UTILITY SERVICES

General

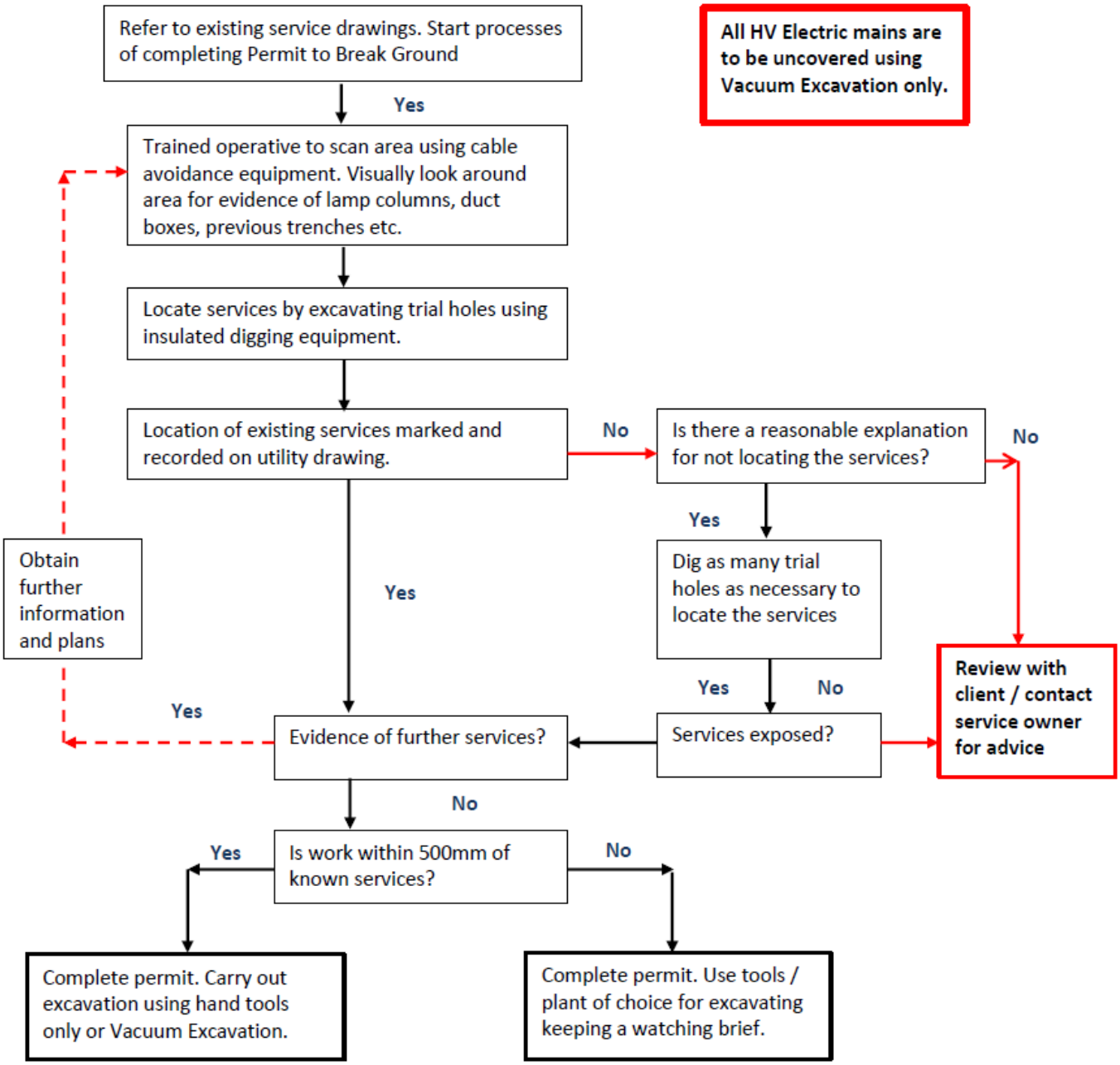
All activities will consider the following risks before works commence:

- Location and identification of existing services
- Protection of Overhead services.
- Use of Vacuum Excavation only on all HV Electric Services.
- Arc rated Fire Retardant clothing for those uncovering services.
- Plant & Equipment, competence / experience of staff undertaking the work.
- Plant / people segregation.

