspect & certify compliance	Carry out site Inspections & check for compliance on site. Inspect QA Folder for certification.
Cleaning Pipes	Developer to ensure that pipes are clean & free from debris and contamination materials. Pipe stops/plugs used when works suspended. Adhere to IW Code of Practice Inspect & certify compliance	Carry out site Inspections & check for compliance on site. Inspect QA Folder for certification.
Pipe bedding/haunching & surround.	Adhere to IW Codes of Practice /Standard Detail requirements, maintain photographic record Inspect & certify compliance	Carry out site Inspections & check for compliance. Inspect QA Folder for photographic record & certification.
Marker Tape over pipework	Adhere to IW Codes of Practice /Standard Detail requirements, maintain photographic record Inspect & certify compliance	Carry out site Inspections & check for compliance on site. Inspect QA Folder for photographic record & certification.
Depth of Cover	Adhere to IW Codes of Practice /Standard Detail/Connection Agreement requirements. Developer to maintain photographic record to prove that correct cover to the crown of the pipework is achieved ahead of backfilling. Inspect & certify compliance	Carry out site Inspections & check for compliance on site. Inspect QA Folder for photographic record & certification.
Anchors/Thrust/Support Blocks for pumped mains	Adhere to IW Codes of Practice /Standard Detail/Connection Agreement requirements. Inspect & certify compliance	IW Field Engineer to carry out site Inspections & check for compliance on site. Inspect QA Folder for certification
Backfilling	Comply with IW Codes of Practice/Standard Details requirements. Inspect lines prior to backfilling to assess compliance & certify compliance	IW Field Engineer to carry out site Inspections & check for compliance on site. Inspect QA Folder for certification
Marker Posts & Plates	Comply with IW Codes of Practice/Standard Details requirements. Certify compliance	Carry out site Inspections & check for compliance on site. Inspect QA Folder for certification
Manholes / Inspection chambers / Valve Chambers/ Boundary boxes/Bulk Meter Chambers	Adhere to IW Codes of Practice /Standard Detail/Connection Agreement requirements. Developer to maintain photographic record of construction ahead of backfilling. Records of base, walls, shafts, roofs, step iron or ladders,, surround (pre-cast units) inverters, benching, joints, gaskets & rocker pipes, invert levels & pipe details for as-built drg's. Provide proprietary lifting equipment for covers & safety access plan of MH/chamber entry. Maintain record of all materials & associated fittings, test results for concrete, aggregates, etc. Inspect & certify compliance.	IW Field Engineer to carry out site Inspections & check of all manholes, chambers, etc. for compliance on site with the Codes of Practice and Standard Details. Randomly select to check depth against as-builts. Inspect QA Folder for as-built records & certification.

<b>Element of Work</b>	<b>Developers Responsibility</b>	<b>Field Engineers Responsibility</b>
Wastewater Pump Stations / Water Supply Booster Stations	<p>Adhere to IW Code of Practice /Standard Detail/Connection Agreement requirements.</p> <p>Developer to maintain photographic record of construction ahead of backfilling.</p> <p>Records of base, walls, shafts, roofs, invert, benching, step irons and ladders (where allowed/required) joints, gaskets &amp; rocker pipes, invert levels &amp; pipe details, pumps, meters, gauges, ducting, control &amp; telemetry systems, etc. for as-built drg's. Provide proprietary lifting equipment for covers &amp; safety access plan of wet well and valve chamber entry. Maintain record of all materials &amp; associated fittings, test results for concrete, aggregates, pump, M&amp;E specifications &amp; manuals etc. Inspect &amp; certify compliance</p>	<p>IW Field Engineer to carry out site Inspections &amp; check for compliance on site with the Codes of Practice and Standard Details.</p> <p>Inspect QA Folder for as-built records &amp; certification.</p> <p><b>Mandatory Inspection required</b></p>

