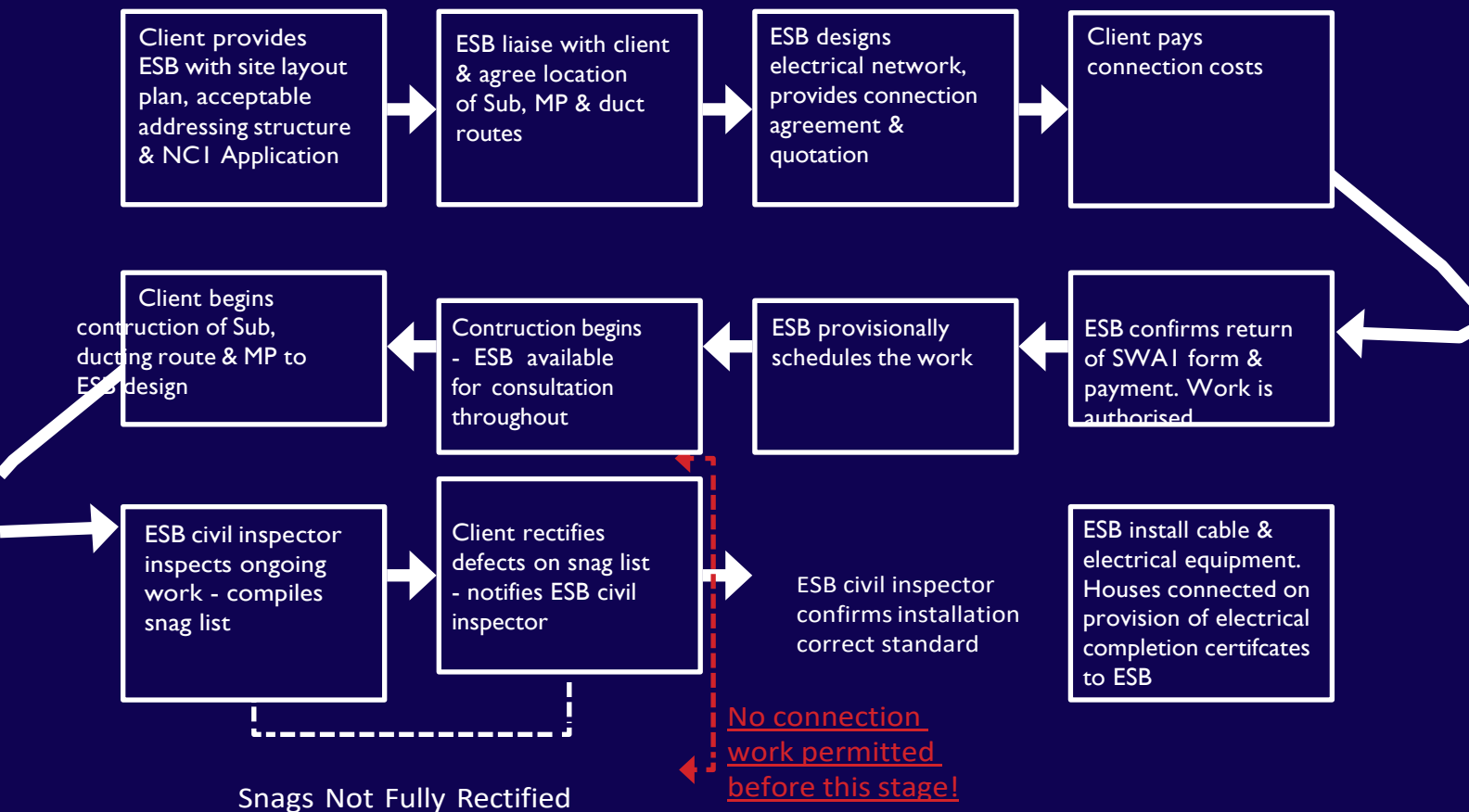


ESBN ELECTRICAL CONNECTION PROCESS FOR HOUSING SCHEME'S



HOUSING SCHEMES: GUIDEBOOK FOR ESB NETWORKS STANDARDS FOR ELECTRICAL SERVICES



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Need further copies of this Housing Schemes Standards Guidebook?

NOTE: FAILURE TO COMPLY WITH THESE GUIDELINES WILL LEAD TO THE INSTALLATION BEING REJECTED BY ESB NETWORKS.

CONTENTS

PAGE

USEFUL WEBSITE LINKS.....	3
ABOUT THIS GUIDEBOOK	4
APPLICATION FOR CONNECTION	8
Site Layout Plan.....	9
Quotation and Terms for Connection.....	10
Job Authorisation.....	10
Process for Connection of Works.....	10
Checklist of Required Documentation	11
Statutory Obligations	12
Site Safety.....	12
Safety Continued.....	14
ESB Networks Overhead Lines.....	14
ESB Networks Underground Cables.....	14
Generators.....	16
Temporary Supplies and Portable Electrical Equipment	16
ESB NETWORKS QUALITY POLICY / QUALITY EMPOWERMENT CHARTER FOR STAFF	18
SUBSTATION / KIOSK SITE REQUIREMENTS	20
SUBSTATION / KIOSK EARTHING REQUIREMENTS.....	23
SPECIFIC TRENCHING / BACKFILLING REQUIREMENTS AT SUBSTATION / KIOSKS PLINTHS.....	26
MAINS CABLE DUCTING REQUIREMENTS	30
Adherence to ESB Networks Duct Installation Quality Standards and Equipment Location Agreements	30

Selection of correct Duct Installation Specification	30
Notification of Commencement of Ducting Works.....	30
MISUSE / MISPLACEMENT OF ESB NETWORKS' AND OTHER UTILITY MARKER TAPES.....	33
DUCTING REQUIREMENTS FOR INSTALLATION IN PRIVATE PROPERTY	38
MINIPILLARS, MINIPILLAR VAULTS AND VAULT COVERS	43
SPECIFIC DUCTING REQUIREMENTS AT MINIPILLAR VAULTS	46
For Mains Cable Ducts.....	46
For Service Cable Ducts.....	46
Block built Minipillar vaults are not acceptable	47
MINIPILLAR EARTHING REQUIREMENTS	48
HOUSE SERVICES	51
GETTING CONNECTED (METERING)	56
PUBLIC LIGHTING.....	57
ESB Networks supply to public lighting system	57
VISUAL GUIDELINES	59
Substations / Kiosk	59
Minipillars.....	59

USEFUL WEBSITE LINKS

<https://www.esbnetworks.ie/contact-us/safe-digging>

<https://www.esbnetworks.ie/docs/default-source/publications/approved-material-suppliers-for-lv-mv-38kv-110kv-associated-works3b697e65-e546-4c82-8414-2f77069c86d1.pdf>

<https://www.esbnetworks.ie/docs/default-source/publications/summary-of-standard-specification-for-esb-networks-mv-lv-ducting.pdf>

<https://www.esbnetworks.ie/new-connections>

<https://www.esbnetworks.ie/docs/default-source/publications/electrical-services-guidebook-for-housing-schemes96bf505f-4d12-4287-9c6d-ce0fa35a5b46.pdf>

ABOUT THIS GUIDEBOOK

This guidebook is aimed at builders, developers, contractors and Local Authorities involved in housing scheme developments, who shall be referred to as **Clients** throughout the Guidebook text. It details ESB Networks' requirements for MV and LV underground cable supply to such housing schemes. The requirements detailed in this Guidebook form part of ESB Networks' contract with the Client.

The electronic version of this guidebook is available via the following link from the ESB Networks website.

<https://www.esbnetworks.ie/docs/default-source/publications/electrical-services-guidebook-for-housing-schemes96bf505f-4d12-4287-9c6d-ce0fa35a5b46.pdf>

Please note that the requirements in this guidebook apply to housing scheme developments only.

For all ESB Networks trenching and duct installation requirements / specifications on routes **external to** housing schemes developments, please contact the local ESB Networks office for the appropriate documentation. The standard specifications for ESB Networks 38kV and MV / LV Networks ducting are also available from the ESB Networks website.

<https://www.esbnetworks.ie/docs/default-source/publications/summary-of-standard-specification-for-esb-networks-mv/lv-ducting.pdf>

ADHERENCE TO ESB NETWORKS INSTALLATION STANDARDS AND EQUIPMENT LOCATION AGREEMENTS

It is the Client's responsibility to ensure that **safety** and the **quality of work** on site meets the standards in this guidebook. It is also the Client's responsibility to ensure that all substation / kiosk plinth locations, duct runs and minipillar locations, agreed in advance with the local ESB Networks Office, are installed correctly at the agreed locations.

The local ESB Networks office must be informed prior to the installation of any substation / kiosk plinths and ducting /

minipillars and agreement obtained regarding the positioning of these items and duct routes. ESB Networks staff can then inspect the installation work for conformance with the requirements and guidelines contained in this guidebook.

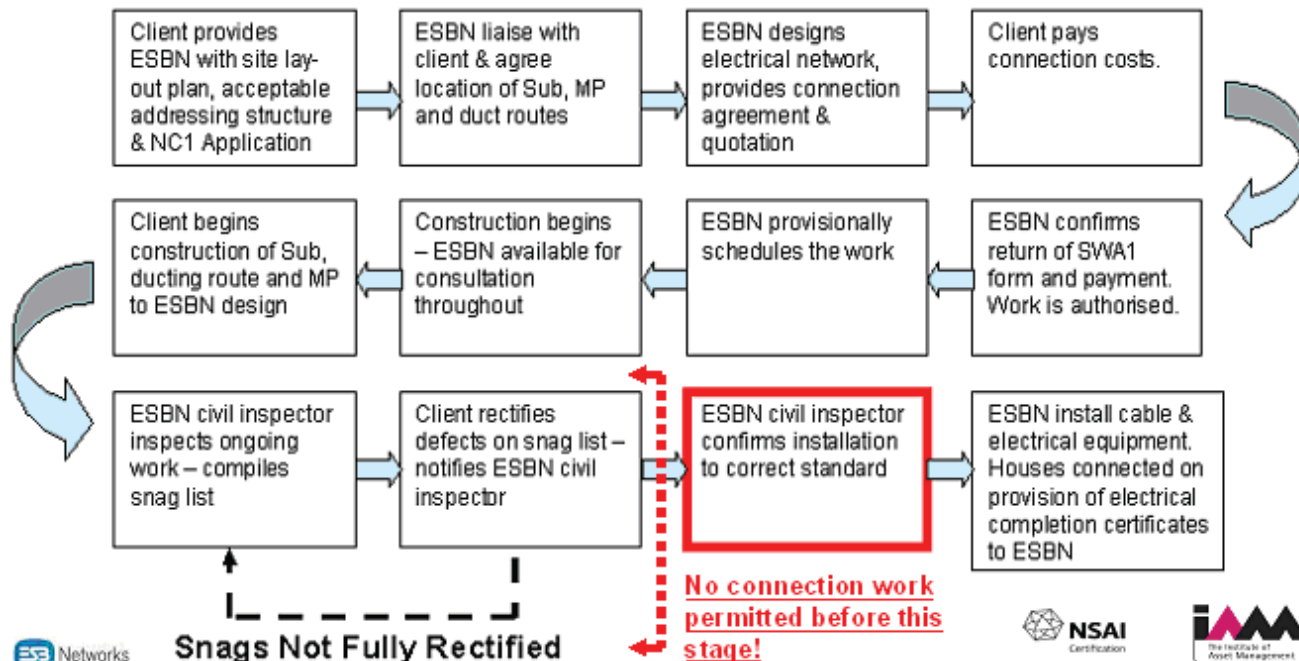
All non-conformances and deviations from the requirements, guidelines and substation / kiosk, minipillar and cable duct run location agreements must be rectified before ESB Networks will install any cables or equipment. If the Client does not notify ESB Networks regarding commencement of ESB Networks related site works, then ESB Networks staff will require photographic evidence and trial holes at selected locations, in order to demonstrate that the installation work conforms to the Guidebook requirements. Please see ESB Networks Quality Policy / Empowerment Charter for staff, on page 19 of this Guidebook. This provides clear, firm instructions to ESB Networks staff in relation to ESB Networks quality requirements and directs them to inspect all new installations and insist on full conformance with ESB Networks standards.

