

**Briefing Note  
Joint Sub-Committee on Public Petitions  
September 2015**

**Petition No P00002/15:**

**"Non-compliant installation of water meter boxes in vehicle access locations by Irish Water"**

**INTRODUCTION**

On 6 July 2015, Irish Water received a letter from the Joint Oireachtas Committee on Public Service Oversight and Petitions (the "**Committee**") inviting Irish Water to discuss issues raised in a petition presented by Mr Con O'Leary of Premier Plastics (the "**Petitioner**"). Following consideration of the information provided by the Petitioner, and subsequent information provided by the Department of the Environment, Community & Local Government (the "**Department**"), the Clerk of the Committee has invited Irish Water to discuss the following discreet issues:

1. the use of Grade B and Grade C surface boxes;
2. Irish Water's independent testing of Grade C surface boxes; and
3. the issue of meter reading.

Irish Water has accepted the Committee's invitation to attend before it on 23 September 2015 to discuss the above issues. It is understood by Irish Water that the Committee shall stay within the terms of reference detailed above and shall not require Irish water to comment upon issues other than those identified above.

It should also be noted that Irish Water is currently defending legal proceedings issued by a member of the public in relation to, inter alia, the use of a Grade C surface box cover outside his premises. The principle of sub judice will prevent Irish Water discussing any issues that impact upon these proceedings to any significant extent. Notwithstanding this, Irish Water will do all it can to engage with the Committee in a proactive manner.

To facilitate the Committee's consideration of these questions, this submission considers:

- background information on the Irish Water Metering Programme;
- boundary box ("**Boundary Box**") design guidance;
- performance of Boundary Boxes; and
- commentary on Irish Water's extensive engagement with the Petitioner.

**EXECUTIVE SUMMARY**

Irish Water is satisfied that it has taken a rigorous approach in respect of the selection of covers for its Boundary Boxes which are used in the national domestic water metering programme (the "**Programme**"). At this juncture the Petitioner's concerns have been addressed on numerous occasions by Irish Water both directly and through numerous representations made on his behalf. As such Irish Water is entirely satisfied that:

1. the Grade C plastic surface box used in the Programme is designed (according to the manufacturer) to be 3-times stronger than the requirement for Grade C surface boxes in BS 5834-2/2011 (the "**British Standard**"). Representatives of Irish Water have in fact observed this cover tested to more than 4-times the load stipulated in the British Standard;
2. it is common industry practice outside Ireland to install Boundary Boxes with Grade C surface boxes in the drop down areas of footpaths;
3. empirical evidence from the both the Programme and the previous non-domestic metering programmes carried out by Local Authorities suggests that the failure rate of Grade C surface boxes installed in the drop down areas of footpaths is negligible i.e. 14<sup>1</sup> out of 645,000<sup>2</sup> Boundary Box installations;
4. millions of similar Grade C surface boxes have been installed in similar circumstances in the UK without any reportable issues;
5. the installation of Grade C surface boxes better facilitates customers who want access to the Boundary Box to read their meters;
6. the installation training provided to crews installing Boundary Boxes on behalf of Irish Water, together with post installation quality audits, ensures that workmanship and standards of installation are particularly high. As such defects relating to installation are minimised;
7. it has given due and proper regard to all of the relevant codes and circulars. The Department Circular referred to extensively by Mr O'Leary is not binding upon Irish Water. It is acknowledged that it is good engineering design to follow standards such as those specified in the Department Circular in the absence of any independent design or risk evaluation. However such standards need not be automatically followed where good design and planning suggests an alternative, equally robust, solution;
8. accordingly Irish Water has, as part of the Programme, taken normal design considerations and risk factors into account and remains satisfied that its approach to the installation of surface boxes in the drop down areas of footpaths is the most appropriate design solution. As such, whilst Irish Water acknowledges the terms of the Department Circular, it is considered entirely objectively reasonable for Irish Water to adopt its current approach in respect of the installation of Grade C surface boxes in the drop down areas of footpaths.