## Appendix 3 – Wastewater and Water Infrastructure Testing and Commissioning

### Appendix 3.1 - Wastewater Infrastructure - Testing & Commissioning

Element of Work	Developers Responsibility	Field Engineers Responsibility
Gravity Wastewater Sewers	Notify Irish Water ahead of all pressure testing. Air pressure test to be carried out between Manholes on all gravity lines after the sewer is installed & before any concreting or backfilling commences. Further Air Test to be carried out following backfilling of trench. In the event of an Air Test failure follow up investigations required including a CCTV survey & Water Test. Final Report Required from Developer's Construction Engineer stating that all tests have been witnessed and passed. Comply with IW Codes of Practice/Standard Details requirements. Certify compliance. Maintain Inspection & Test Log.	Witness testing and report on compliance. Inspect QA Folder for certification. <b>Mandatory Inspection required</b>
Wastewater Service Connections	Air test to be carried out between the sewer & property curtilage. Witness & certify compliance. Maintain Inspection & Test Log.	Witness testing and report on compliance. Inspect QA Folder for certification <b>Mandatory Inspection required</b>
Dye testing of gravity w/water sewer & service connections	Dye testing to be carried out by the Developer to ensure cross connections/ exfiltration does not exist. Records and results of dye testing to be maintained on site within QA Folder. Witness & certify compliance. Maintain Inspection & Test Log.	Witness testing and report on compliance. Inspect QA Folder for certification <b>Mandatory Inspection required</b>
Wastewater Rising Main Testing	Notify IW in advance of all pressure testing. Pre test rising mains ahead of IW attendance on site. Calibrated gauges and data loggers in place with certification available for inspection within QA Folder. Testing of PE and DI Pipelines to be carried out in accordance with IGN 4-01-03. PE and DI pipe testing to be carried out by competent contractor. Data Logger in place as part of the monitoring system. Print results to be provided to IW Field Engineer and Test report in accordance with Code of Practice to be provided. Developer's Construction Engineer to witness all sewer & rising main testing & provide cert of compliance for all rising mains & sewers. Witness & certify compliance. Maintain Inspection & Test Log.	Witness testing and report on compliance. Inspect Testing Report and confirm its adequacy Inspect QA Folder for certification <b>Mandatory Inspection required</b>
CCTV Network Surveys	CCTV surveys to <b>WRc Manual for Sewer Condition Classification, 5<sup>th</sup> Edition</b> standard and in accordance with the Code of Practice. Notify IW in advance of CCTV survey commencing. Carry out CCTV Survey in accordance with IW Wastewater Network Survey Standard. All sewers must meet Grade 1 in both Operational and Service Standards. Submit CCTV Survey, CCTV Report, files compatible with IW InfoNet system. Witness & certify compliance. Maintain Inspection & Test Log.	Witness testing and report on compliance of CCTV survey. Review CCTV report. Inspect QA Folder for certification. <b>Mandatory Inspection required</b>

Element of Work	Developers Responsibility	Field Engineers Responsibility
Manholes / Inspection Chambers	<p>Water test to confirm water tightness to be carried out in accordance with BS EN 1610 on foul MH's / Inspection Chambers at the frequency required by the Field Engineer. Infiltration tests to be carried out on MHs/chambers at the frequency required by the Field Engineer. MH Survey QA system in place. Records to be maintained on site in QA folder for inspection. Photographic records of all MH testing to be filled on site. Witness &amp; certify compliance. Prepare as-built drg.'s including invert &amp; cover levels &amp; pipe details. Maintain Inspection &amp; Test Log.</p> <p><b>Compliance Report</b> required from Developer's Construction Engineer stating: "Manhole testing has been witnessed &amp; that exfiltration and infiltration is below the test acceptance parameters, MH's (including benching, biscuit &amp; cover) comply with requirements set down in IW Code of Practice and the Standard Details". Developer's Construction Engineer to sign off Manhole QA Schedule.</p>	<p>Provide the Developer's Construction Engineer with a test frequency requirement for water tightness and infiltration tests. Inspect MH QA records. Carry out visual inspection of each MH &amp; chamber &amp; prepare condition report. Witness all water and infiltration testing and report on compliance.</p> <p>Inspect QA Folder for certification.</p> <p><b>Mandatory Inspection required</b></p>
Wastewater Valve Chambers	<p>Adhere to IW Code of Practice /Standard Details requirements. Developer to provide demonstration that randomly chosen fittings are functioning correctly during final walk-over with IW Field Engineer.</p> <p>Developer to provide as build records of depth to top of fittings. Inspect &amp; certify compliance</p>	<p>Carry out site Inspections &amp; check for compliance on site. Inspect QA Folder for as-built records &amp; certification.</p> <p><b>Mandatory Inspection required</b></p>
Individual Wastewater Service Connection Inspection Chamber	<p>Approved Inspection Chambers to be installed as per IW Code of Practice/Standard Details requirements.</p> <p>Developer to provide IW with as build record identifying invert level of chamber.</p> <p>Inspect &amp; certify compliance</p>	<p>Carry out site Inspections &amp; check for compliance on site. Inspect QA Folder for as-built records &amp; certification. <b>Mandatory Inspection required</b></p>
Marker Posts and Plates	<p>Adhere to IW Code of Practice /Standard Details requirements. Inspect &amp; assess compliance</p>	<p>Carry out site Inspections. Inspect QA Folder for certification.</p>
Wastewater Pump Stations	<p>Adhere to IW Codes of Practice/ Standard Details &amp; Connection Agreement requirements.</p> <p>Full operation test of all pumps, pump controls, pump protection devices, telemetry systems to be carried out in accordance with IW Technical Standard for Wastewater Pumping Stations.</p> <p>Notify IW in advance of all plant/equipment testing, Provide IW with all Operation &amp; Maintenance Manuals, As-Built drawings, Control wiring diagrams, Control Philosophies, Warranty documents, etc. Developer to provide IW with a typical operational and maintenance demonstration of all key equipment. Developers Design Engineer to witness all testing associated with the operation of the pump station &amp; provide to IW all necessary certification of compliance for Pump Station in accordance with Irish Water's Technical Standard for Wastewater Pumping Stations. Developer to ensure PS site including parking areas and access tracks are transferred to the ownership of Irish Water. Inspect &amp; assess compliance.</p>	<p>Carry out site Inspections. Inspect QA Folder for as-built records &amp; certification.</p> <p>Witness testing &amp; report on compliance of pump station structure, plant and equipment. Review doc's &amp; manuals received from developer &amp; check for compliance. Upload all such material to IW ECM Data base.</p> <p>Review all doc's relating to Wayleaves/ rights of way &amp; check for compliance with Connection Agreement.</p> <p>Refer to IW legal department.</p> <p><b>Mandatory Inspection required</b></p>