WORK PROGRAMME

ESB Networks will endeavour to meet agreed work schedules. Good co-operation between ESB Networks and Clients is very important to achieve this. The work-stages agreed with ESB Networks should be fully completed to the required ESB Networks specification and standards, before calling on ESB Networks to install substations / kiosk, cables and house services. This will avoid unnecessary delays and additional ESB Networks callout costs.

EARLY CONTACT WITH ESB NETWORKS IS ESSENTIAL!

ESBN Electrical Connection Process for Housing Schemes



It is essential that the Client have early contact with ESB Networks to agree substation / kiosk / minipillar site locations and to agree the legal transfer of such sites to ESB Networks and to agree any associated cable legal deed of Wayleave for any cables in private property. The Client is also required to advise those property owners who will have a minipillar on their property, of ESB Networks' right of access to such equipment at all times in the future.

Diversion and alteration of existing networks may be required to facilitate the housing scheme / development. When required, network alterations can take from 8 weeks to over 6 months depending on the voltage level and nature of the alteration required. Where undergrounding is necessary, the Client will be required to provide all necessary trenching, ducting, etc. as may be called for to accommodate the alteration. Please note that it may not be feasible to relocate some networks. Some networks may require the sterilisation of a corridor through the development along the existing route.

SAFETY WARNING!!

Construction work under or adjacent to ESB Networks overhead lines of all voltages presents serious Health and Safety risks and **is not permitted**. ESB Networks must be contacted well in advance of such works in order to arrange for any necessary alternatives. Appropriate safety control measures must always be applied where construction works are in the vicinity of overhead lines. These control measures are set out in the H.S.A approved "Networks Code of Practice for Avoiding Danger from Overhead Electricity Lines" – downloadable from the H.S.A website www.hsa.ie or from the ESB Networks website www.esb.ie/esbnetworks or call ESB Networks at 1800 372 999 for a free hard copy. Should Clients fail to comply with such an instruction the Health and Safety Authority will be requested to intervene.

Detailed requirements for individual sites should be discussed and agreed locally with ESB Networks.

APPLICATION FOR CONNECTION

Applications should be made to:

ESB Networks DAC,
New Connections Applications,
Sarsfield Road,
Wilton,
Co. Cork.

Application forms and information are available on the ESB Networks website:

<https://www.esbnetworks.ie/new-connections>

Application form types are:

- NC1 for Multi unit
- NC2 for Domestic Single
- NC3 for Commercial Single
- NC4 for Public Lighting systems

Information Required by ESB Networks for application process:

- Application form
- Location Map (scale 1:1000 – 1:2500 or 1:10560)
- Site Layout Plan (scale 1:100 – 1:500)

Site Layout Plan

- The Client must provide a high quality print or a negative of the site layout plan or a CAD file, free from such items as contour lines, landscaping, foul sewers, storm sewers and water mains.
- **Note for ESB Networks Staff;** Substation / kiosk sites should be chosen as to both integrate and protect the substation / kiosk. Substations / kiosks located in open green spaces bring with them long term concerns for ESB Networks in terms of vandalism, public safety and visual obtrusiveness (see Visual Guidelines on page 61) and should be avoided wherever possible. The site location should also be optimised for efficient cable distribution. If the sides and rear of the unit substation are to be enclosed by walls, these must be constructed to the dimensions given on page 22. This spacing between the cabinet and the walls is vital as it allows for correct ventilation while preventing all other access.
- The site layout plan must be labelled with the Ordnance Survey Map reference and should contain at least 4 reference points to the underlying Ordnance Survey Map, (e.g. Existing street corner, bench mark etc.).
- The site layout plan should also be labelled with **the final street names and house numbers**. If this information is not available at the time of application the Client must ensure its availability on ‘Acceptance of Terms’ at payment stage.
- The site layout plan must outline any possible difficulties with minipillars or cable routes or substation / kiosk sites; e.g. with regard to large variations in land levels and steep gradients so that appropriate measures can be agreed with local ESB Networks representative.

Quotation and Terms for Connection:

Following a site visit, ESB Networks will design the electrical network and prepare a written quotation for terms and conditions for connection based on Client's drawings and site plans. Revisions to drawings submitted to ESB Networks may require revised quotations. On receipt of the quotation, the Client should return the following to ESB Networks:

- Acceptance of Terms form (signed)
- Payment
- Final Street Names and House Numbers (if not already supplied)

Note: If final street names and house numbers are not provided, ESB Networks Bureau **will not** accept application.

Job Authorisation

On receipt of payment, the signed 'Acceptance of Terms' Form, the final street names and house numbers, and the appropriate documents on the checklist below, the job will be authorised by ESB Networks.

Process for Connection of Works:

The quotation letter will provide the name of an ESB Networks contact person who will deal with all queries relating to the connection works. The Client should contact this person one-week after payment is made to discuss and agree the timetable for the connection works.

Checklist of Required Documentation:

Every effort will be made to minimise the time between application for connection and job authorisation. Clients can assist this process to a large degree by ensuring that the documentation on the checklist below is made available to ESB Networks as early as possible.

1. Application for connection.
2. Location Map.
3. Site Layout Plan.
4. Full List of street Names and Numbers.
5. Signed Acceptance of Terms.
6. Payment.
7. H1 Forms (substation / kiosk site transfer).
8. SWA1 Forms (legal deed of Wayleave) where cable passes through private property.

**SAFETY ACCIDENTAL CONTACT OR CLOSE PROXIMITY CAN KILL, OR CAUSE
SERIOUS INJURY**

Statutory Obligations:

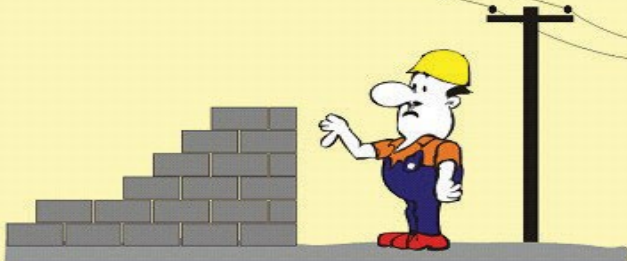
Part III of the General Application Regulations 2007 (S.I.299) requires precautions to be taken against the risk of death or personal injury from electricity in the work area. In particular, regulation 76 states ‘that all electrical equipment and installations shall at all times be so constructed, installed, maintained, protected and used so as to prevent danger’. Clearly this puts an onus on everybody including ESB Networks and the Client to protect the workforce and the general public from the associated electricity hazards.

Site Safety:

1. ESB Networks and the Client must meet all the requirements of S.I.229 Regulations 2007 in order that site conditions and practices provide a safe working environment.
2. ESB Networks staff must work on third party construction sites to install substations / kiosks, cables, minipillars and meters. If they find the work-site to be unsafe they are required to leave the site until appropriate controls are put in place.
3. Where adequate safety precautions have not been taken by the Client to protect against the hazard of overhead electricity lines or underground cables or other electrical apparatus and there is a risk of coming into contact with live apparatus, both overhead and underground. ESB Networks will issue an ‘Instruction to Stop Work’. If the instruction is ignored the Health and Safety Authority will be requested to intervene.
4. Safety standards for the installation of electrical equipment on housing schemes are covered in this guidebook; they must be adhered to by the Client and by ESB Networks.

SAFETY

NEVER BUILD UNDER OR
NEAR POWER LINES!



LINES CAN KILL

IF YOUR DIGGER
CONTACTS A CABLE
JUMP CLEAR
AND KEEP OTHERS AWAY



CABLES CAN KILL

ALWAYS CHECK WITH ESB BEFORE YOU START - ADVICE IS FREE!

Safety Continued:

ESB Networks Overhead Lines:

Where building is taking place close to ESB Networks overhead power lines, certain precautions are necessary and 'H.S.A ESB Code of practice for Avoiding Danger from Overhead Electricity Lines' must be complied with.

1. ESB Networks must be contacted to see if the lines can be diverted or switched out while the work is taking place. If the lines cannot be diverted or switched out, then the Client must ensure the safety precautions shown are put in place.
2. Tipper trucks, cranes, diggers, concrete delivery trucks and material escalators are particularly at risk in coming in contact with ESB Networks overhead lines. The Client must ensure that all drivers and operators of these vehicles are made aware of such hazards before they enter the work site.
3. Where work is taking place close to low voltage (LV) overhead lines, ESB Networks can, depending on the length of line, arrange insulation cover up over the exposed lines for the duration of the work. This could apply for instance to work adjacent to a main street in a town or where ESB Networks overhead service line is attached to a building. This line cover up service is provided, however, **adequate notice** is required to allow ESB Networks to schedule the work.

ESB Networks Underground Cables:

Underground cables are one of the more common hazards encountered when excavating in streets, near buildings or on building sites. Always assume electric cables will be present. If ESB Networks cables, cable slabs / bricks / boards or warning tape is uncovered then digging in the vicinity must stop until the site has been inspected by ESB Networks.

The Client is required to ensure that, PRIOR TO any excavation work taking place, the location of all underground cables in the vicinity is known in accordance with H.S.A document 'Code of Practice for Avoiding Danger from Underground Services'.

Maps giving the general location of cables are available from: e-mail: dig@esb.ie or send site details to **Central Network Mapping, ESB Networks, St Margaret's Road, Finglas, Dublin 11 D11X3W7**

A Cable Avoidance Tool (CAT), which when used by a trained operator, can give a more precise location of cables when used in conjunction with the maps. Digging by hand is mandatory in close proximity to ESB Networks Cables.

AVOIDANCE OF ELECTRICAL HAZARDS WHEN WORKING NEAR OVERHEAD LINES

At the planning stage and before starting work near an overhead line consult your local ESB office.

THERE ARE TWO GENERAL CASES

SITE WHERE THERE WILL BE NO WORK OR PASSAGE OF PLANT UNDER A LIVE OVERHEAD LINE



- A barrier should run parallel to the line. (See below for distance from line)
- This may be fixed post fencing or steel drums filled with rubble spaced 1.5 metres apart.
- If cranes are in use a line of bunting at a height of 3 metres should supplement the barriers. (See below for distance from line)
- Danger notice stating "Danger Live Overhead Line" should be spaced at intervals.

SITE WHERE PLANT WILL PASS UNDER A LIVE OVERHEAD LINE

- In addition to the above, Goal Posts should be erected as shown

Dimensions as follows:

- Height of goalposts
- As advised by ESB

Width of Goalposts

- Max. 10 metres.

Height of bunting

- 3 metres

Distance between steel drums

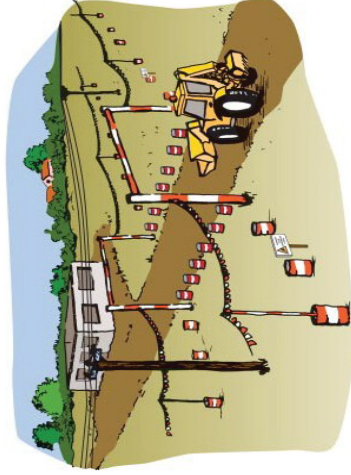
- 1.5 metres

Distance between danger notices

- 20 metres

Horizontal distance of barrier to outside conductor on line

- 6 metres minimum for LV, 10kV, 20kV, 38kV.
- 10 metres minimum for 110kV, 220kV, 400kV.



In general if work is to be undertaken directly under the line, ESB will insist that the line is switched off for the duration of the work.

ESB may permit working under a live line only if special agreed precautions are put in place. Booklet (ESB Code 9803203) also available which gives greater detail.

Generators:

If a generator is used on site it is essential that no back-feed can occur onto ESB Networks infrastructure. If it is a fixed generator type, the details of the generator must be provided to the local ESB Networks representative, and it must be installed by a competent person with the correct protection and changeover arrangement provided.