## BACKGROUND

Irish Water is, pursuant to legislation, currently engaged in the implementation of the Programme. The Programme is expressly mandated by the Irish Government. Ervia (formerly Bord Gáis Éireann) was tasked with the installation of over 1 million water meters outside domestic properties before the end of 2016. In international terms this is a very ambitious installation programme that dwarfs similar metering programmes in the UK.

<sup>1</sup> Figure accurate up until the end of July 2015.

<sup>2</sup> Approximately 644,500 Grade C Boundary Boxes and 500 Grade B Boundary Boxes.

Following robust EU procurement processes the Programme commenced on site in August 2013 and will continue until 2016.

The Programme involves the installation of water meters at domestic premises and, where required, Boundary Boxes to house the water meters. Where pre-existing Boundary Boxes are already installed at a particular location<sup>3</sup> Irish Water's contractors examine each Boundary Box to establish if it can be reused (and if it is deemed suitable it will then be reused). For this reason, within the Programme, over 645,000 Boundary Boxes have been installed nationwide on behalf of Irish Water (approximately 644,500 Grade C Boundary Boxes and 500 Grade B Boundary Boxes), whilst, to date, Irish Water has installed over 755,000 water meters.

### Boundary Boxes

A Boundary Box is designed to accommodate a water meter and a stop tap on the water supply pipe beneath the footpath. There are three distinct parts to a Boundary Box; (a) the manifold and stop tap assembly at the bottom of the Boundary Box; (b) the vertical plastic guard tube that forms the chamber; and (c) the surface box that is visible in the footpath. The surface box consists of a "cover" and "frame", and is the relevant part of the Boundary Box in respect of this petition. A customer may lift the "cover" in order to look down into the Boundary Box below. The "cover" sits in the "frame", and the surrounding surfacing material supports the frame. The surface box can be classified as Grade A, B or C (BS 5834-2:2011) according to its load-bearing capacity. Photographs of Boundary Boxes (together with the related surface box and cover) used on the Programme are provided below.



Picture 1 - Boundary Box with Surface Box

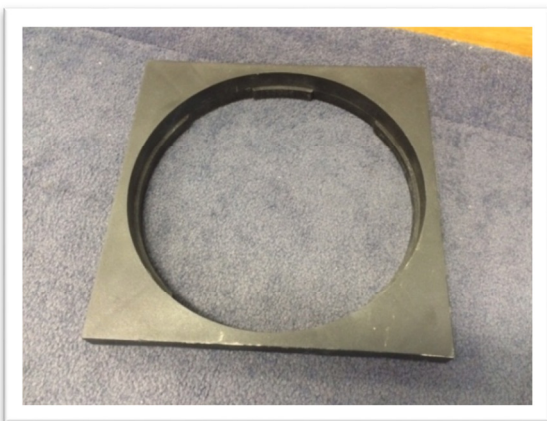
<sup>3</sup> For example, Local Authorities or private developers (in accordance with the terms of planning permissions) may have installed Boundary Boxes in some locations.



Picture 2 - Surface Box Assembly (Black)



Picture 3 - Surface Box with Cover Open



Picture 4 - Surface Box Swivel Plate



Picture 5 - Surface Box (Cut-Away)

### Equipment Supply Agreements

Prior to the commencement of the Programme, Irish Water conducted an open procurement process for Boundary Boxes and other materials which were to form part of Equipment Supply Agreements. The Equipment Supply Agreements are utilised by Irish Water's metering contractors as the means to obtain Boundary Boxes and other principal materials required to undertake the metering works. As such, Irish Water's metering contractors are obliged to use materials from the Equipment Supply Agreements. This ensures a high level of quality and consistency of products and materials across all contractors on the Programme. Approved Boundary Boxes are available to Irish Water's metering contractors with covers that comply with either the Grade B or Grade C loading requirements specified in BS 5834-2:2011, the British Standard for surface boxes, guards and underground chambers for the purposes of utilities (Part 2: Specification for Surface Boxes). There is no directly equivalent Irish Standard.