## Appendix 3.2 - Water Supply Assets - Testing & Commissioning

Element of Work	Developers Responsibility	Field Engineers Responsibility
Hygiene Standards	Adhere to all appropriate hygiene procedures to ensure that the infrastructure installed is fit for use as water supply works for the delivery of wholesome or potable water, fit for human consumption.	Carry out site Inspections & check for compliance on site. <b>Mandatory Inspection required</b>
WSTG Hygiene Training	Hygiene Training records for all personnel working on the installation of potable water supply system to be available for inspection within the on-site QA Folder. Inspect & certify compliance.	Carry out site Inspections of QA folder & check for compliance on site <b>Mandatory Inspection required</b>
Pressure Testing of Water supply mains	Notify IW in advance of all pressure testing. Pre test rising mains ahead of IW attendance on site. Calibrated gauges and data loggers in place with certification available for inspection within QA Folder. Testing of PE and DI Pipelines to be carried out in accordance with IGN 4-01-03. DI and PE testing to be carried out by competent contractor. Data Logger in place as part of the monitoring system. Print results to be provided to IW Field Engineer and Test report in accordance with Code of Practice to be provided. Developer's Construction Engineer to witness all water main testing & provide certificate of compliance for all pipelines. Witness & certify compliance. Maintain Inspection & Test Log.	Witness testing and report on compliance. Inspect Testing Report and confirm its adequacy Inspect QA Folder for certification <b>Mandatory Inspection required</b>
Service Connection (public side)	Developer to Notify Irish Water of testing of service. Testing Regime to be in place. Test service connection pipework/saddle connection. Developer to maintain photographic record to prove that correct depth has been achieved and Marker Tape has been installed 300mm above the crown of all service connections. Inspect & certify compliance. Maintain Inspection & Test Log.	Witness testing at IW discretion, (frequency 1 in 5) and report on compliance. Inspect QA Folder for certification <b>Mandatory Inspection required</b>
Cleaning, Swabbing and Flushing	Notify IW in advance of all cleaning, swabbing and flushing activities of the pipelines and service connections, including in advance of Chlorination /Disinfection of pipelines. Adhere to IW Codes of Practice requirements for cleaning, swabbing and flushing. Witness & certify compliance. Maintain Inspection & Test Log.	Witness cleaning, swabbing and flushing activities. Inspect QA Folder for certification. <b>Mandatory Inspection required</b>
Chlorination /Disinfection	Notify IW in advance of all Chlorination/Disinfection of the pipelines and service connections. Certified dosing pump to be utilised by the developer (20mg/l). Adhere to IW Codes of Practice requirements for / Standard Details & Connection Agreement. Witness & certify compliance. Maintain Inspection & Test Log.	Witness testing and report on compliance. Inspect QA Folder for certification. <b>Mandatory Inspection required</b>
De-Chlorination	De-chlorinate and dispose in a safe and environmentally suitable fashion the water that has been used to disinfect the water mains. Adhere to IW Codes of Practice. Witness & certify compliance. Maintain Inspection & Test Log.	Inspect QA Folder for certification. <b>Mandatory Inspection required</b>

