

## MUDFA

Draft proposals for demonstrating the integrity of the Works done to date

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The Quality Assurance system previously set up on the MUDFA contract was largely based on a monitoring regime which did not require written evidence of inspections carried out. A new regime has now been instigated which requires documented evidence of inspections going forward.

In the past, frequent inspections of the Works have been completed by Carillion Utilities Services (CUS) staff and Transport Initiative Edinburgh (**tie**) staff. There have also been random inspections by Statutory Utility Company's (SUC's) staff and City of Edinburgh Council (CEC) staff. However, there is a very limited amount of these inspections which have been documented and generally these inspections were completed without a record being kept.

CUS staff are competent people holding either SUC qualifications /certification and / or NRSWA qualifications and / or CSCS cards and we believe that all other parties who have inspected the works in the past were competent in their particular discipline. It is therefore not true to say that no inspections have been done in the past, on the contrary many inspections by competent people have been done but regrettably there is no documentary proof of these inspections.

Until the recent **tie** audit, none of the parties involved had intimated that the monitoring regime set up by ourselves some 16 months ago was not acceptable and therefore the practice continued in the belief that it was acceptable. In hindsight, a more robust inspection regime with written evidence of inspections being generated should have been put in place – this has now been done.

We are currently investigating the extent of previous Works done and finalising proposals to put forward for demonstrating the integrity of the previously completed Works. An initial draft of our proposals is as follows.

#### **Trench Backfill**

Over the past months, trench backfill has been completed as follows :

- Pipe bedding surround, sand surround or concrete surround to the new utility or ducting as appropriate.
- B0 material, type 1 material or foam concrete.
- Blacktop surfacing or slabbing as appropriate.

Our proposals for the above are as follows.

- **Surround to the new utility or ducting.**
  - We will check for any records that we have to demonstrate that the appropriate surround has been installed – this will include written records as such exist, photographic evidence (both CUS and **tie** photographs) and delivery tickets for bedding materials brought to site.

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The aforementioned will be collated to assist in demonstrating the presence and adequacy of the bedding.

- There have been very few instances of complaints having been received in the past from anyone inspecting the works as to the inadequacy of bedding to a utility or duct bank which would suggest that the bedding provided was satisfactory.
  - In a small number of selected areas, we will dig trial holes to prove the adequacy of the bedding. Our intention is to keep this trial holing to a minimum as there is a risk of damage to existing or new utilities during the trial holing operation.
- **B0 Backfill**
    - There are many footpath areas, in particular in Leith Walk where there are signs of distress where B0 material has been used to backfill following utility installation. We are visually examining each area and where there is clear signs of failure, we intend to remove the B0 material and replace with either properly compacted type 1 material or foam concrete. This work is currently in progress.
  - **Type 1 Backfill**
    - Type 1 backfill has been used in several areas of footpath, carriageway and several road crossing reinstatements. We intend to visually inspect each area and if no signs of distress after having been trafficked, then this will provide evidence that the type 1 reinstatement is satisfactory.
    - We will check for any records that we have to demonstrate that the type 1 has been installed – this will include written records as such exist, photographic evidence (both CUS and **tie** photographs) and delivery tickets for type 1 materials brought to site. The aforementioned will be collated to assist in demonstrating the presence and adequacy of the type 1.
  - **Foam Concrete**
    - In recent months, we have tended towards the use of foam concrete for footpath, carriageway and road crossing reinstatements.
    - There is no satisfactory test which can be done on insitu foam concrete, however, we are now taking concrete cubes and testing them for future foam concrete reinstatements.
    - We will monitor the results of these cube test results and if they are satisfactory, then it would be logical to believe that previous deliveries of foam concrete were also satisfactory.
    - We will check for any records that we have to demonstrate that the foam concrete has been installed – this will include written records as such exist, photographic evidence (both CUS and **tie** photographs) and delivery tickets for foam concrete materials brought to site. The aforementioned will be collated to assist in demonstrating the presence and adequacy of the foam concrete.
  - **Blacktop Surfacing**
    - Blacktop surfacing has been used in several areas of footpath, carriageway and several road crossing reinstatements. We intend to visually inspect each area and if no signs of distress after having been trafficked, then this will provide evidence that the blacktop reinstatement is satisfactory.

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- We will check for any records that we have to demonstrate that the blacktop has been installed – this will include written records as such exist, photographic evidence (both CUS and **tie** photographs) and delivery tickets for blacktop materials brought to site. The aforementioned will be collated to assist in demonstrating the presence and adequacy of the blacktop surfacing.
- **Slabbing**
  - There are many footpath areas, in particular in Leith Walk where there are signs of distress where slabbing has been used over B0 material backfill following utility installation. We are visually examining each area and where there is clear signs of failure, we intend to reinstate the slabbing following treatment of the B0 as outlined above. This work is currently in progress.
  - Kerbing will also be revisited during this exercise and any remedial works deemed necessary completed at the same time.

### **Gulleys**

Regrettably, in the Southbound carriageway of Leith Walk, a section of the carriageway was reinstated following utility installation without gulleys and without obtaining prior consent from **tie**. Apart from one gulley, which is subject to availability of suitable traffic management, all 35 gulleys have now been reinstated. There now appears to be further debate with CEC as to the number of gulleys to be reinstated in Leith Walk. CUS have reinstated the gulleys in accordance with the drawings issued to us but CEC now appear to have a different set of drawings – this remains to be resolved.

A similar situation occurred in Shandwick Place where we allegedly missed out 5 gulleys but in fact missed out one (which was originally completely choked with concrete and debris prior to us commencing work and which has now been reinstated) as the other 4 gulleys were never there in the first place.

To avoid this situation in the future, we have mobilised additional resources to site to complete a condition survey of each area prior to works commencing. This will include a survey of all existing gulleys, including the condition of each gulley, as we are finding that the vast majority of gulleys do not appear to have been properly maintained and are frequently choked.

We will complete a visual inspection of previously completed work sites to ensure that previously installed gulleys have been properly reinstated or that instructions have been received giving permission to omit any gulley which has not been reinstated.

### **Communication Ducts**

All communication ducts installed to date will be visually inspected and mandrell tested to prove the integrity of the ducts. This mandrell testing is currently ongoing and following proving by ourselves, the ducts will be put forward for mandrell test

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### **Communication Chambers**

All communication chambers to date have been built by properly certified BT manhole builders. These chambers will be visually inspected to check the quality of the finished product meets the requirements of LN 550 and the visible structural concrete tested using a Schmidt hammer. As above, **tie** and the relevant SUC personnel will be given the opportunity to witness these checks and tests. Written evidence of these checks and tests will be maintained and included in the as-built documentation.

We have mobilised a materials engineer to site who will ensure that a sufficient number of concrete cubes are taken for future structural concrete pours and that these cubes are properly cured and tested.

### **Water Mains**

Whilst watermain joints in the past have been inspected, these inspections have not been documented. However, the integrity of water main joints has been proved by the subsequent documented pressure tests completed on the watermains and in this respect we propose that this is sufficient and that no further inspection / testing of previously installed watermain joints is required. Inspection of watermain joints for future installations will be recorded. Our understanding is that all other aspects of the watermain installation has been completed to SW's satisfaction and therefore no further inspections or tests are deemed necessary.

### **Gas Mains**

We believe that the strict testing and inspection documented regime demanded by SGN and followed in the past is sufficiently robust to ensure the integrity of the gas mains laid to date.