The establishment of the Equipment Supply Agreements was a two-stage procurement process that involved a pre-qualification stage followed by a tender stage, both of which were conducted in accordance with all applicable EU procurement Directives. It is to be noted that there were no legal challenges to the manner in which the procurement process for the Equipment Supply Agreements was undertaken.

Arising from that procurement process an Equipment Supply Agreement was established for the supply of Boundary Boxes for the Programme. Irish Water's requirements in relation to the Equipment Supply Agreement for Boundary Boxes were objectively proportionate to the subject matter of the contract, having particular regard to the scale of the Programme and the time period within which it was to be delivered. In particular, candidates were advised that:

*"A total supply of approximately 1,000,000 units will be required to be supplied during the period July 2013 to December 2016, with up to an estimated maximum supply of 320,000 units during each of the years 2014 and 2015 ... Each candidate included on the Framework Agreement shall be capable of providing a minimum of 100,000 boundary boxes for domestic water meters per year."*

These requirements were established because, at the peak of the Programme, it was expected that approximately 30,000 Boundary Box installations were occurring per month. In order

that Irish Water could determine that the candidates had the minimum technical and financial capacity to perform the Programme, and meet these requirements, it sought to assess the candidates' resources, experience, quality assurance, and health & safety and environmental systems. The marks awarded were based on a comprehensive and robust evaluation of the pre-qualification responses by expert evaluation teams. The scores allocated in respect of experience in particular were fairly and objectively based on the skills, efficiency, experience and reliability demonstrated by candidates in providing contracts of a similar nature to the subject matter of the tender competition (i.e. the supply of Boundary Boxes for domestic water meters with a minimum supply of 100,000 Boundary Boxes per annum).

Two Irish suppliers of Boundary Boxes, Mains to Meters and Fusion Plastic Productions, were selected following the tender stage of the process, offering the "Ebco" box and the "Talbot Matrix" box respectively. Both of these products are manufactured by Atlantic Plastics (Talis) in Wales. Grade B surface boxes available on the Equipment Supply Agreement are formed of cast-iron. The Grade B Boundary Boxes used on the Programme are supplied by a company based in Offaly and are manufactured in France. The Grade C surface boxes available on the Equipment Supply Agreement are manufactured out of a plastic material. Irish Water did not specify in its procurement processes that the Grade B surface boxes were to be cast-iron and that the Grade C surface boxes were to be plastic. This was simply the result of the open procurement process (although most Grade C surface boxes are plastic and most Grade B surface boxes are cast-iron)<sup>4</sup>.

#### Training of Irish Water's contractors

Prior to the commencement of the Programme, Irish Water had the opportunity to review the performance of previously installed Boundary Boxes in Ireland. This review identified the fact that the greatest risk to a successful installation lay with the quality of the workmanship rather than with the nature of the product itself. By way of example, poor workmanship could mean that fittings leak, or that backfill settles or that the cover sinks into the frame. None of these issues are intrinsically linked to the quality or strength of the product itself.

With a view to mitigating against this known risk, Irish Water and the Department worked with the Water Services Training Group (an agency of the Department) to develop robust training courses for the contractors metering crews to ensure that they were fully aware and trained in best practice for Boundary Box installation, including connections and reinstatement. All crews are required to have obtained appropriate training to ensure that Boundary Boxes and associated fittings and the surrounding reinstatement is of the highest quality. As a consequence, Irish Water is satisfied that it has put in place robust processes and procedures to ensure that the quality of workmanship on the Programme is consistently high. The level of training provided to the installation crews helps ensure that there are minimal defects when Boundary Boxes are installed.

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<sup>4</sup> For information purposes, Irish Water will shortly be establishing further equipment supply frameworks in order to procure Boundary Boxes for use in properties outside of the initial installations performed as part of the Programme. In the normal way this competition will be run in accordance with all applicable public procurement requirements.



## BOUNDARY BOX DESIGN GUIDELINES

### History of Boundary Boxes

Boundary Boxes are not a recent development and, because of that, Irish Water was able to consider the performance of Boundary Boxes in service in advance of works commencing under the Programme. Boundary Boxes have been supplied into the Irish market since the 1990s (if not earlier). We understand that towards the end of the 1990s the Department recommended and/or suggested that local authorities use Boundary Boxes in place of stop cock chambers when new connections were being made to the public mains. In response we understand that several local authorities made it a condition of any new connection that a Boundary Box would be used rather than a stopcock chamber.