Element of Work	Developers Responsibility	Field Engineers Responsibility
Water Quality Testing	<p>Carry out bacteriological testing of the water in the water mains following satisfactory disinfection in accordance with the requirements of the Code of Practice for Water Infrastructure. Water samples to be provided to accredited laboratory agent nominated by Irish Water. Adhere to IW Codes of Practice requirements. Witness &amp; certify compliance. Maintain Inspection &amp; Test Log</p>	<p>Witness Sampling of water for bacteriological testing. Examine Test results and confirm satisfaction. Notify Developer on outcome of results from laboratory <b>Mandatory Inspection required</b></p>

## Appendix 4 – Final Documents Content Requirements and Request for Conformance Certificate

Development Name: \_\_\_\_\_ Location: \_\_\_\_\_

**Final Documents to comprise the following typical scope of documentation (They shall be in accordance with the requirements of Section 1.7 of the Code of Practice for Water Infrastructure and Section 1.8 of the Code of Practice for Wastewater Infrastructure):**

No.	Document description	Y/N
1	Confirmation by a Chartered Engineer that the water/wastewater infrastructure has been installed in accordance with the design submitted in the Connection Application	
2	Confirmation by a Chartered Engineer that the water/wastewater infrastructure has been installed using appropriate material and workmanship.	
3	Confirmation by a Chartered Engineer and test result certificates indicating that the water/wastewater infrastructure has undergone appropriate on-site testing, off-site testing and commissioning. The appropriate site tests for wastewater collection infrastructure would be as follows: <ul style="list-style-type: none"> <li>• Water retaining tests completion results for manholes and pumping station structures associated with wastewater infrastructure</li> <li>• Air tests and water tests completion results for sewers</li> <li>• Testing completion results of pumping plant (if appropriate),</li> <li>• Pressure testing completion results of rising mains and for water mains</li> <li>• Visual inspection completion results of manholes</li> <li>• CCTV report of sewer pipework</li> <li>• Commissioning reports of wastewater infrastructure and for water infrastructure (cleansing, flushing, swabbing, disinfection, bacteriological testing, etc.)</li> </ul>	
4	Provision of “As-Constructed” drawings and records of the constructed water and wastewater infrastructure	
5	“As Constructed” record of service pipe installation completion (including link to WPRN),	
6	Provision of Safety File in accordance with the current Safety and Health Construction Regulations	
7	Provision of Operation and Maintenance Manuals for pumping plant (if appropriate)	
8	Provision of wayleave and easement agreements,	
9	Provision of drawings to Irish Transverse Mercator coordinates (ITM) for wayleave/easement/land acquisition	
10	Proof of ownership of site (copy of Deeds/Solicitor letter),	
11	Confirmation by a Chartered Engineer of compliance with the Building Regulations and the Building Control (Amendment) Regulations, in particular evidence of compliance with the Building Regulations to ensure plumbing systems compliance and no risk of contamination.	

Final Documents issued by: \_\_\_\_\_ (Developer Construction Engineer )  
 Date: \_\_\_\_\_

Final Documents received by: \_\_\_\_\_ (Irish Water Field Engineer)  
 Date: \_\_\_\_\_

## Appendix 5 – Sample Inspection & Test Plan



### Appendix 3 - Inspection & Test Plan (ITP) - to be agreed prior to Connection Agreement

IW Unique Customer Reference : CUS16.....					
<b>Development Details</b>					
Development Name			Phased Development (Yes/No)		
Address			Estimated Construction Date		
Number of Units			Estimated Duration		
<b>Developers Details</b>		<b>Developers Representative(DR)</b>		<b>Contractors Details</b>	
Name	Name		Name		
Address	Address		Address		
Contact	Consulting Engineer:		Agent Name		
Phone:	Phone:		Phone:		
<b>Water &amp; Wastewater Infrastructure Details</b>					
<b>Water Infrastructure</b>			<b>Wastewater Infrastructure</b>		
Water main (m)			Gravity Foul Sewer(m)		
Bulk Meter Present	Yes/No		Rising Foul Main(m)		
Booster Pump Present	Yes/No	Number:	Pumping Station Present	Yes/No	Number:
			Number of Manholes		
<b>Standard IW Forms:</b>					
IW Test Form for Pipeline Test (Water & Wastewater)					
IW Test Form for Manhole Water Test					
IW Commissioning Certificate for Pump Station/Booster Station					
IW Warning Notice of Non-conformance with Connection Agreement					
IW Application for Conformance Certificate					
IW Schedule of Corrections					
IW Final Documents Schedule					
IW Completion Certificate					