Index

1 PERMIT TO BREAK GROUND PROCESS 2
2 MS05/1 EXPOSING UNDERGROUND SERVICES 2
3 MS05/2 PROTECTING OVERHEAD SERVICES 3
3.4 CROSSING POINTS 4
4 MS05/3 WORKING UNDER OVERHEAD POWER LINES 4
5 MS05/4 SERVICE MAINS INSTALLATION 4
6 MS05/5 INSTALLING SERVICE FEEDS FROM MAINS TO HOUSING PLOTS 5
7 MS05/6 EXPOSING MAINS FOR PLOT CONNECTIONS 6
8 MS05/7 INSTALLING BT DUCTING AND BT CHAMBERS 7
8.4 EXCAVATION OF TRENCH 7
8.5 BRICK BUILT CHAMBERS 104 & 106 7
8.6 MODULAR JOINTING CHAMBERS 7
9 MS05/8 PLACING SERVICES THROUGH DUCTS 8
10 PPE 8
11 RISK ASSESSMENT AND ASSOCIATED DOCUMENTS 9
11.4 RISK ASSESSMENTS 9
11.5 DO'S & DON'TS BRIEFING SHEETS 9
11.6 ASSOCIATED DOCUMENTS 9
12 COSHH 9
13 AMENDMENTS TO THE METHODOLOGY 10

1 Permit to Break Ground Process



2 MS05/1 Exposing Underground Services

1. If HV Electric services are known to be in the work location or close by then a Vacuum Excavator is to be used, under no circumstances are HV Cables to be exposed in any other way.
2. Start the Permit process on Reflow App by:
   a. Open the 'Permit to Work' form in the Reflow App, select MVK Permit > MVK Permit type > HS14 Permit to Break Ground. Complete the Permit in full with those that will be carrying out the work. If completing the Client's Permit, you can select 'Client' instead of 'MVK' Permit where the App will request photocopies of their Permit that can then be submitted.
   b. Review the existing and as-laid service drawings provided. Copies are also available on the Reflow App, Selecting your job > Documents > Existing Services.

3. Whilst reviewing the existing / as-laid service drawings the trained operative will scan the working area using the gCAT+4 and Genny 4 using all the modes available.
4. Conduct a visual inspection of the work area looking for evidence of lamp columns, service covers and old trenches.
5. Mark the ground with Linemarker spray for all services picked up during the scanning process.
6. Hand dig using insulated hand tools in line with HSG 47 to expose the services taking care not to damage the services. If services are known to be in the vicinity of the work area and have not been found, then a slip trench is to be dug across the working area until located. Alternatively, a Vacuum Excavator can be used to uncover the services, some clients insist on this.
7. Once all services are located further slip trenches are to be hand dug to expose the line and level of the services at regular intervals when excavation by mechanical means is required (i.e., when excavating for the installation of BT Ducting above known services in the footpath). Care is to be taken around existing Gas valves as these are sometimes not marked on drawings, look for vertical sleaves that should be protecting them.
8. If services are found that are not on any drawings request an as-laid drawing be updated.

3 MS05/2 Protecting Overhead Services

Information about the position of overhead electric lines should be obtained from the Electricity Board or SHE Department with reasonable notice, preferably by written application prior to any work commencing near or under any overhead electric lines.

Contact with overhead electric lines can be lethal whether they are carrying voltage as high as 400,000 V or as low as 240 V. Overhead electric lines are not normally insulated and if contact or near contact is made with them by a crane jib, scaffold pole, ladder or similar object, an electric current will discharge with a risk of fatal or severe shock and burns to any person in the immediate vicinity.

1. The precautions required to prevent accidents involving overhead lines which are not diverted or made dead, depend on the nature of the work at the site. There are three broad categories of work on site.
   a) Sites where there will be no work or passage of plant under the lines. Here barriers are required to prevent unauthorised access.
   b) Sites where plant will pass under the lines. Here defined passageways in the barriers must be made.
   c) Sites where work will be done beneath the line. Here further precautions must be taken in addition to the erection of barriers with passageways.
2. The general rule should be that ground level barriers are erected parallel to the overhead line to prevent danger from any part of the mobile plant approaching too close to the line.
3. The absolute minimum distance from these barriers to the line should be obtained from the electricity board or through GS6 guidance.
4. Where this minimum distance could be encroached upon by parts of mobile plant such as cranes, excavators or lorries, it is necessary for the plant operator to be given an additional indication of the safe working height / restrictor height.
5. Note: The Electricity Board, having been consulted as recommended, may advise a safe separation distance greater than 6 m, depending on the voltage of the overhead line.
6. Additional indication should take the form of a line of coloured plastic flags or 'bunting' mounted at a height of from 3 to 6 m above ground level immediately over the barrier.
7. Where site conditions permit, and particularly where plant such as a mobile crane is used, the minimum distance of the ground level barriers from the overhead lines should be a jib length plus 6 m. In such cases the supplementary flags or bunting need not be provided.
8. Measurements will be taken from underneath the nearest conductor at ground level by the Engineer using surveying equipment that does not require physical measuring. Under no circumstances are tape measures or measuring staffs to be used.
9. In certain cases, particularly where high voltage lines with long spans are involved, Electricity Board engineers may advise that allowance should be made for lateral swing of the conductors, due to high wind, so as to maintain the safe distance from barriers to the overhead line at all times.