In accordance with the Water Framework Directive, the Irish Government began a major initiative to require local authorities to install water meters on all non-domestic connections in 2002. Between 2002 and 2009, local authorities installed approximately 225,000 non-domestic meters and Boundary Boxes. The Department issued 21 guidance notes in support of the non-domestic metering programme, together with specimen contract documents and specifications.

Irish Water sought evidence of the performance of those non-domestic Boundary Boxes since 2002. Irish Water has learnt that Grade C surface boxes have exhibited very low levels of damage and, as such, replacement levels are also low. In addition only a small number of Grade B surface boxes were used. Irish Water understands that, in the main, where defects were discovered in Grade C surface boxes it was evident that they were typically as a result of poor workmanship in terms of the nature of lateral support to the Boundary Box and/or vandalism; rather than the surface box itself being unsuitable. It should be noted that, in the main, Grade C surface boxes were installed in commercial areas rather than residential areas, and would have been subject to more severe loadings than those expected in the Programme.

Irish Water has obtained statistics from Cork County Council on repairs carried out to surface boxes over the period 2 September 2008 to 4 August 2015. Irish Water understands that, during that period, there were approximately 31 surface box replacements from all causes (in the context of approximately 19,000 installations<sup>5</sup>). The 31 surface box replacements must be viewed in the context of there being 159 total Boundary Box replacements (i.e. where the damage was not limited to the surface box or the surface box was not damaged) and there being 400 occasions where new Boundary Boxes had to be replaced due to subsidence or burial. This indicates that there are many factors other than the presence of heavy loads that can cause damage to a Boundary Box (in the same way as any other item of street furniture). It is important to note that irrespective of the Grade of a Boundary Box there will, in the normal way, always be a need for maintenance to be carried out on Boundary Boxes.

### The UK Experience

Through routine technical and best practice forums Irish Water is in regular discussion with a number of UK water utilities. As part of these forums, it has been confirmed to Irish Water that the majority of UK Water and Sewerage Companies are installing Grade C surface boxes as part of their respective metering programmes. We understand that Thames Water and Southern Water, who are the only two UK Water and Sewerage Companies to be given

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<sup>5</sup> Equating to 0.16% of installations.

Regulatory approval for compulsory metering programmes similar to the size of Irish Water, are using Grade C surface boxes for all installations.

Thames Water, Southern Water and United Utilities have not indicated to Irish water that there are any performance issues relating to the use of their Grade C surface boxes. We understand that none of these companies actively measure surface box lid failure on the basis that it is such a negligible issue. They also confirmed that they were not aware of their respective operations or maintenance staff ever raising the failure of Grade C surface boxes as a cause for performance or safety concerns.

### Codes and Standards

A designer typically looks to see what applicable standards are available to assist him or her in their design. In this case, the relevant standard is British Standard 5834:2 (2011) (the "**British Standard**"); and Irish Water specified that Boundary Boxes supplied for the Programme must comply with this standard<sup>6</sup>.

However, the various codes and standards (including the British Standard) are necessarily limited in that they do not address many important design considerations. The codes and standards generally set the base design limit but, for the sake of thoroughness, Irish Water also considered the following factors in order to arrive at the most practical, cost effective and technically robust design solution. The design considerations taken into account by Irish Water included the fact that:

- the difference in load-bearing capacity for a nominal Grade C surface box cover and a nominal Grade B surface box is very large, i.e. from 0.5 tonnes for Grade C to 5.0 tonnes for Grade B. A designer would have many situations where an intermediary grade of surface box would be appropriate, as opposed to an automatic default to the higher grade;
- the codes make no allowance for the level of workmanship and supervision in respect of installation. In some design codes safety factors can be reduced if there is a higher than normal supervision to the manufacture process;
- the codes make no reference to finding an appropriate balance between the strength of the cover, the ease of access for the customer and the accommodation of radio devices;
- the codes do not account for the severity of different failure modes. For example a plastic cover may crack but stay intact, while a metal cover could break catastrophically once it reaches its ultimate load with the resultant health and safety risks associated with this which are detailed more specifically below;
- the codes refer to locations "accessible to vehicles" but give little guidance on the type or weight of vehicles or how accessibility is determined; and
- most importantly, compliance with a British Standard (or an Irish Standard) cannot confer immunity from legal obligations, and the designer is obliged to consider all