Extra care is needed with portable generators. **Dangerous occurrences have been reported a number of times when sockets in a house awaiting connection were made live by connecting a generator to one of the socket outlets.** This is a highly dangerous practice and has the effect of making the fuse board live, creating an imminent danger to life on the ESB Networks system. The Client and ESB Networks are required to notify the Health and Safety Authority if they come across such practice.

Temporary Supplies and Portable Electrical Equipment:

Temporary electrical supplies are regularly used on building sites. They provide power for electrical tools and equipment. In many cases leads are strung on scaffolding or laid on the ground. A few simple rules should be observed.

1. All leads and equipment must be regularly inspected and replaced if faulty.
2. All switchgear, plugs and sockets used on a building site must be of an industrial type and comply with the standards in IEC 309. They should offer a minimum IP 44 rating of protection against the entry of foreign objects and moisture.
3. Leads laid on the ground should be suitably protected against possible damage by passing vehicles.
4. Leads should not be installed where vehicles can pass underneath or should be high enough not to cause a problem.
5. All 400 / 230 Volt supply leads must be screened, kept short and must be protected with an RCD.
6. Portable transformers must be used to supply all tools and equipment at 115Volts.
7. Hand lamps must not exceed 25Volts AC.

ESB NETWORKS QUALITY POLICY / QUALITY EMPOWERMENT CHARTER FOR STAFF

The required lifetime of ESB Networks underground cable assets and accessories is 80 - 100 years. The design and construction standards we implement today for underground cable assets will decide whether or not these assets achieve ESB Networks required levels of reliability, functionality and safety over this 80-100 year lifetime requirement.

To realise the full potential of our underground assets, it is vitally important therefore, that **all** ESB Networks Staff throughout the country proactively defend and enforce our design and construction standards on a consistent basis, throughout the country, at all times. In particular,

- ESB Networks staff must first and foremost, ensure that the locations and positions of MV substations, minipillars, meter cabinets and cable routes adhere to ESB Networks site selection and location criteria, while cooperating with Clients as best as possible.
- ESB Networks' Civil Works Quality Inspectors must issue a Civil Works Inspection Report to all Clients for all work undertaken on ESB Networks' behalf.
- Developers and contractors must rectify all defects identified in Civil Works Inspection Reports issued by ESB Networks Quality Inspectors. Civil Works Quality Inspectors should then determine if all defects have been fully rectified by the developer / contractor. If all defects are not cleared, then follow-on Civil Inspection Reports should be issued until all construction defects are cleared to the satisfaction of the ESB Quality Inspector.
- ESB Network Supervisors should only schedule work, for installation of cables, MV substations, minipillars and meters, once the initial or follow up Civil Inspection Reports are signed off by the Civil Works Quality Inspector as being clear of defects or substandard work.

- ESB Networks staff must actively bring sub-standard ducting, civil works and poling activities to the attention of their ESB Networks supervisors. Acting in unison, ESB Networks staff should refuse to install, connect or commission, any item which may pose a risk to staff or members of the public, or which impairs the ability of the ESB Networks asset to perform as required over its 80-100 year lifetime (see connection process chart page 6).
- We will endeavour to work with developers and contractors in relation to site realities, genuine mistakes and breakdown in communications. **However, ESB Networks staff must not accept sub-standard work or any item of equipment which compromises the quality of our assets or poses a risk to staff or members of the public.**

All ESB Networks staff are requested to be extra vigilant in ensuring that **all** work, completed on the network, whether undertaken by ESB Networks staff or third parties, meets ESB Networks Constructions Standards. All commissioning reports must be completed and returned to the relevant sections in ESB Networks. All follow up issues identified during commissioning must be addressed.

ESB Networks senior management empowers all ESB Networks staff to make decisions in line with the ESB Networks quality principles and policies summarised above. In addition, ESB senior management commits to fully supporting staff who take decisions in line with ESB Networks quality policy, in the event of challenges and disputes by Clients.

ESB Networks senior management will facilitate and promote training of Networks Civil Works Quality Inspectors, Supervisors and Managers, to ensure that ESB Networks staff are fully conversant with ESB Underground Networks Construction Standards and ESB Networks Quality Policy / Quality Empowerment Charter for Staff to ensure that these standards are applied fairly and consistently by all ESB Networks staff countrywide.

SUBSTATION / KIOSK SITE REQUIREMENTS

Note for ESB Networks Staff; Substation / kiosk sites should be chosen as to both integrate and protect the substation / kiosk. Substations / kiosks located in open green spaces bring with them long term concerns and ongoing maintenance costs for ESB Networks in terms of vandalism, public safety and visual obtrusiveness (see Visual Guidelines page 60). Such locations should be avoided wherever possible. The site location should also be optimised for efficient cable distribution. If the sides and rear of the unit substation are to be enclosed by walls, these must be constructed to the dimensions given on page 21. This spacing between the cabinet and the walls is vital as it allows for correct ventilation while preventing all other access.

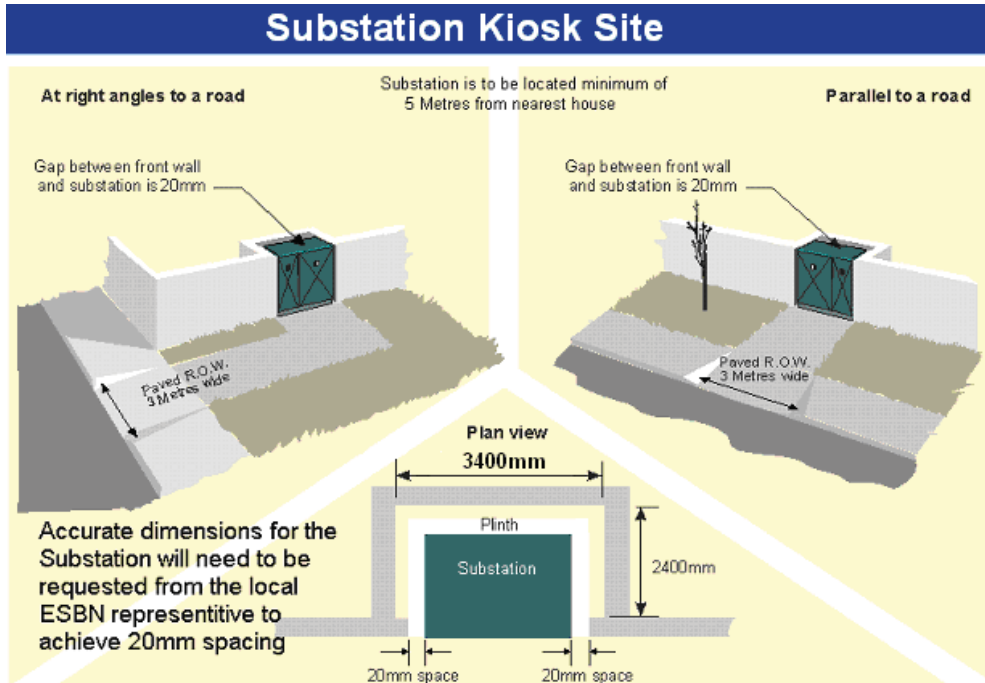
ESB Networks design staff, having weighed up the above factors, will specify on the site layout the required location and construction detail and the number and type of each substation / kiosk required in the development.

The Client is required to;

- Provide, free of charge, all substation / kiosk sites and plinths specified in the ESB Networks site layout, including any surrounding walls specified by ESB Networks. The ground around substation / kiosk sites must be completely levelled and reinstated before ESB Networks can energise this equipment.
- Provide all earthing requirements as detailed in the ‘Substation / Kiosk Earthing’ section of this guidebook.
- Provide an unrestricted 3 metre wide **paved** access at all times to the substation / kiosk door from the nearest public roadway. Where the substation / kiosk site location, agreed with ESB Networks, is not adjacent to a public road, then paving must be of concrete, brick paving or other durable material capable of withstanding occasional heavy traffic.
- Ensure legal transfer of site title to ESB Networks.
- Provide a free legal deed of Wayleave to ESB Networks for any cables located, with ESB Networks prior agreement, in private property.

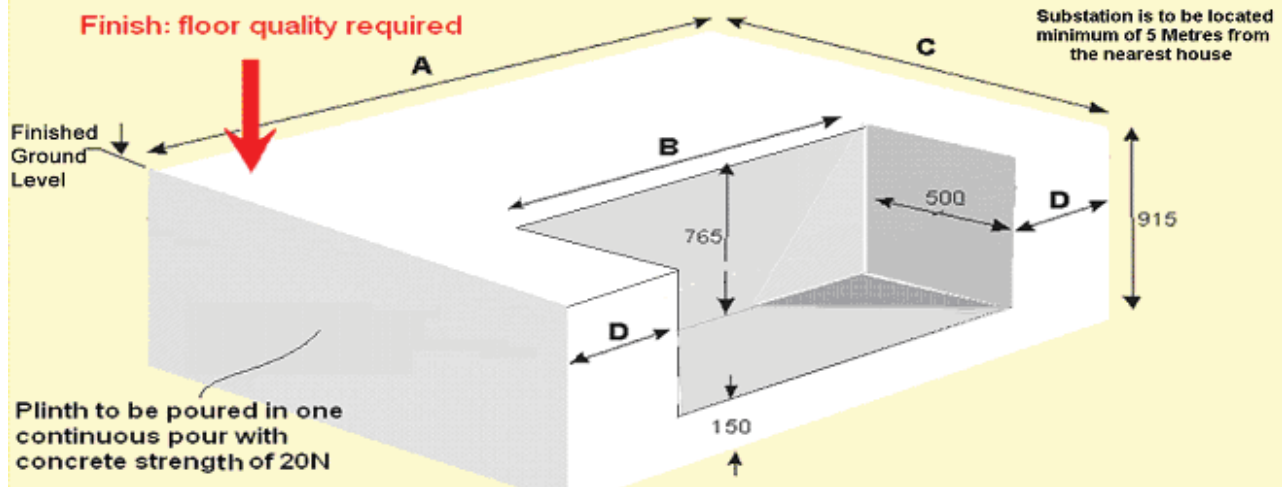
WARNING!!

Substation not completed to ESB Networks specification Substation cannot be connected cannot be connected



No Public Lighting column/pillar to be < 2m from Substation/Kiosk

Substation Kiosk Foundation Plinth



Plinth Function	A	B	C	D	ESB Drawing
Unit Substation	2600	2200	2200	200	D204710 Plinths for MV/LV Unit Subs.
Kiosk	2000	1200	1200	390	D204945 Plinths for 3 or 4 bay RMU

If plinth is not level, Substation will not be installed.

The Substation / Kiosk will only be installed by ESB Networks when all the measurements are according to ESB Networks' requirements. The top of the plinth must coincide with finished ground level in all cases.

SUBSTATION / KIOSK EARTHING REQUIREMENTS

ESB Networks requires that earths be installed at each substation / kiosk location to ensure public safety and safe operation of the electrical supply system by ESB Networks staff.

The Client is required to:

- Provide a trench 25 metres long, 300mm wide and 600mm deep at either side of the substation / kiosk (the adjacent duct trenches may be used for this purpose).
- Provide a trench exclusively for electrical earthing 300mm wide and 200mm deep around the substation / kiosk plinth.
- Contact ESB Networks supervisor / representative once the trenching above is completed so that ESB Networks can install electrical earths.
- Following installation of electrical earthing by ESB Networks, immediately cover the bare earth conductor with a layer of fine topsoil or clay; then lay in a layer of ESB Networks approved Yellow Marker Tape 300mm from finished ground level and backfill trench in preparation for final reinstatement.
- Contact ESB Networks supervisor / representative once the trenching above is completed so that ESB Networks can install electrical earths.
- Notify ESB Networks supervisor / representative once backfilling is complete to enable ESB Networks to test if the earthing meets the required ESB Networks performance standard.
- ESB Networks will then perform electrical earth resistance tests. Should the tests fail then ESB Networks may require the Client to partially re-excavate the trench to install additional earth rods and bare conductor.