3.4 Crossing Points

1. Passageways / Crossing Points underneath overhead cables should be planned to the minimum possible.
2. The passageway is to be fenced to define its route and goal posts erected at each end to act as gateways in the barriers running parallel to the overhead line.
3. The goal posts will be constructed from rigid, non-conducting material such as suitable timber or plastic pipe and distinctively marked in red and white stripes. The Electricity Board will advise on the correct height of the crossbar.
4. At either side of the passageway on or near the goal posts there will be warning notices giving the cross-bar clearance height and instructing drivers to lower their jib and keep their jibs below this height.
5. No crossing under overhead cables when dark
6. When approaching the protected crossing, additional warning notices will be erected for visiting deliveries approx. 30 m. away (where reasonably practicable)

4 MS05/3 Working Under Overhead Power Lines

If work beneath live overhead lines cannot be avoided, the barriers, goal posts and warning notices described in points within MS05/2 will still be provided. However, they will not prevent danger from upward movements of cranes, excavators or other plant and vehicles, nor will they prevent direct contact by workers where buildings or structures are being erected beneath the lines.

1. Plant, equipment or hand tools that could reach beyond the safe clearance limit will not be taken under the line.
2. Excavators will be modified by the addition of suitable physical restraints (restrictors) so that it cannot reach beyond the safe clearance limit. Restraining devices may be fitted to the derricking or slewing mechanism, or both, as required. Signage place on the arm of the excavator identifying restricted equipment.
3. Access for plant and materials and the working of plant will be under the direct supervision of a responsible person appointed to ensure that safety precautions are observed.
4. Tipper lorries to make sure the bed of the lorry is fully down before passing under the overhead lines.