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<sup>6</sup> For the information of the committee, there is a European standard (IS EN124) that is the standard used in Ireland for manhole covers and similar street furniture. However, this standard explicitly excludes surface boxes from its scope; therefore, is not relevant to the Programme. Similarly, there is a recent Irish Standard IS261 (2013) for cast-iron covers and frames that does cover surface boxes for water meters; however, this is limited to cast-iron products and, as such, is not relevant to plastic products.



circumstances relevant to the design. Irish Water recognised that there were factors that had to be considered that were beyond the scope of situations considered in the available guidance.

#### Department Circular BC 6/2009

The Petitioner contends, inter alia, that Circular BC6/2009 (the “**Circular**”) details the correct specification for surface boxes and that Irish Water is inappropriately acting in violation of the Circular. Initially it is important to note that the Circular is non-binding upon Irish Water (by way of example, the Circular is primarily addressed to ‘Planning Authorities’ and ‘Building Authorities’; of which Irish Water is neither). As such the Circular has been developed from a developer and housing perspective rather than from water services metering and customer viewpoint.

Further, and more importantly, the Circular contains the default specification for the installation of surface boxes in the absence of specific design at any particular location. It is well established practice that objectively justifiable and reasoned designs can diverge from such non-binding guidance if such design is technically sound and grounded on a rational understanding of the product being used, the risks relating to that product and the situation into which it is being installed. Given the scale of the Programme and the public money being expended, it was incumbent upon Irish Water to design the most technically suitable and efficient solution, having regard to all relevant material factors.

Furthermore the authors of the Circular had to assume that the products intended to be used on site met only the minimum requirements of each Grade specified in the British Standard; however, Irish Water had the benefit of having formed a framework of products (the Equipment Supply Agreements referred to above) which had products with known properties far superior to the minimum requirements set out in the British Standard. As such it is inappropriate to suggest that the Circular forms the only justifiable technical approach to the installation of Boundary Boxes or surface boxes. Irish Water is entirely satisfied that compliance with the Circular is not the only way in which Boundary Boxes can be installed (and perform) in a safe, secure and efficient manner. The experience to date from the Programme entirely vindicates Irish Water’s approach.

#### Manufacturer Guidance

The Equipment Supply Agreement in respect of the provision of Grade C and Grade B surface boxes for the Programme was established prior to Irish Water concluding any technical opinion as to the appropriate location for the installation of Grade C surface boxes. In that regard it is important to note that if, after the procurement process for the Equipment Supply Agreement had run its course, a Grade C surface box with a strength nearer the standard of a nominal Grade C surface box had been selected for the Programme, then Irish Water’s approach to the appropriate installation location of such Grade C surface boxes may well have been different to Irish Water’s current approach. Irish Water’s current approach is founded, to a large extent, on the proven load bearing capacities of the Grade C surface boxes used on the Programme, rather than the minimum load capacity of a theoretical product.

Irish Water understands that the manufacturer of the Grade C surface boxes used on the Programme has supplied over 16 million of these products in the UK and Ireland and that it is common practice to install them in the drop-down (or crossover) areas of residential footpaths.

Irish Water has been informed by the supplier of the Grade C surface boxes that they have had practically no reports of any issues in covers sited in the drop down area of footpaths.

This is corroborated by the Irish Water experience on the Programme to date where our contractors have installed over 644,500 Grade C surface boxes nationwide, and have had only a handful of reports (c. 14) of broken covers.

Irish Water has also obtained confirmation from Atlantic Plastics, the supplier of its Boundary Boxes, that the installation of the Boundary Box in the drop down area of footpaths will not, in this instance, be deemed to be a breach of the warranty conditions provided in respect of the product.