In certain locations with known very poor earthing conditions, an additional earthing system may be required to be installed for public safety. This may require extra trenching or installation of additional earth rods etc. These extra requirements will be specified in the Terms of Supply letter issued to the Client.

- If the tests are successful then the earth trenches, which are clear of the right of way, can be fully reinstated.

Contact the local ESB Networks supervisor / representative to install the earth mat before installing the paved right-of-way in front of the substation / kiosk. The preformed earth mat is installed 200mm below finished ground level in front of the substation / kiosk doors and will extend 1 metre out from the substation / kiosk and across its full width.

SAFETY WARNING!!

Earths are an essential safety system. Supply **cannot be made available** until all of them including the earth mat are correctly installed.

Earthing System not Installed Substation cannot be Connected Houses cannot be Connected

Substation Kiosk Earth

Trench filled in after ESB install earthing system but surface left unfinished until ESB test earthing system.

Area around plinth & 25 metre trench left open until ESB install station earthing system

Earth conductor size will be confirmed by ESN representative

Paved R.O.W.
3 Metres wide

Preformed Earth mat

Position of Pre Formed Earth Mat in front of Substation



WARNING

Substation earthing systems are an essential Safety System. Supply will NOT be connected until they are installed

SPECIFIC TRENCHING / BACKFILLING REQUIREMENTS AT SUBSTATION / KIOSKS PLINTHS

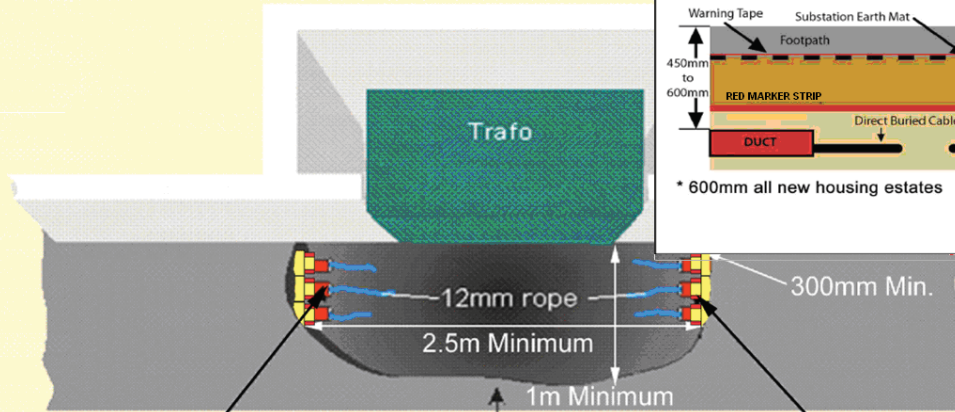
ESB Networks will specify the number of cables and ducts and route of cable ducts required at substation / kiosk plinth positions on the site layout plan.

- The excavated ground in front of the substation / kiosk (plinth) should be left open until all the mains cables have been pulled in and connected to the substation / kiosk equipment.
- Following connection to the substation / kiosk equipment, cover and manually compact the exposed cables with a 200mm minimum depth layer of sand to EN12620 standard with maximum grit size of 4 mm from ESB Networks Approved sand supplier.
- Install a layer of 1 metre long ESB Networks approved red marker strips on top of the 1 metre wide sanded area across the full front length of the substation / kiosk so as to completely cover the sanded area between the two sets of ducts.
- Backfill open area in front of substation / kiosk with CL804 material to a depth of 200 mm below finished surface level.
- Arrange with ESB Networks for installation of substation / kiosk preformed earth mat as outlined in previous section on substation / kiosk earthing requirements.

**FAILURE TO COMPLY WITH THESE INSTRUCTIONS WILL LEAD TO
THE INSTALLATION BEING REJECTED BY ESB NETWORKS.**

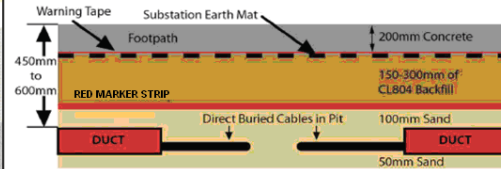
Substation Kiosk Ducting

Plan View



15C

Side View of Ducting in Front of Substation

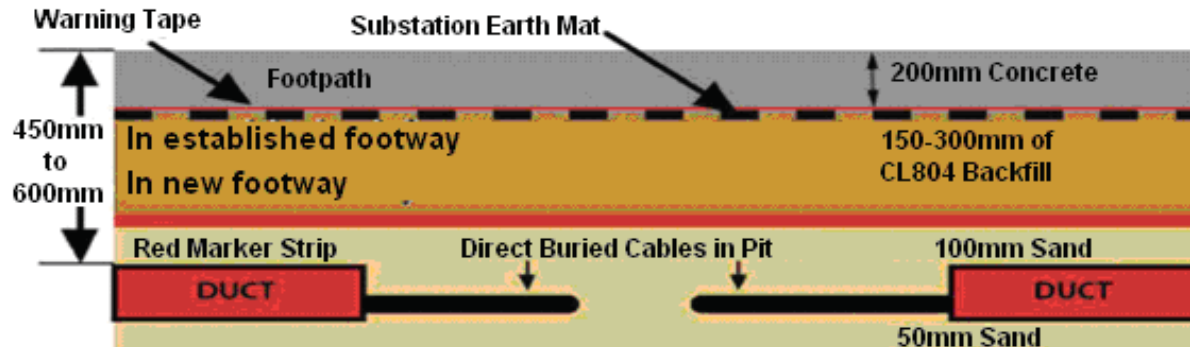


* 600mm all new housing estates

See pg. 213 of MV/LV Manual

Note: Seal ducts in accordance with ESN approved methods

Side View of Kiosk Ducting in Front of Substation/Kiosk



* 600mm all new housing estates

See pg. 213 of MV/LV Manual

Unit Sub / Kiosk Civil Works Inspection List		Job ID
Is unit substation / kiosk installed at location agreed with ESB Networks / in a position which may be a danger to public / traffic or staff?		
Legal transfer of site title has not been transferred to ESB Networks?		
Has a free legal deed of Wayleave to ESB Networks for any cables kiosk in private property associated with the unit substation / kiosk been completed?		
5 metre separation between unit substation / kiosk and nearest house has not been achieved?		
Minimum 3 metre wide paved access to the unit substation / kiosk has not been installed?		
Plinth is not level with surrounding ground?		
Plinth not constructed of reinforced concrete / not laid in one pour?		
Plinth dimensions not to standard and top surface level?		
Is wall built around substation without ESB Networks' prior agreement?		
Is wall built with ESB Networks prior agreement, not to standard? i.e. 200 mm clearance from unit substation / kiosk to back wall and 20mm clearance from side of unit substation / kiosk to front wall?		
Ground around substation / kiosk is not properly reinstated?		
25 metre trench length of substation earth not installed and overlaid with ESB Networks approved marker tape at 300mm depth?		
Preformed earth mat is not installed in front of unit substation / kiosk at 200mm depth?		

MAINS CABLE DUCTING REQUIREMENTS

(NB RELATED TO HOUSING SCHEMES/DEVELOPMENTS ONLY)

Adherence to ESB Networks Duct Installation Quality Standards and Equipment Location Agreements

It is the Client's responsibility to ensure that **safety** and the **quality of work** on-site meets the standards in this guidebook. It is also the Client's responsibility to ensure that all substation / kiosk plinth locations, cable legal deeds of Wayleave, duct runs and minipillar locations, which were agreed in advance with the local ESB Networks office, are installed correctly at the agreed locations.

Selection of correct Duct Installation Specification

ESB Networks will specify the route, size and purpose of all ducts on the site layout plan. For all ducting which lies within the housing scheme / development, the trench cross-sections and ducting requirements set out in this guidebook shall apply.

For any ESB Networks MV/LV ducting which lies outside the housing scheme / development, the standard specification for ducting listed on the ESB Networks website must be used. The link for downloading this specification is;

<https://www.esbnetworks.ie/docs/default-source/publications/summary-of-standard-specification-for-esb-networks-mv-lv-ducting.pdf>

Notification of Commencement of Ducting Works

The local ESB Networks office must be informed before any installation of substation / kiosk plinths and ducting takes place. In the absence of notification regarding commencement of site inspection, ESB Networks staff will require detailed photographic evidence and excavation of trial holes to full trench depth at selected locations. This will confirm that the installation work conforms to ESB Networks duct installation quality requirements set out in this guidebook.

In all instances, ESB Networks staff will inspect the installation work for conformance with the requirements and guidelines contained in this guidebook. Based on this, a Civil Works / Ducting Inspection Report will be produced by ESB Networks. All non-conformances and deviations from both the guidebook specification requirements and prior agreements with ESB Networks regarding locations of substation / kiosk, minipillars and duct runs will be itemised in this report and presented to the Client for rectification.

ESB Networks will not install any cables until all the deviations and non-conformances identified in the Civil Works Inspection Report are rectified. As soon as the Client notifies ESB Networks that all work is now completed in accordance with this guidebook, ESB Networks staff will revisit the site and complete a second Civil Works / Ducting Inspection Report. Depending on the outcome of this re-visit report, ESB Networks will either commence installation work or advise the Client that further remedial work is required.

This is in accordance with ESB Networks' 'Quality Policy and Empowerment Charter for Staff', which clearly instructs ESB Networks installation staff not to accept poor quality work standards or deviations from prior agreements regarding substation / kiosk / minipillar and duct run locations. Please see ESB Networks Quality Policy and Empowerment Charter on page 19/20 of this Guidebook

The Client is required to:

- Supply and install ESB Networks approved 125mm red electric solid wall uPVC cable duct (ESB Specification No.16113).
- No other duct type is acceptable. The layout of the ducts in the footpath shall be as shown in the diagram below.
- Install all ducts at the specified depths and spacing's as shown in this guidebook or as per ESB Networks specification for MV/LV ducting, depending on whether the duct run is within or outside a housing scheme / development.
- **CLEAN** and **PROVE** each duct as per ESB Networks specification. Approved ducts, brushes and mandrels and duct end caps are available from the list of approved suppliers on the ESB Networks website.

<https://www.esbnetworks.ie/docs/default-source/publications/approved-material-suppliers-for-lv-mv-38kv-110kv-associated-works3b697e65-e546-4c82-8414-2f77069c86d1.pdf>

- **SEAL** all duct ends using end caps so as to avoid ingress of grit, stones and sediment which can block ducts and **DAMAGE** cables.
- Ensure all duct joints are properly made and secured. Ducts should be installed as straight and level as practicable with only gradual changes in direction and level. Where bends are necessary, always use ESB Networks approved standard 1.2m radius bends.

ESB Networks outline drawings will show the route deviations of the ducting on the site layout plan, which will enable the Client to procure the required number of 11°, 22.5°, 45°, 90° 1200mm long radius bends.

- For slowly curving routes, use a series of 11 or 22 degree bends to negotiate slowly curving routes. Never bend straight duct lengths over long route curves as this practice will lead to ripping of cables sheaths at stressed duct joint positions.
- Enclose **all duct bends** in minimum 15 Newton strength CBM4 concrete; to secure them against movement during cable pulling. A minimum thickness of 400mm of CBM4 is required on the **INSIDE** of 90° bends and a minimum of 200mm on the **INSIDE** of 11, 22 and 45 degree bends. See sketches on page 41.
- The CBM4 material must be within the setting time when poured.
- Provide each duct with a strong continuous 12mm polypropylene draw rope free of knots and securely anchored at each end.
- Install the ducts so as to ensure the required minimum clearance of **300mm** from all other services is maintained.
- Install ESB Networks approved yellow warning tape 300mm below finished ground level along the full length and over the full width of ducts. ESB Networks approved Yellow Marker Tape and Red Marker Strip is available from the list of approved suppliers on the ESB Networks website using the download link shown previously on page 33.

WARNING!!

Before calling on ESB Networks to install cables, ensure all requirements comply with the relevant ESB Networks Specification.

Failure to conform with ESB Networks Ducting Standards will result in re-excavation of trenches and re-installation of ducting at the Client's expense.