5 MS05/4 Service Mains Installation

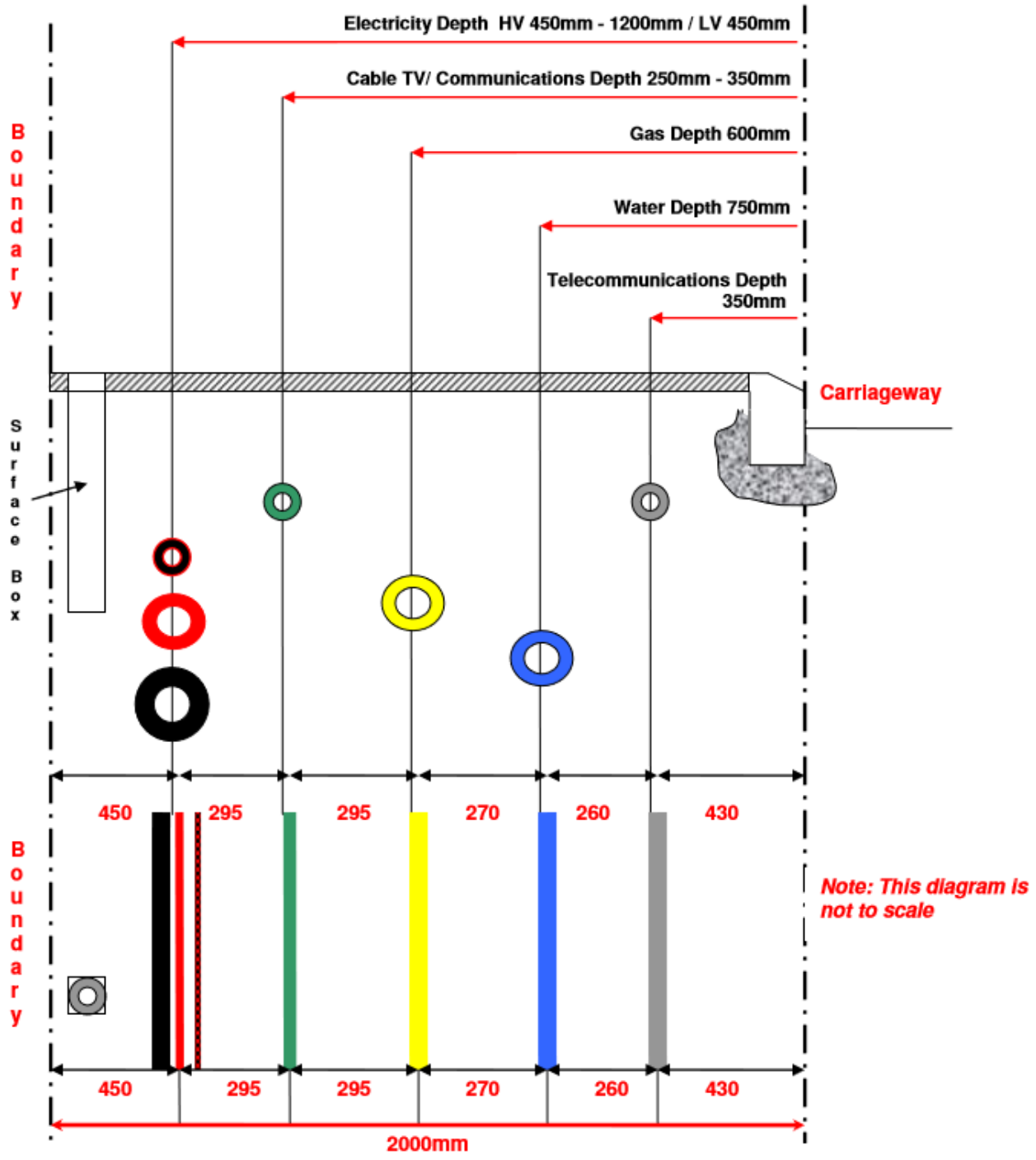
1. Follow MS05/1 for exposing existing services before excavations take place for installing new service mains.
2. Once line of service trench is marked out the 360 Excavator will commence digging and load spoil into Dumper. Spoil to be carted away from the excavations to an agreed designated area. Banksman must be in attendance to closely watch the bucket/ground for evidence of buried services Existing Utility drawings must be made available to those carrying out the works activity and a copy kept in the excavator at all times for reference.
3. A sand/shingle bed will be laid ready for the ducting/mains to be laid (mains laid by utility contractor).

4. Once the ducting/mains have been laid cover over with 150mm of sand / shingle (compact using hand tampers only) and place the correct service warning tape over the centre of the main/ducting (Ensure you have placed enough sand to cover the service/duct and that extra sand is placed above gas/water nipples).
5. Place offcut ducting vertically over any purge point or valves as per below. Use colours for ducting as per service (blue for water / black for electric / yellow for gas.

NJUG Guidelines (Note: Each utility sector may have its own asset standard in respect to the positioning and depth of apparatus, please check before excavation starts)

FIGURE 1 - Recommended Positioning of Utility Apparatus in a 2 metre Footway

Note – the same positioning should apply in the carriageway/service strip (if safe and practical to do so) where a development has no footway(s) available for services and/or the boundary of the property is on the carriageway (please refer to minimum depths in carriageways). For further advice please contact the asset owner.



6 MS05/5 Installing Service Feeds from Mains to Housing Plots

1. Follow MS05/1 for exposing existing services before excavations take place for installing Housing Plot services.
2. Excavate trench from Plot towards footpath stopping a minimum of 500mm from footpath.

3. The 500mm will then be dug by hand (or Vacuum Excavation) using insulated digging tools to uncover all services within the footpath.
4. Lay plot service on sand to the main, tape both ends of the plot service to prevent debris entering the service. Before backfilling Site Engineer/Supervisor to make a record of any cable/duct instillation, whether mains or services, an "as-laid" drawing showing the route and the position of any joints, link Chambers, pillars etc. will be produced and kept in the site office.
5. Cover plot service and service pit with sand and place warning tape over the top. Remember to use colour coded vertical sleeves to protect any purge valves.
6. Completely backfill mains area with sand to make excavation at Stage 2 works easier to expose either by Vacuum excavation or by hand digging ready for service connections.
7. Blind over the sand with type 1 stone & compact.
8. After footpath kerbs & edgings have been laid use timber bearers across the footpath (keep timbers slightly lower than kerb/edgings so that they are level with the Tarmac base course) and place bricks over any vertical sleeves and spray to colour of service.
9. When re-visiting electric mains on site to hand excavate for the Electricity Company 'to connect previously laid cables that have to be jointed'; check with Client that cables are NOT LIVE. Request evidence from the Client, if the Client cannot provide evidence refuse to carry out the work.