Thames Water Addendum to UK Water Industry Research National Code of Practice and the UKWIR National Code of Practice for the Self-Laying of Water Mains and Services England and Wales

These two documents are intended to be used where the water utility does not have direct control of the works, e.g. the water pipes and ancillaries are being installed by a private developer. Therefore, in these instances, the client may deem it prudent to set higher material standards to mitigate against a risk of poor workmanship, supervision lapses and the fact that Boundary Boxes are being installed in unfinished surfaces with uncontrolled traversing site traffic. Such variables do not arise in the context of Boundary Boxes being installed pursuant to the Programme and, as such, the documents are of limited relevance.

Load Testing

It is important to note that the Grade C surface box used in the Programme is designed (according to the manufacturer) to be 3-times stronger than the minimum requirement in the British Standard. Indeed representatives of Irish Water have observed the surface box tested in controlled conditions at the manufacturer's plant to more than 4-times the load stipulated in the British Standard. It is clear therefore that the loading that can be imposed on the Grade C surface box being used as part of the Programme is far in excess of what is required for a nominal Grade C surface box.

During this observation of the manufacturers testing, the Grade C surface box used by Irish Water withstood loads in excess of 2 tonnes before cracking<sup>7</sup>, and loads in excess of 3 tonnes before fracturing<sup>8</sup>. By way of context, a large family car would be unlikely to exert wheel loads greater than 0.5 to 0.75 tonnes; not all of which could even transfer onto the small area of a surface box.

In addition Irish Water has had independent load testing carried out on the Grade C surface box used in the Programme and the surface boxes have again been proven to withstand loads of more than 2 tonnes i.e. significantly more than the load of a car wheel. As part of these tests a stone was placed on a surface box and a standard car tyre used to impose the load. The result of these tests was that the car tyre deformed around the stone and came into direct contact with the surface box. The test was abandoned when fears arose that the tyre might

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<sup>7</sup> These are typically very small hairline cracks on the reverse side of the surface box that are virtually impossible to see once the load is removed.

<sup>8</sup> Fracturing describes the actual breakage of the surface box when the cracks become large and pieces start to break away forming a hole in the surface box.

burst. Upon removal of the load there was no discernible damage to the surface box. It is clear therefore that, in this instance, there was a greater likelihood of damage to the car tyre as opposed to the surface box.

### Customer Benefits

There are benefits for the customer where the Grade C surface box is used because it is significantly more convenient for the customer to access the meter and outside stop value (OSV) for their property. The Grade C surface box is not only lighter than the metal Grade B surface box; it can also be levered open like the lid of a paint pot. The metal surface box needs a set of lifting keys that have to be provided to the customer, and can be mislaid. The metal surface boxes also need an element of manhandling with the resultant risk of fingers becoming trapped.

Safety is a key priority for Irish Water and it is important to note that Grade B surface boxes are not indestructible; for example (and as noted above) a plastic Grade C surface box may crack but stay intact, while a metal Grade B could break catastrophically once it reaches its ultimate load. When a metal surface box fails it could break into pieces with sharp edges that can cut and cause injury. The Boundary Box would also be left completely exposed leaving a trip hazard. On the other hand, the plastic surface box may crack but will remain largely intact; at most a small hole might form in the surface box. The Boundary Box would not present a significant trip hazard because most of the surface box would be in place and would not collapse under the weight of a person's foot.

## **PERFORMANCE**

### Number of installations –v- number of reported failures

There have been approximately 645,000 Boundary Boxes installed to date (both existing Boundary Boxes that have been reused by the Programme and new installations installed through the Programme). Out of these 645,000 installations only 14 reports of broken surface boxes have been received by Irish Water's customer call centre. This represents 0.002% of all installations to date. It is apparent therefore that the Grade C surface boxes installed as part of the Programme have, to date, shown exceptional levels of performance.