Item	Inspection Activity	Inspection Procedure & Acceptance Criteria	IW to be Notified	IW Presence	No of IW Attendance Required	DR Attendance
1	Pre-Start Meeting	Pre-Start Meeting – Set Agenda Required.	Yes	Mandatory		Mandatory
2	Water main Pressure Testing	IW Field Engineers/Agents to attend all water main pressure tests.	Yes	Mandatory		
3	Water Quality Testing	IW Field Engineer/Agents to take all water quality samples.	Yes	Mandatory		
4	Service Connections	Connection/Testing/Tapping of services.	Yes	Discretion		
5	Booster Pump Commissioning		Yes	Mandatory		
6	Foul Sewer Testing	IW Field Engineers/Agents to attend all sewer pipe air tests	Yes			
7	Foul Manhole Testing	IW Field Engineers/Agents to attend all MH water tests	Yes			
8	Dye Testing	IW Field Engineers/Agents to attend all dye tests	Yes			
9	Foul Rising main Pressure test	IW Field Engineers/Agents to attend all rising main pressure tests	Yes			
10	Wastewater PS Commissioning	IW Field Engineers/Agents to attend all water main pressure tests	Yes			
11	Application for Conformance Certificate	Developer submits Final Documents to IW for review. IW Field Engineer conducts Walk Over of site and issues Schedule of Corrections	Yes	Mandatory		
12	Schedule of Corrections completed	IW Field Engineer conducts Walk Over of site to confirm Schedule of Corrections completed & that development is in compliance with Connection Agreement. Conformance Cert issued by IW, development can be connected to IW network	Yes	Mandatory		
13	Water Audit, CCTV & MH survey to SUS25	To be completed by Developer prior to start of Defects Liability Period.	Yes	Mandatory		
14	Defects Liability Period	IW Field Engineers/Agents monitor site, conduct walkover inspections		Mandatory		
15	Defects Liability Termination / TIC of assets	IW Field Engineer conducts Final Inspection prior to end of Defects Liability Period & if development is in compliance with Connection Agreement IW shall issue a Completion Certificate. Water service assets TIC by IW	Yes	Mandatory		
		Total IW FE mandatory attendances envisaged =				

## Appendix 6 – Non-Conformance Notice



### Non-Conformance Notice

No: \_\_\_\_\_

IW CDS Ref.		Inspection Date	
Developer			
Development			
Address			
<b>Details of Non-Conformance:</b>			
Issued By:	IW Field Engineer	Date:	
<b>Response by Developer/Developers Representative:</b> <i>Provide below details of response and proposed actions to be taken by Developer. Return to IW Field Engineer, signed and dated by Developer or Developers Representative.</i>			
<i>Response required within 5 working days of issue of this Notice.</i>			
Response by:  (Developers / Developers Representative)	Response Date		
<b>Non-conformance Notice Issued to:</b>			
Developer:			
Contractor:			
Developer Construction Engineer:			
Developer Design Engineer:			
<b>Failure to address non-conformance items may result in a delay or a refusal by Irish Water to allow connection(s) to its network(s).</b>			

## Appendix 7: As-Constructed Plan Checklist

Planset No: \_\_\_\_\_ WAPC Ref No. \_\_\_\_\_

Location and/or Stage Name: \_\_\_\_\_

This checklist is to be used to undertake a review of water and wastewater As –Constructed plans by the Developer's Construction Engineer prior to lodging the submissions with Irish Water. The Certification at the bottom of this checklist is to be signed by Developer's Construction Engineer, confirming that they are in accordance with the requirement for the Codes of Practice.