MISUSE / MISPLACEMENT OF ESB NETWORKS' AND OTHER UTILITY MARKER TAPES

Always use ESB approved marker tape over ESB Networks red ducts. ESB Networks approved marker tape must never be used over red public lighting ducting or over any other utility's ducting.

Similarly, utility marker warning tapes deployed by other utilities, to warn of the presence of water pipes, public lighting cables, telecoms cables and gas pipes, must never be placed over ESB Networks red ducting.

Should any warning tape (including tape with metal strips) other than ESB Networks **approved** marker tape be discovered overlying ESB Networks ducts, the Client will be required to remove the unapproved marker tape and install approved material in its place prior to connecting supply. Similarly, should any ESB Networks approved warning tape be discovered overlying other utilities' ducts or pipes, ESB Networks will request the Client to arrange for its removal and replacement by the correct utility warning tape for safety reasons.

ESB Networks approved marker tape is provided in two widths of 250mm and 500mm. A link describing its features and suppliers is given below -

<https://www.esbnetworks.ie/docs/default-source/publications/approved-material-suppliers-for-lv-mv-38kv-110kv-associated-works3b697e65-e546-4c82-8414-2f77069c86d1.pdf>

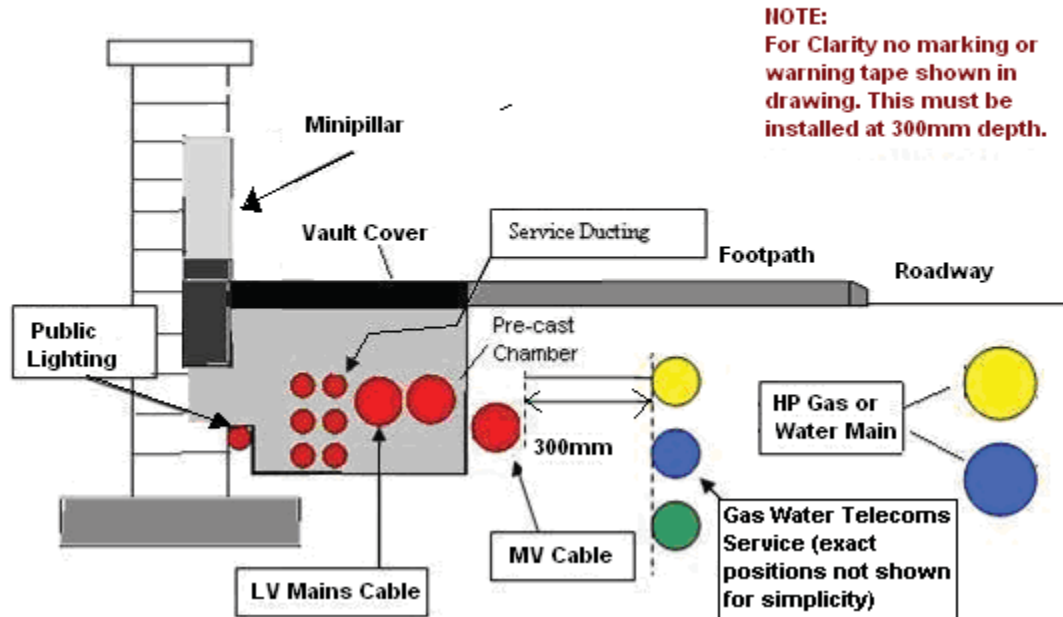
Photo showing:

- correct use of PL tape
- correct use of ESNB tape
- approved prefabricated vault

**NB Block built
minipillar vault is
not acceptable**



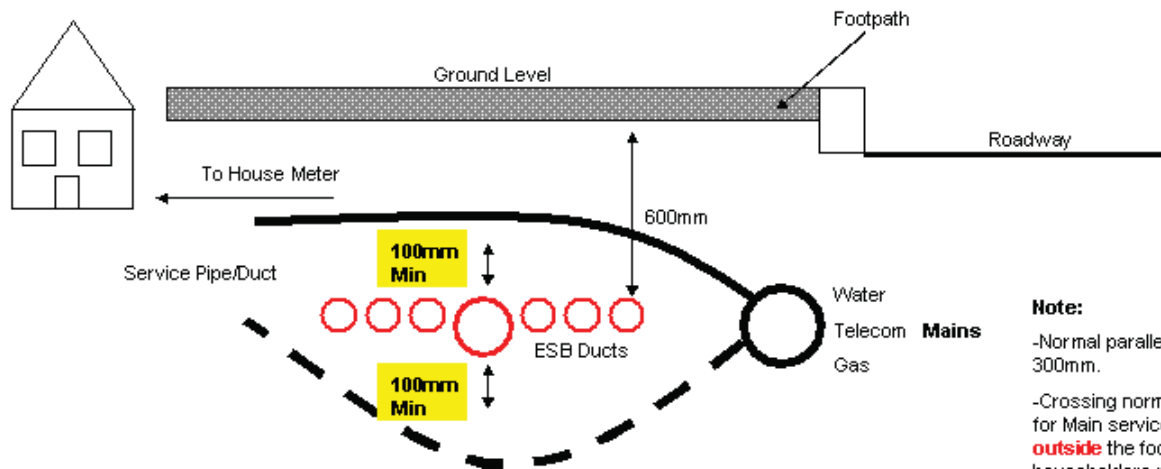
Position and Spacing of ESB Networks Ducting in relation to other Utility Ducts and Pipes in Housing Schemes/Developments



Normal standard clearance = 300mm.

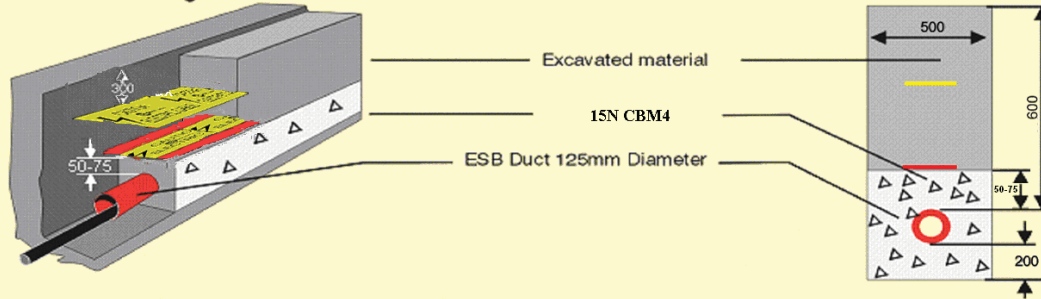
Clearance from High Pressure pipes = 600mm

Minimum Standard Crossing Clearances for ESB Mains and Service Ducts in Housing Schemes



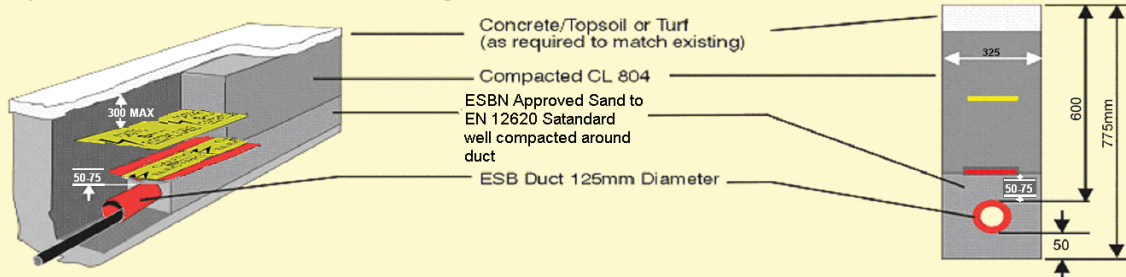
Duct Installation in New Estate Roads

Duct in advance of road-making



Duct Installation in New Estate Paths

Footpaths and areas within one metre of road-edge



Normal standard clearance = 300mm.

Clearance from High Pressure pipes = 600mm

DUCTING REQUIREMENTS FOR INSTALLATION IN PRIVATE PROPERTY

Mains duct installation on private property is permitted only in exceptional circumstances and only by prior agreement with ESB Networks.

In addition to the requirements outlined above the Client is required to;

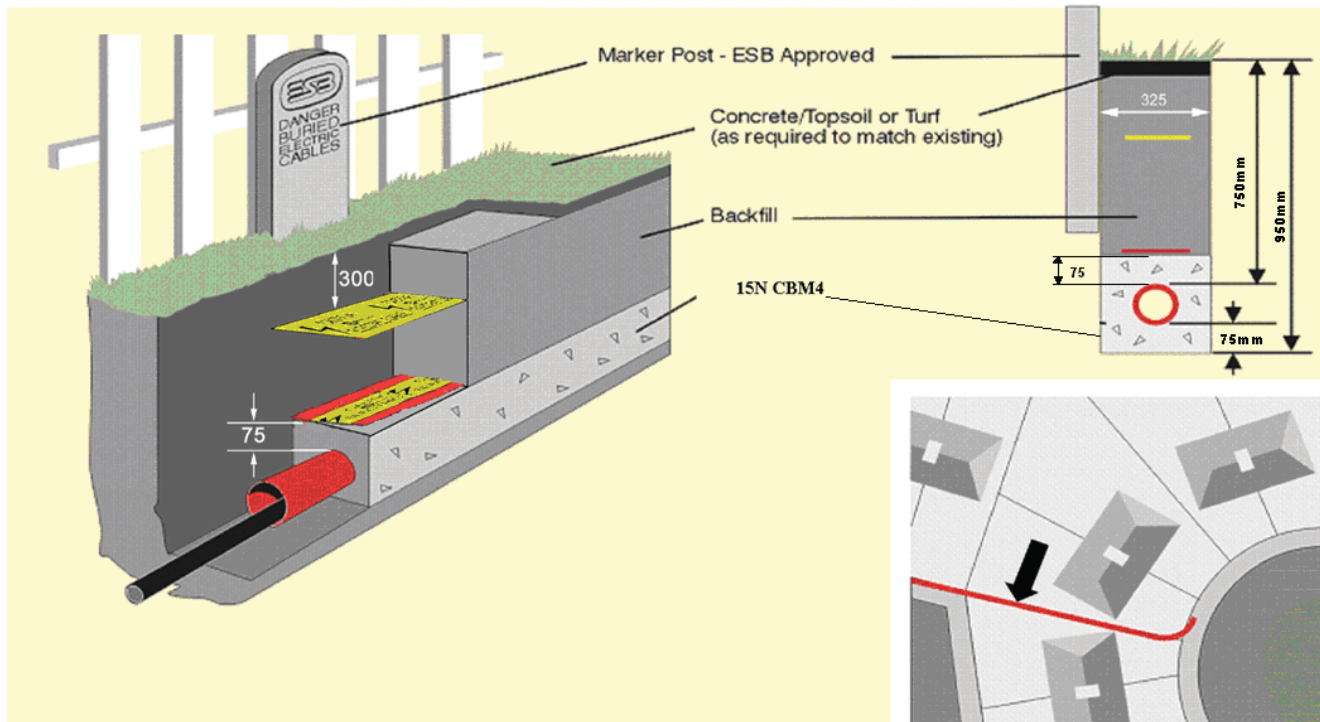
- 1) Install permanent ESB Networks approved marker posts where the duct enters and exits, the private property, and at approximately 5 metre intervals along the duct route in prominently visible locations along the trench as agreed beforehand with ESB Networks Staff.

Marker Posts (100 x 125 x 1200mm), for use in private property only, are available from ESB Networks approved suppliers. ESB code reference: 3227355. Supplier details are given in the website link above on page 33.

- 2) Establish a Legal Deed of Wayleave or Burden on the owner's title giving ESB Networks a 2 metre wide full Right of Way and unrestricted access to carry out all necessary repair or reinstallation works. The Client must complete and submit **FORM SWA1** to local ESB Networks office, prior to commencement of any installation work.