### Audits of installed Boundary Boxes

Irish Water has also, as part of its overall post installation audit from late 2013, undertaken specific monitoring of a sample of Grade C surface boxes installed in the drop down areas of residential driveways. Approximately 50 Grade C surface boxes have been under observation since November 2013 and no visual defects in any of these surface boxes have been recorded<sup>9</sup>. Such an audit clearly supports the approach adopted by Irish Water in respect of the installation of Grade C surface boxes. Photographs of a number of these installations are provided below:

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<sup>9</sup> The last review taking place in July 2015.



### The role of Irish Water's contractors

In accordance with the installation contracts entered into under the Programme, the design responsibility for individual installations remains with Irish Water's metering contractors. It would have been impossible for Irish Water to specify, in advance of execution of each contract, the manner in which every meter and Boundary Box was to be installed by its contractors. The decision between installing a Grade B surface box or a Grade C surface box is therefore ultimately made by the contractor on a case by case basis<sup>10</sup>. The decision is generally based on an engineering assessment of the loading conditions at each particular location.

For example, a contractor might typically install a Grade C surface box where there is pedestrian traffic and very occasional light vehicle traffic making parking manoeuvres. On the other hand a Grade B surface box may be considered where there are risks of occasional higher wheel loads. Irish Water's audits generally concur with the design decisions being made by each of its Contractors in respect of the use of Grade C surface boxes.

Irish Water's contractors, as designers, have demonstrated that, where the location permits, the lighter Grade C surface box is the most appropriate surface box to install rather than the heavier Grade B product. In most cases, Irish Water's contractor will seek to relocate the Boundary Box away from vulnerable locations to best facilitate the use of a Grade C surface box. In addition, the Grade C surface box is lighter and therefore easier for the crew to handle during installation; thus increasing the likelihood of a high-quality installation and minimising health and safety risks.

To date, and as far as Irish Water is aware, having made reasonable investigations and through the quality assurance procedures outlined below, the contractors have been installing

<sup>10</sup> Within a framework of Irish Water technical requirements.



Grade B and Grade C surface boxes in accordance with industry practice and appropriate to the circumstances encountered at each installation point.

It is also to be noted that, as is industry standard, Irish Water's contractors bear the risk of damage to Boundary Boxes and surface boxes for a lengthy period of time post installation. As such it is commercially incumbent upon Irish Water's contractors to seek to install Boundary Boxes and surface boxes that will not be susceptible to failure. It is therefore not in the best interests of Irish Water's contractors to install surface boxes in locations which could give rise to failure.

### Supervision and Quality Control

Irish Water and its contractors have committed significant resources to supervision and quality auditing to ensure that the finished work is of the highest quality. Irish Water has also developed extensive quality assurance/control resources to conduct follow-up checks on finished installations; this includes a strict auditing programme of all works carried out as part of the Programme. In order to review the quality of works that the contractor has undertaken, a team of Irish Water Field Inspectors carry out frequent audits of the contractors' works. If audits show that the installation works are not up to the required standards then the contractors must rectify this at their own cost. Members of the public can also report any issues related to the works directly to Irish Water by contacting 1890 278 278, 24 hours a day 7 days a week. Any such issues that do arise are addressed quickly and with minimal impact upon the Programme.

### Meter Reading

Irish Water meters feature Automatic Meter Reading (AMR) technology where a transmitter sends meter readings from the meter to a receiver unit in one of Irish Water's meter reading vehicles. This means that meter readers won't usually need to open or lift the cover to take a meter reading as it can be read remotely from a passing vehicle; as a result of this efficiency, just 11 meter readers are able to read all the meters installed to date under the Programme. Ultimately this is a much more efficient and accurate method of carrying out meter readings (as opposed to manual reads, which can be more susceptible to human error).

To maximise the benefit of the remote meter reads, it is important to enable the automated reading of the meters to be conducted effectively. Logic and previous studies carried out by a research organisation in the UK indicates that the less dense material properties used in the Grade C surface box are more suited to the successful propagation of radio signals from the water meter than more dense metal.

That said, Irish Water has now completed 3 quarterly meter reading cycles and our systems have not reported any difficulty reading the 500 (approx.) meters with Grade B surface boxes in urban areas.