Water and Wastewater As-constructed Requirements	
<b>Wastewater</b>	
1	All text and as-constructed information <b>clear</b> and <b>legible</b> at A3: Otherwise <b>clear</b> and <b>legible</b> A1 to be submitted.
2	Latest Layout Plans digital forwarded – Format to be DWG or DXF in ING co-ordinates. All Drawing content shall comply with Irish Water's "As Constructed CAD Standards".
3	Location sketches provided for all access chambers, inspection openings and inspection shafts.
4	All sewer gradients within acceptable tolerances.
5	All served properties have sewer junctions shown and where applicable denoted as 150mm per the COP
6	Submission has been signed by Developer's Construction Engineer and Surveyor.
7	Final Inspection date included on plan.
8	As-constructed information has been checked for completeness and correctness as per the statement below.
9	A copy of the final new Works inspection report.
10	Total number of Access Chambers (to be itemised on drawing)
12	Total number of Properties Being Served (to be itemised on drawing)
13	Total number of Manholes (to be itemised on drawing)
14	Total Length of Sewers (listed by nominal diameter and to be itemised on drawing)
<b>Water</b>	
1	All text and as-constructed information <b>clear</b> and <b>legible</b> at A3: Otherwise <b>clear</b> and <b>legible</b> A1 to be submitted.
2	Latest Layout Plans digital forwarded – Format to be DWG or DXF in ING co-ordinates. All Drawing content shall comply with Irish Water's "As Constructed CAD Standards".
3	All installed services shown on plan are spatially correct.
4	Submission has been signed by Developer's Construction Engineer and Surveyor.
5	Final take over date included on plan.
6	As-constructed information has been checked for completeness and correctness as per the statement below.
7	A copy of the final new Works inspection report.
8	Plan bundle number is clear and has been revised.
9	Total number of Hydrants and Air Valves (to be itemised on drawing)
10	Total number of Sluice Valves, PRVs and PSVs (to be itemised on drawing)
11	Total number of Properties Being Served (to be itemised on drawing)
12	Total Length of Mains (listed by nominal diameter and to be itemised on drawing)
<b>Notes:</b>	
<ol style="list-style-type: none"> <li>1. Any items not addressed will result in the submission being rejected.</li> <li>2. This form is to be completed and forwarded with the as-constructed submission.</li> </ol>	

I certify that the assets constructed meet all Irish Water's requirements and that the "As-Constructed" records are true and correct (to the best of my knowledge and belief).

**Signature** \_\_\_\_\_

**Date** \_\_\_\_\_

**Your name and company name** \_\_\_\_\_

**Complete this form and send to the Irish Water Connection and Developer Services' Field Engineer**

## **Appendix 8: Sample Agenda for Pre-Construction Meeting**

### **Pre-Construction Meeting Agenda**

- 1. Introductions**
- 2. Points of contact for the development / Roles & Responsibilities**
  - Design Engineer
  - Construction Engineer (Site Agent) / IW Field Engineer
- 3. H&S**
  - Covid-19 – IW Protocol (as applicable)
  - Site Induction is required for all developments
  - No IW Field Engineers to enter manholes.
  - Tube from air-test kit to extend outside of manhole to surface level.
  - Field Engineer will not complete inspection if they deem procedures are unsafe.
- 4. Construction Programme**
  - Connection Agreement signed & returned, all fee's paid to IW
  - QA only within development site
  - Developer outlines project / sequencing / phasing / Wayleaves / Arterial Route, etc.
  - Temporary Connection
  - Connection Date – provide for ROL application
  - Review design and identify Complexities
  - Special Conditions (if applicable) – possible remedial works
- 5. QA Folder – Records of Materials, Testing, As-built drawings**
  - Materials as per requirements of IW Codes of Practice
  - QA folder used to compile Final Documents
- 6. Inspection & Test Plan – in-line with requirements of Codes of Practice**
  - Sewer Testing – Batching Tests if possible
  - Manhole Testing – first MH plus a sample quantity based on size of development
  - Watermains –PE Weld audit & testing, Pressure testing, swabbing, chlorination, biological testing
- 7. Testing Notifications**
  - 5 Day notice required by IW issued via IW Call-centre (1850 238238) to IW Field Engineer
  - All Tests must be signed off by the Developer's Construction Engineer.
  - Non-conformance Notice
  - Common QA issues – The Dirty Dozen
- 8. Pre-connection**
  - Final Documentation must be presented to IW ahead of connection.
  - CCTV, As-built drawings, IW CAD standards, Testing Certs, Wayleave prepared & signed
  - Walk-off Inspection by IW Field Engineer and customer
- 9. Connection to Network**
  - Refer to details in Self Lay Connection Agreement
- 10. Defects Liability**
  - Final Inspection required at the end of the defects liability stage.