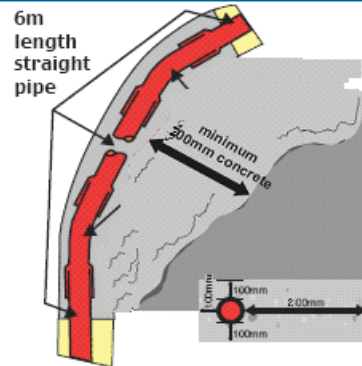
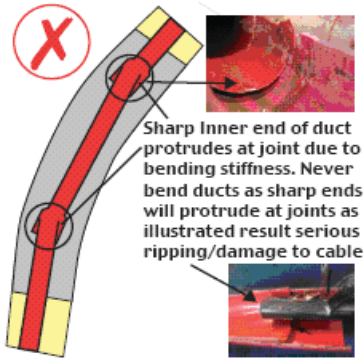
FORM SWA1 'Acquisition of Cable legal deed of Wayleave for Cables' is available from local ESB Networks offices.

Ducts in Private Ground/Farmland Outside Estates



DUCT BENDS

Gentle Sweep Bends

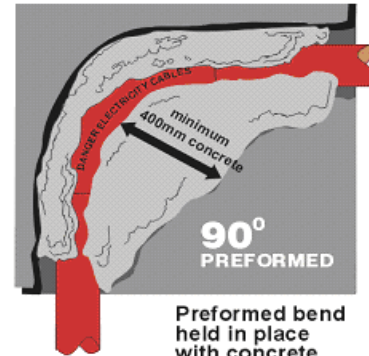
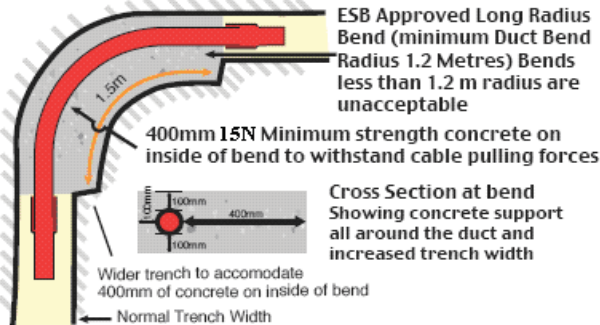


Use 11 degree or 22 degree bends to provide smooth joint interface

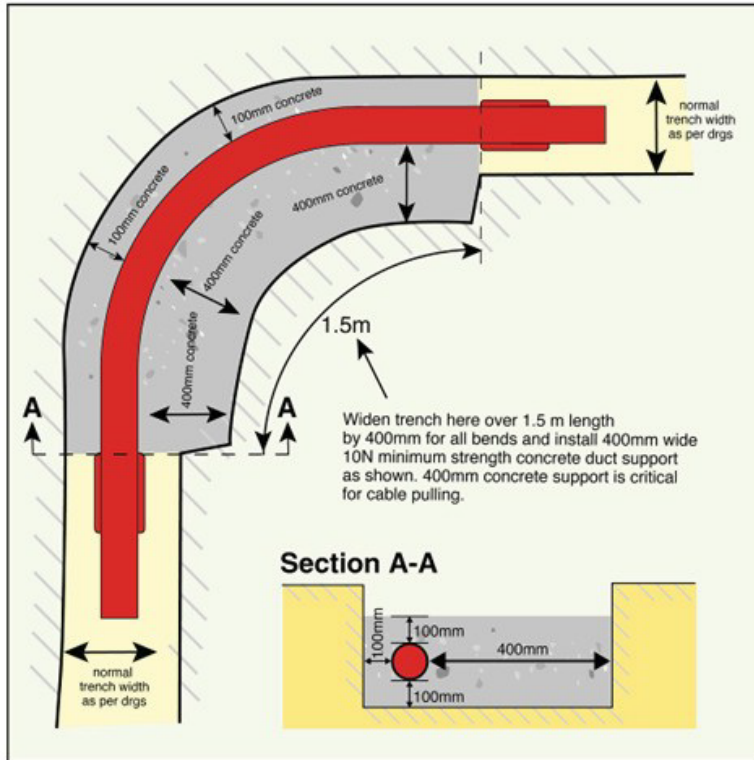
Concrete support as for item 6A

Always use 11 or 22 degree bends at locations where the route curves around in a large sweep

Sharp Bends



Plan & Crossection view of trench widening at bend positions



Note: Where there are two ducts in any horizontal layer of ducting in a trench, increase the horizontal clearance of 75mm between adjacent ducts at bends to 150mm. This means widening the trench gradually on each side of the bend over a duct length in the case of two duct trenches. For three or more ducts per layer, the duct to duct clearance is already 150mm which is adequate.

Ducting Civil Works Inspection Report Questions			Job ID
Routes of ducts are not in accordance with ESB drawings?			
Standard un-faded ESB approved 125mm red electric cable ducts has not been used?			
Depth of cable ducts not to ESB standard?			
Separation of ESB ducts from other ESB ducts not to standard?			
ESB warning tape has not been installed 300mm below finished ground level over ducts?			
ESB heavy duty warning strips have not been laid over cables where required (across full width of entrance to substation, or in roadways)?			
ESB ducts have not been brushed and mandrelled?			
Earth wire not laid along trench <u>in sand</u> ? Photographic evidence specifically required.			
ESB warning tape has not been installed 300mm below ground level over earth wire?			
ESB duct is less than 300mm clearance from other service and extra mechanical protection has not been provided (brick – concrete slab, or heavy duty UG protection plate)?			
ESB approved 1200mm long radius bends have not been used at bend positions or have not been encased in 15N CBM4 concrete?			
ESB approved ducts have not been encased in 15N CBM4 concrete where required (private property, road crossings, etc.)?			
Backfilling of ducts not to ESB standard? Sand (EN12620 natural unwashed sand from Approved Supplier) and 15 Newton strength CBM4 where appropriate (<u>pea gravel and lean mix are not acceptable</u>).			
Ducts do not have 12mm polypropylene draw ropes provided?			
Duct ends are not sealed so as to avoid ingress of grit or water?			
For any ducts in private property, ESB approved marker posts for LV and MV are not installed at approximately 5 metre intervals along cable route?			
Are photographs provided to ESB as proof that the civil works installation standard meets ESB Networks requirements?			

MINIPILLARS, MINIPILLAR VAULTS AND VAULT COVERS

ESB Networks will specify the location of each minipillar on the site layout plan and provide minipillars, and minipillar earthing materials. The Client is required to:

- Advise those property owners who will have a minipillar on their property of ESB Networks' right of access to such equipment:

Integrate minipillars into front garden walls and ensure that the front of each minipillar lines-up accurately with the front of the appropriate garden wall. If a garden wall is not built, then the front of the minipillar should be in line with the inside edge of the footpath.

- Supply / install minipillars (ESB Networks supplied) and associated ESB Networks approved pre-fabricated/pre-cast vaults and vault covers at all positions which have been agreed with ESB Networks at the design stage. Unapproved vaults will not be accepted by ESB Networks. Vault covers with brick or other infill material are unacceptable to ESB Networks for housing scheme / development use. Block built minipillar vaults are also unacceptable.

ESB Networks Approved Pre-fabricated and Pre-cast minipillar vaults are available from approved suppliers listed on the ESB Networks website; <https://www.esbnetworks.ie/docs/default-source/publications/approved-material-suppliers-for-lv-mv-38kv-110kv-associated-works3b697e65-e546-4c82-8414-2f77069c86d1.pdf>

These must be installed according to the detailed manufacturer's instructions supplied with each unit:

- Ensure that minipillar 'Ground Level' markings are properly aligned with the finished ground level surface and visible for inspection. Ensure that all minipillars and plastic vaults are adequately secured against movement in any direction including tipping backwards into householders' properties, using 15N concrete surround.
- Install all minipillars, vaults and vault covers so as to avoid causing a tripping or injury hazard. There shall be no gap between the vault and minipillar.

Minipillar at Construction Stage(Prior to backfilling)



Minipillar vaults are to be bedded securely. Service ducts are to be terminated above the mains LV ducting. The mains LV Ducts are to be terminated into vaults using 22° bends. As agreed before hand, with ESB Networks, medium voltage cable ducting is to be run in front of the minipillar vault using standard clearances to the LV mains ducting and other services or in the roadway.

NB Block built Minipillar vaults are not acceptable

Minipillar at Electrical Installation Stage



Minipillar Vaults are to be:

1. Clean and free from any obstructions.
2. Ducts are to be installed flush with minipillar vault inner wall.
3. 12mm rope to be secured, not using the minipillar.
4. Free from any MV Ducts.
5. Plastic vaults to be backfilled with 15N concrete.



← Example; Finished Minipillar in open plan site

Minipillar body to be installed level, ground level mark flush with ground level and front face of minimipillar flush with inside line of footpath.

Example; Finished Minipillar in open plan site □

Minipillar body to be installed level, ground level mark flush with ground level and front face of minimipillar flush with inside line of footpath.



← Example of Minipillar installed between two driveways.

Minipillar is adequately supported, protected and flush with brick surfaces.



Failure to conform to above installation standards will result in minimipillars not being connected

SAFETY WARNING!! Don't forget the minimipillar EARTH!

SPECIFIC DUCTING REQUIREMENTS AT MINIPILLAR VAULTS

The Client is required to:

For Mains Cable Ducts

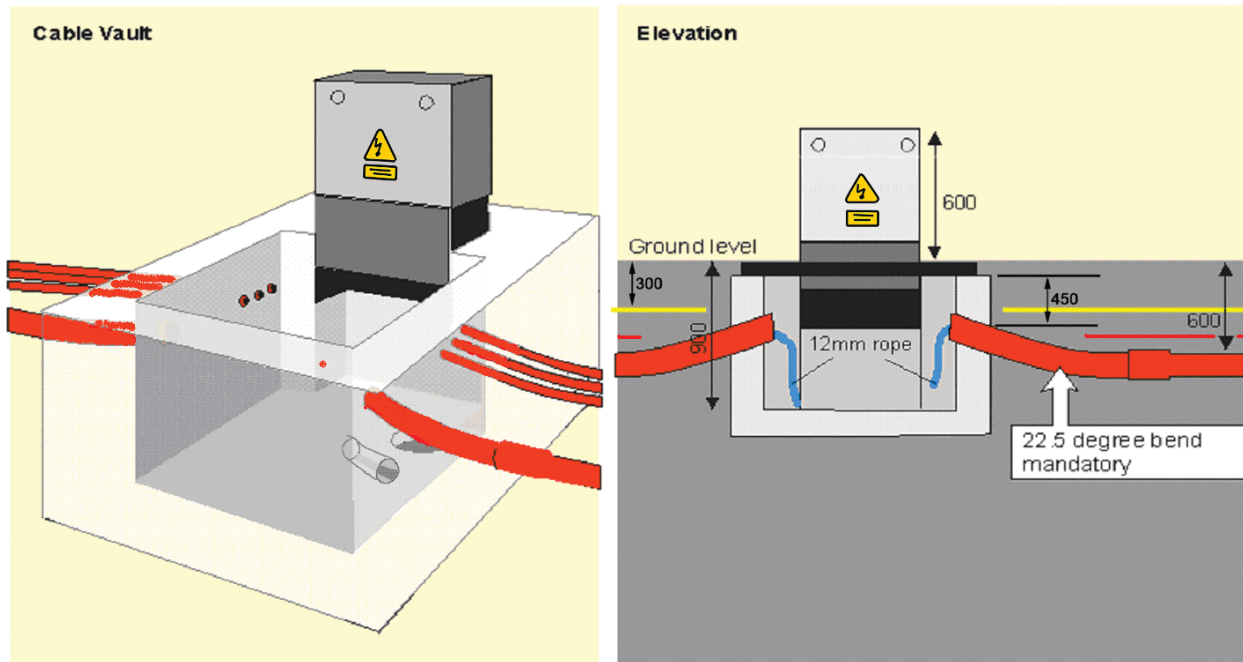
- Install an ESB Networks approved 125mm, 22.5 degree bend on each mains cable duct on entry of duct to a minipillar vault.
- Install each bend at an upward angle to assist with cable pulling. Each bend should be cut flush with internal wall of vault.
- Install mains cable ducts through the **side faces** of the minipillar vault only.