7 MS05/6 Exposing Mains for Plot Connections

1. Remove the 2 strips of timber using hand tools.
2. Using an Excavator with a toothless bucket place the bucket in the gap left by the removal of the timber and peel back the Tarmac section between the 2 gaps. Banksman to keep a watching brief and give directional guidance to the excavator operator.
3. Using the excavator gently remove the first 100mm of type 1 stone, again under the watchful eye of the Banksman. Do not continue with the excavator after this has been completed.

4. Follow process in MS05/1 and complete the Permit to Break Ground.
5. The process of uncovering the service mains will then be done either by hand using insulated digging tools or by Vacuum Excavation.
6. Once the Utility team has made the connection backfill with more sand making sure any warning tape is replaced over the service. Continue to backfill with Type 1 stone and then Tarmac.

8 MS05/7 Installing BT Ducting and BT Chambers

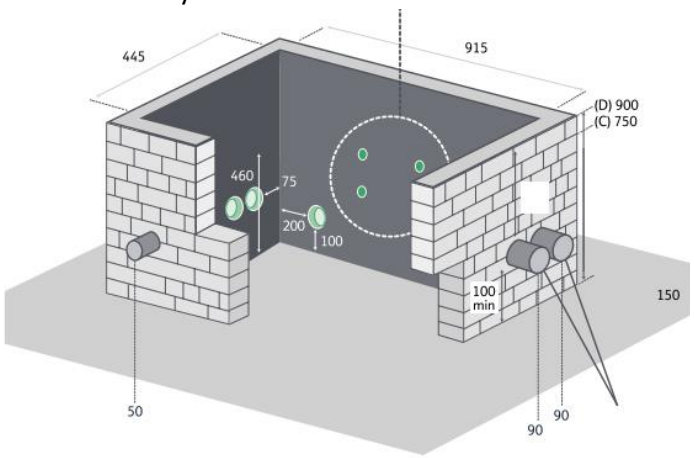
8.4 Excavation of Trench

1. Follow MS05/1 for exposing existing services before excavations take place for installing BT Ducting and BT Chambers.
2. With a Banksman keeping a watching brief and giving the excavator operator directional guidance excavate trench in footpath with a toothless bucket. Sand base of trench.
3. Place draw ropes through the ducts before laying them in the trench, connecting each new section of ducting as you go along with plot reducers. Excavate to Housing Plots.
4. Hand excavate for BT Joint Chambers.

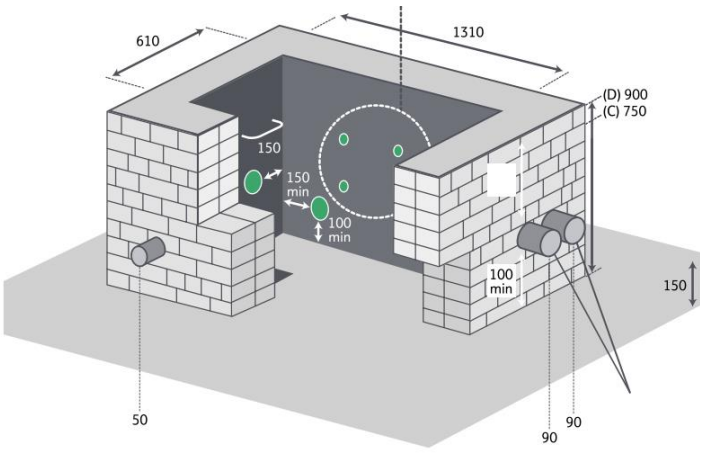
8.5 Brick built Chambers 104 & 106

1. Construct 150mm concrete base.
2. Lay bricks to stretcher bond, Point both sides of the brickwork. Duct entries must not enter through corners and be no less than 75mm from the side wall. They shall enter wall at a minimum depth of 250mm from the top of the frame, cut flush and clear the base by a minimum of 100mm.
3. Bolts must be fitted in each box to allow ironwork to be installed.
4. One step is required in all Chambers deeper than 750mm.
5. Maximum internal depth of Box is 900mm.
6. Sump to be fitted in Chambers over 700mm in depth.
7. Only approved BT frames and covers shall be fitted.
8. Backfill around Chambers using class 6N type and compact.