However, at this stage Irish Water is unable to quantify the overall reading efficiency associated with Grade B surface boxes as compared with Grade C surface boxes because there are a number of factors that mean it is not a like with like comparison. For example, significantly fewer Grade B surface boxes have been installed than Grade C surface boxes. Also they are not located in such dense proximity to one another and are spread out over a larger geographic location than equivalent numbers of Grade C surface boxes and as such are a very small proportion of the meter readers' daily routes.

Accordingly, Irish Water does not consider that there is sufficient empirical evidence from the Programme to determine definitively whether more wide spread use of Grade B surface boxes would have a negative impact on the ability or associated productivity to read meters remotely.

## **EXTENSIVE ENGAGEMENT WITH THE PETITIONER**

Irish Water is very much aware of the Petitioner and of his concerns. The Petitioner produces a form of Boundary Box with a Grade B surface box. Both Irish Water and the Department have engaged extensively on this subject, both directly with the petitioner and with third parties acting on his behalf.

Irish Water engaged with the Petitioner around the acquisition of the Boundary Boxes for the Programme (in the context of the Equipment Supply Agreements referred to above). This process was, as noted above, subject to a tender process under the rules governing public procurement. At each stage of the tender process, the criteria for qualification were clearly stated and Irish Water engaged with both qualifying and non-qualifying parties (including the Petitioner).

Irish Water continually strives for improvement and, as such, is willing to engage with suppliers of new products to the extent that such engagement is considered, in all the circumstances, to be appropriate. On that basis Irish Water has met with the Petitioner on a number of occasions and is currently trialling his Boundary Boxes with Grade B surface boxes. An interim report on this trial has been issued to the Petitioner and a final report is to follow shortly.

There has been extensive engagement with Oireachtas Members both on behalf of Mr O'Leary and in relation to the Programme generally. Every query has received a full and complete response:

- in 2014 alone, the Minister has answered c. 120 Parliamentary Questions related to the Programme. All of these questions and answers are a matter of public record and can be accessed at [www.oireachtas.ie](http://www.oireachtas.ie);
- Irish Water has also responded to over 200 queries received directly from Oireachtas Members through its dedicated channels (email and phone) related to the Programme; and
- Mr O'Leary, or a representation on his behalf, has been responded to on 14 separate occasions in 2014 alone. All of the queries were responded to in detail. The third parties acting on Mr O'Leary's behalf or as a result of Mr O'Leary's representation have not felt it necessary to pursue this further on receipt of a response from Irish Water.

In addition in 2014 Irish Water was subject to a High Court action in respect of the installation of a Grade C surface box at a particular location and Irish Water understands that Mr O'Leary provided advice and technical assistance to the Plaintiff in that action (and this has since been confirmed by the Petitioner). Irish Water refutes the Petitioner's statement that Irish Water "conceded" to the applicant's case or indeed that Irish Water's approach to the case "proved conclusively that the light Grade C boxes Irish Water are installing in vehicle access locations are wrong." In fact, and having made a technical assessment of the proposed location of the Boundary Box on the public footpath outside the customer's property and the likely traffic at the location, Irish Water was satisfied that that a Grade C surface box was appropriate for the location. Although it remains Irish Water's position that a Grade B surface box was neither



legally nor technically required at that location, in the interest of resolving this matter expediently and cost effectively on behalf of all our customers (who ultimately bear the cost of protracted legal proceedings), Irish Water took a pragmatic decision to install a Grade B surface box outside the customer's property.

## **CONCLUSION**

Irish Water is satisfied that all relevant design considerations have been taken into account in respect of the installation of Grade C surface boxes.

The evidence from past installations of Boundary Boxes in Ireland and the UK clearly supports the use of plastic Grade C surface boxes in residential footpaths, including drop-down areas in front of residential drives subject to slow-moving parking traffic. As detailed above the installation of Grade C surface boxes provide considerable benefits to Irish Water's customers.

Irish Water believes that this is the best approach for its customers. Irish Water continues to monitor the performance of all installations, especially those in marginal locations, and the results to date have been excellent.