For Service Cable Ducts

- Install service cable ducts at the same level (600mm) or below the level of mains cable ducts.
- Install service cable ducts through the **side faces** of the minipillar vault in the closest knock out / openings to the minipillar.

Note: Pre-fabricated and pre-cast minipillar vaults are supplied with knock out / openings for the entry of mains and service cable ducts.

MINIPILLAR VAULTS



Block built Minipillar vaults are not acceptable

MINIPILLAR EARTHING REQUIREMENTS

To ensure public safety and for safe operation of the electrical network it is a requirement that an earth is installed at each minipillar location to ensure safe operation of the electrical supply system. ESB Networks will provide all necessary earthing materials. The Client is required to:

- Provide an open trench 15 metre long x 300mm wide x 450mm deep beside each minipillar. The adjacent mains cable duct trenches may be used for this purpose.
- Following earth installation¹ by ESB Networks, cover the earth conductor with a layer of fine topsoil / clay and the trench, and then reinstate the trench.
- Provide ESB Networks with photographic evidence that the minipillar earths have been installed as per ESB Networks specification.

NOTE:

In certain locations with very poor earthing conditions, an additional earthing system may be required to be installed for public safety. This may require extra trenching or installation of additional earth rods etc. These extra requirements will be specified in the Terms of Supply Letter issued to the Client.

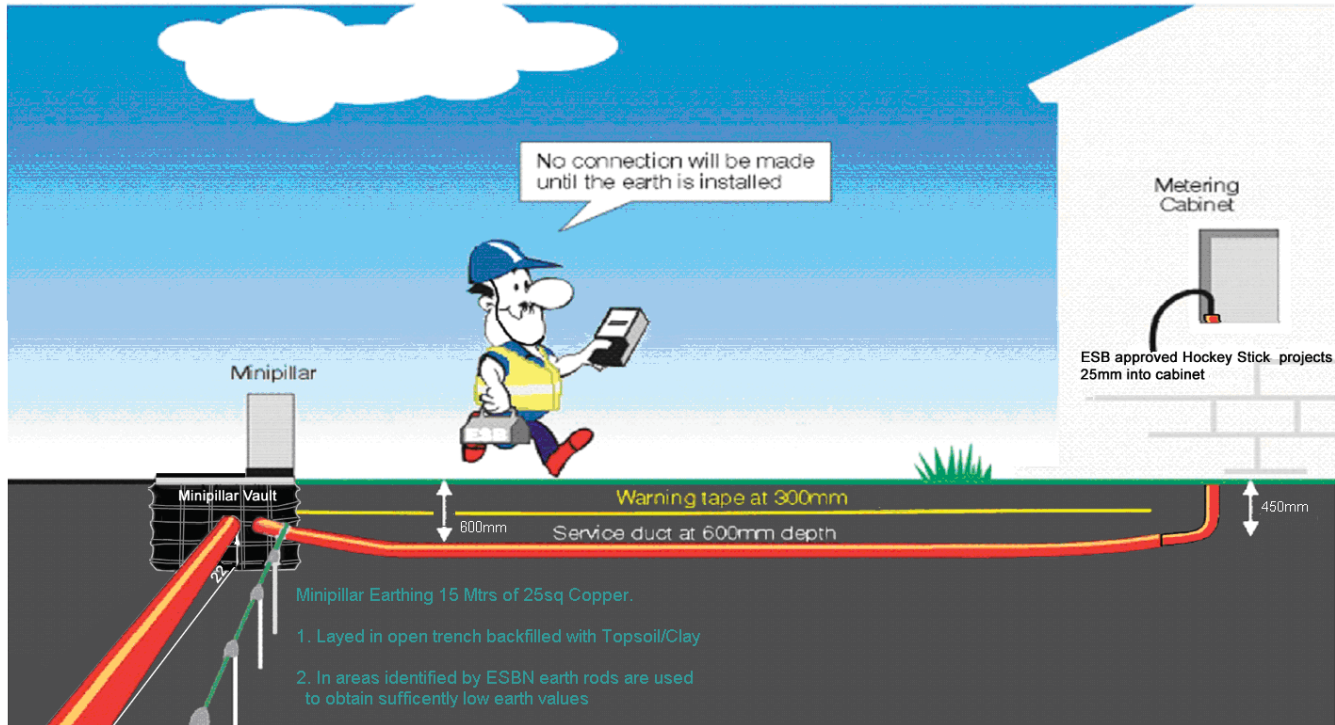
SAFETY WARNING!!

Earthing systems are vital for public safety. Minipillars cannot be connected until the earthing system is correctly installed.

No earthing system at Minipillars Minipillars cannot be connected Houses cannot be ~~arranged~~

¹ The ESB Networks approved method for installing earths must be adhered to for correct system performance.

MINIPILLAR EARTHING



Civil Works Inspection Report Questions – Mini-Pillars (MP)		Job ID
MP is not in position agreed with ESB Networks or is in a position hazardous to traffic or the public?		
MP is not installed at correct level?		
Position of MP is not flush with back of footpath or front of wall?		
MP not adequately secured in ground? (using 15N CBM4 concrete)		
Vault cover is not an ESB approved type?		
Vault cover and / or frame may cause tripping hazards?		
Vault covers not bolted down?		
Bolted side of vault frame is not flush / tight with MP?		
Trimmer bar is not installed?		
Earths not installed in MP?		
22.5 degree bends where appropriate, are not used to provide upward lift for mains cables entering MP?		
Ducts are outside standard minimum / maximum depth in vault (min / max = 450mm)?		
Empty duct ends are not sealed so as to avoid ingress of grit and water?		
Duct end does not finish flush with vault wall?		
Debris / waste material left in duct?		
Mains duct enters vault at the front?		
Pre-fabricated vault is not an ESB approved type (block built not acceptable)?		
No drainage sump in vault?		
Any other defects observed?		

HOUSE SERVICES

ESB Networks will specify the house numbers to be serviced from each minipillar on the site layout plan. Each house will require a separate ESB Networks approved service duct. The Client is required to:

- Record house number in the metering cabinet in accordance with ESB Networks copy of the site layout map.
- Supply and install an ESB Networks approved outdoor meter cabinet, which must be continuously accessible to ESB Networks and unobstructed by side gates. The cabinet must be installed **within 2 metres of the front line of the house** and must be installed at a height of between 1 metre and 1.2 metres above finished ground level, as per ‘National Code of Practice for Customer Interface Current Edition’.
- Provide and install an ESB Networks approved “hockey stick” at the meter cabinet position.

The hockey stick should be angled to allow straight connection to incoming service duct.

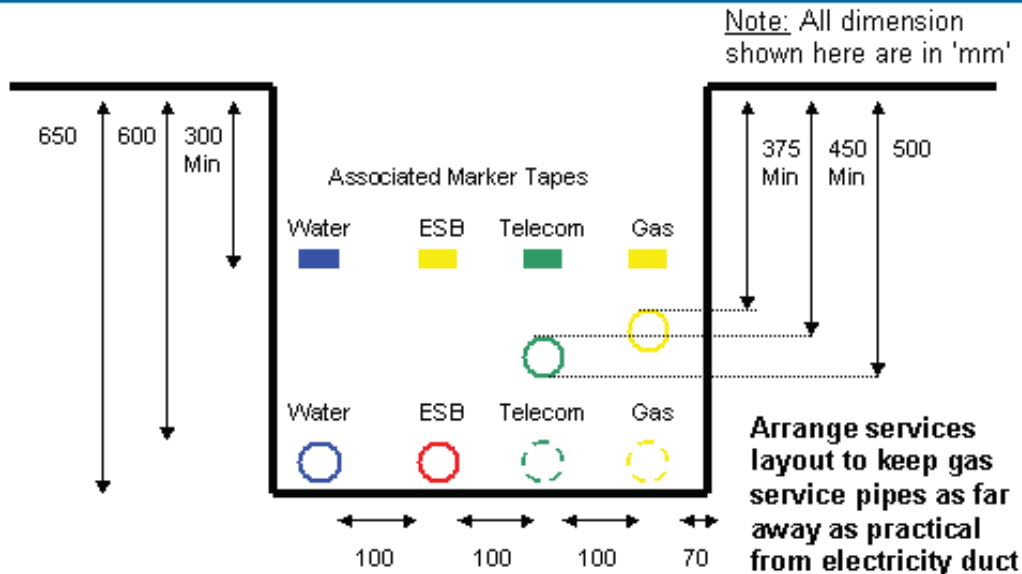
- Provide and install continuous ESB Networks approved MDPE 50mm OD red service duct at a depth of 600mm, from the hockey stick position to the required minipillar vault.
- Install ESB Networks approved yellow warning tape 300mm below finished ground level along the full length of and over each duct.
- Install strong continuous 10mm polypropylene draw rope free of knots and secure at both ends in each duct
- Ensure that each service duct is laid in the public footway, passes only through the house owner’s property and crosses only the house owner’s driveway from the footpath to the meter cabinet position.

The entry point of the service hockey stick into the metering cabinet must be sealed to stop ingress of water.

NOTES:

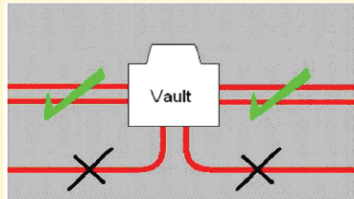
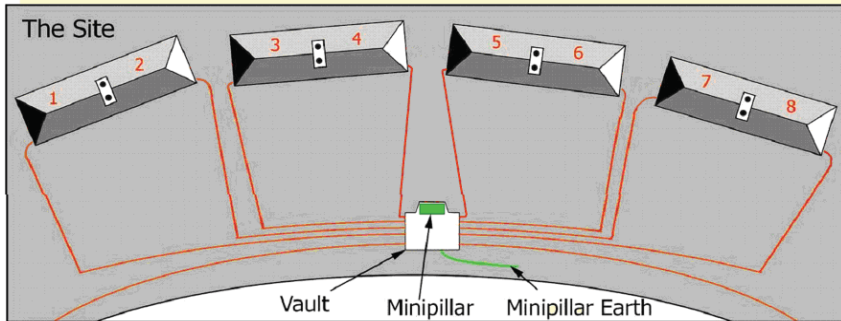
1. Never interchange marker tapes and services. ESB approved marker tape to be used over ESB Networks red duct only.
2. It is essential that the service cable does not come into contact with cavity insulation.
3. Minimum lateral clearance that must be maintained between ESB Networks service duct and other services in the house owner's driveway is **100mm**. **NB** lateral clearance of **300mm applies** in the public footpath.
4. Plan route to avoid unnecessary crossing of services ducts / pipes. Please refer to diagram on page 36 for further information.
5. ESB Networks service ducts to be backfilled with sand; trench bottom to be free of sharp stones.
6. Disposition of services shown overleaf is typical but actual arrangement should suit service entry into house.