Joint box footway 104



Joint Box Footway 106



8.6 Modular Jointing Chambers

1. 'Quadbox' is an approved lightweight modular chamber that comes in 150mm sections and can be used as alternatives to both 104 & 106 brick built Footway options. Each section is twin walled and stacks on top of each other.
2. Construct 150mm concrete base
3. Set the first segment level on the base, bedding it firmly in, and check that it is level. The segment should be tamped into the base to provide a solid foundation for the chamber.
4. Install the additional segments of the chamber (with due allowance for frame and cover installation) to the final depth ensuring that each layer is clear of debris and fully seated.
5. Levels should be checked at regular intervals throughout this process using a suitable depth gauge.

6. Box furniture items slot into moulded pockets within the chamber, eliminating the need to cast-in fixings or drill on site. Duct entries are also easy to achieve, using a standard hole saw mounted on a cordless drill.

7. Place the frame and cover on the chamber prior to backfilling.
8. Backfill to the chamber can be installed using one of the following methods:
   - Compacting Type 1 or suitable 'as-dug' material in 150mm deep layers
   - Using hand tamped lean mix concrete.
   - Using a self-compacting material (such as pea gravel)

   Self-compacting materials can only be used up to the constructional layers of the footpath and where the void between the chamber wall and the excavation is 50mm or less.

   During compaction, it is particularly important to avoid over compaction or ramming the side of the chamber to the extent that it might disturb its position or cause the structure to bow to any degree.
9. Once compaction is complete, the cover can be removed, and the frame bedded onto the chamber.

9 MS05/8 Placing Services through Ducts

1. Sometimes MVK are asked to put service feeds through ducts by the Client. This will mainly be Gas and Water pipes.
2. If the duct has a draw rope, then tie it to the end of the service, one person to feed it up the duct, the other to pull the draw rope through. Good communication will avoid unnecessary trapping of fingers.
3. If this cannot be achieved due to a blockage / kink in the duct then the duct will have to be replaced, NEVER use the Excavator or and other type of mobile plant to pull the service through the duct.

10 PPE

The following PPE will be used during the drainage installation process. The MV Kelly Supervisor will review the PPE requirements and amend as necessary.

✓	✓	✓	✓	✓	✓	✓	✓	✓
EN397	EN471	EN 20345-SB-P	EN352-1	See COSHH	EN166B/F	FFP3 EN149:2001	Arc 2 Rated Overalls	Face Visor EN 166 3 B

11 Risk Assessment and associated Documents

The activities have been risk assessed, the MV Kelly Site Supervisor will review the documents listed below and amend when circumstances change, In conjunction with the below Risk Assessments the MV Kelly Site Supervisor will brief their teams on the Do's & Don'ts documents listed.

11.4 Risk Assessments

RA001	Cutting Materials with a Petrol / Floor Saw	RA003	Underground Services
RA010	Manual Handling	RA013	Portable Tools & Equipment
RA014	Public Protection	RA017	Use of 360 Excavators / Lifting Operations
RA027	Site Plant Selection Assessment	RA029	Laying Tarmac
RA039	General Excavations	RA043	Bricklaying
RA077	Wacker Plates	RA125	Working Alongside Mobile Plant

11.5 Do's & Don'ts Briefing Sheets

BS1	Abrasive Wheels	BS3	Tarmac Operations
BS6	Bricklaying	BS14	Utility Services
BS15	Manual Handling	BS17	Public Protection
BS23	Use of Excavators	BS35	Working Alongside Mobile Plant

11.6 Associated Documents

HSG47	Avoiding Danger from Underground Services	GS6	Avoiding Danger from Overhead Services
HS046	Env Contamination / Silt Management Plan		

12 COSHH

The below list of COSHH Assessments is associated with the activities in this method statement. The MV Kelly Site Supervisor will review, amend and add as and when necessary.

COSHH Assessments

CO06	Diesel	CO12	Unleaded Petrol
CO17	Tarmac	CO25	Ready Mix Concrete

13 Amendments to the Methodology

The MV Kelly Site Supervisor or visiting SHE Advisor will make note of any amendments to the methodology below.

Amendment Record	Name	Signed	Date