Cross - Section of Utility Services Trench within House owners Property showing minimum depth and minimum spacing requirements

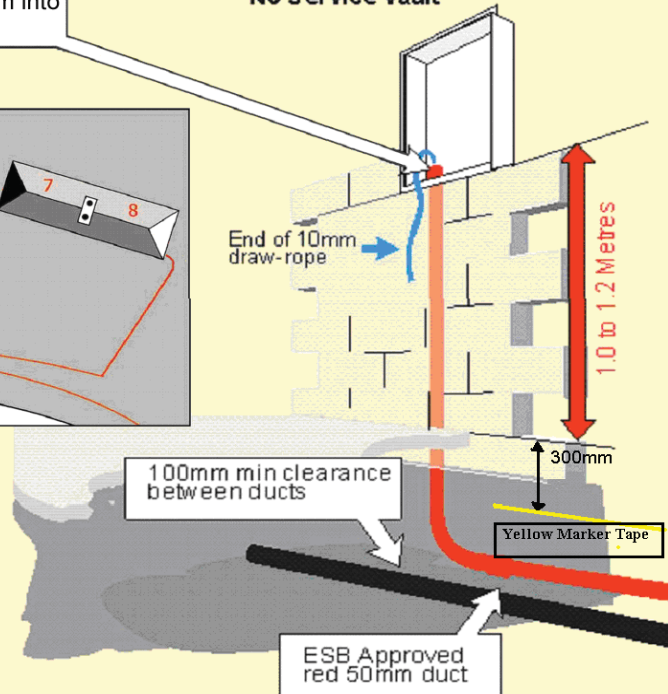


STANDARD HOUSE SERVICE

ESB Approved Hockey Stick projects 25mm into cabinet



No Service Vault



Civil Works Inspection Report Questions – Service Duct & Meter Cabinet		Job ID
Service duct route from MP to meter cabinet outside ESB Networks standard?		
Depth of service duct, <input type="checkbox"/> 600mm, and of hockey stick <input type="checkbox"/> 450mm?		
ESB warning tape has not been installed 300mm below ground level over duct?		
O/S meter cabinet is not between 1m and 1.2m over ground level?		
O/S meter cabinet is greater than 2m from front of house or restricted access to cabinet?		
Meter cabinet damaged at point where ESB duct enters or cabinet door is damaged or not locking correctly?		
Hockey stick is not projecting 25mm into cabinet on bottom left?		
Customer cable does not enter O/S meter cabinet at bottom right of box, or bottom right hand side of box?		
Service duct is not to standard, (only HDPE/MDPE type approved)?		
Standard ESB approved red electric cable duct / hockey stick has not been used?		

GETTING CONNECTED (METERING)

ESB Networks will agree the type of metering required and the location of the metering cabinets. The Client is required to:

- Agree the metering position with ESB Networks at the development planning stage.
- Install meter cabinets in accordance with the ‘National Code of Practice for Customer Interface’.
- Ensure **unobstructed** access at all times to metering cabinets for meter readers.
- Advise house purchaser(s) of the expected date on which supply will be available as agreed with ESB Networks.
- Ensure that house purchaser(s) complete the standard Application for Supply, form name CX51D, and send to the relevant ESB Networks address at least **10 days** in advance of supply date as previously determined by ESB Networks.

NOTES:

1. No connection will be made if any householder’s apparatus other than a main switch fuse / MCB is located within the meter cabinet.
2. Application for Supply Form CX51D is available from local ESB Networks office or by contacting our Customer Service Number 1800 372 757 , or on web site: <https://www.esbnetworks.ie/new-connections>
3. All new installations require a completion certificate. ESB Networks are fully supportive of the Electro Technical Council of Ireland (ETCI) and the approved regulatory bodies in their efforts to improve safety and standards of electrical installations and for that reason only completion certificates recognised by ETCI and issued by registered members of approved regulatory bodies are acceptable.
4. After ESB Networks have completed the connection to the ESB Networks meter / isolator, the Electrical Contractor makes the customer’s installation live, (by connecting to the meter / isolator and closing the isolator switch), and carries out post connection tests on the customer’s installation as specified by the ETCI National Rules for Electrical Installations.
5. The results of the post connection tests are recorded on the customer’s (yellow) copy of the completion certificate.

PUBLIC LIGHTING

The provision of a public lighting system in housing schemes is the responsibility of the Client. An electrical contractor will design and install the system. The public lighting system should be designed and installed according to the recommendations that deals specifically with public lighting and sets out standards and technical specifications which should be generally acceptable to local authorities. Some local authorities however may have their own specifications for public lighting and contractors should consult these before finalising the public lighting design.

ESB Networks supply to public lighting system

Connection shall be by underground cable from the nearest ESB Networks minipillar to the public lighting system micro-pillar. The Client is required to:

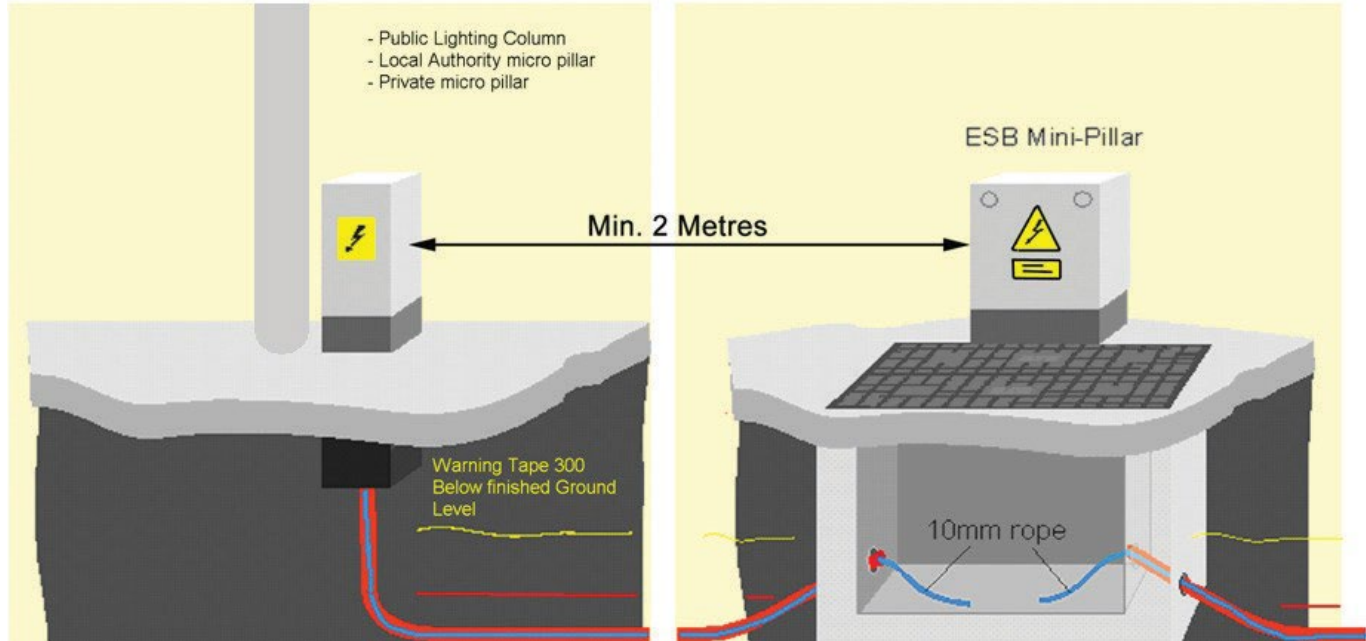
- Fill out form 'NC4' available from ESB Networks website address;
[E02786565 ESB NC Forms AUG 22 NC4 v01.indd](#)
 [\(esbnetworks.ie\)](http://esbnetworks.ie)
- Provide and install an ESB Networks approved MDPE 50mm OD red continuous service duct at a depth of 600mm from ESB Networks' minipillar vault, to the public lighting system micro-pillar.
- Install ESB Networks approved yellow warning tape 300mm below finished ground level along the full length of and over the duct.
- Provide and install a strong continuous 10 mm polypropylene draw rope secured at both ends in the duct.
- Provide a Completion Certificate for the Public Lighting System.

NOTE:

There should be a separation **of at least 2 metres** between ESB Networks' minipillar and the public lighting system micro-pillar, public lighting column or any other private micro pillar.

For any other customer service pillars refer to the 'National Code of Practice for Customer Interface' current edition.

PUBLIC LIGHTING



VISUAL GUIDELINES

Minipillars and substations / kiosks are a necessary part of the electricity network in housing schemes and all proposals should take into account the likely impact of these items on the visual environment. Careful site selection is necessary, in particular for substations / kiosks since this will have a considerable influence on how obtrusive they will be. To incorporate new minipillars and substations / kiosks into a housing scheme the following guidelines along with agreement from ESB Networks should be followed and the best solution obtained.

Substations / Kiosk:

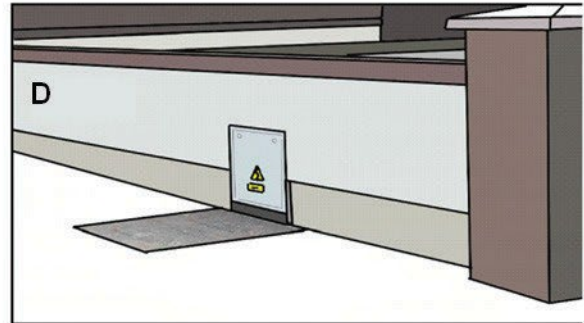
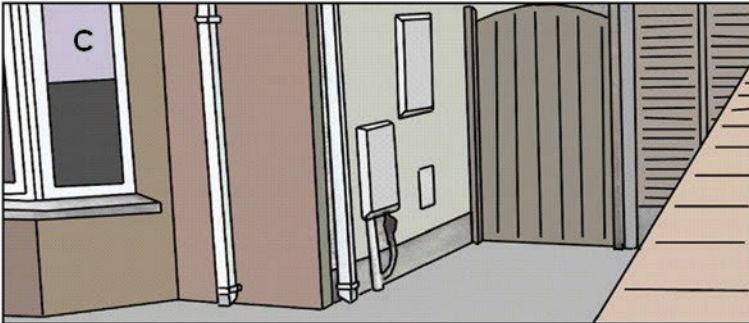
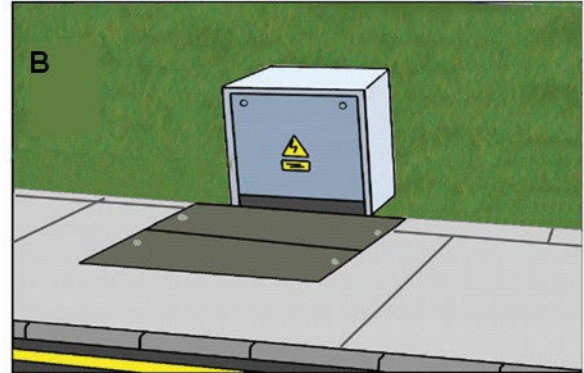
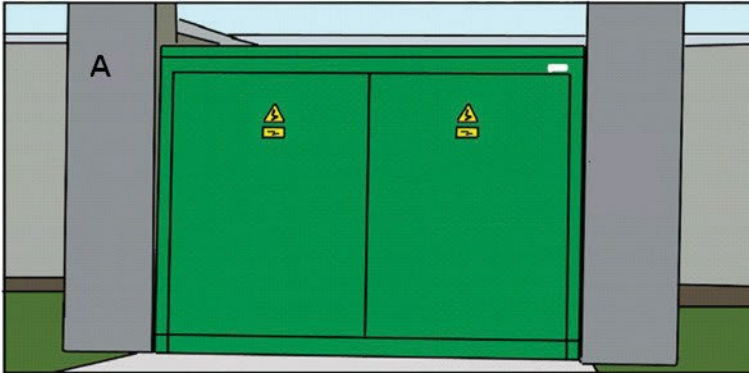
1. Choose an unobtrusive sitting such as a link road for the substation / kiosk. A free standing site in open space is unacceptable.
2. Remember there must be a separation of at least **5 metres** between substations / kiosk and the nearest house.
3. Integrate the substation / kiosk into a surrounding garden wall if at all possible and ensure that the front of the substation / kiosk is in line with the garden wall as per drawing.
4. The ground around the substation / kiosk must be properly reinstated to minimise visual impact. See Diagram on page 22.

Minipillars:

Integrate minipillars into front garden walls and ensuring that the front of the minipillar is in line with the front of the wall. If there is no front garden wall, then the front of the minipillar should be in line with the inside edge of the footpath.

1. **The Client and ESB Networks should agree the exact position of minipillars at an early stage.**
2. If the garden wall is higher than the minipillar, continue the wall over the minipillar on a lintel or galvanised steel plate.
3. The vault frame should fit tightly against the front of the minipillar and should be level with the ground.
4. The ground around the minipillar must be properly finished to minimise visual impact.
5. The minipillar must not be installed in a lowered section of footpath.

VISUAL GUIDELINES



A. Substation

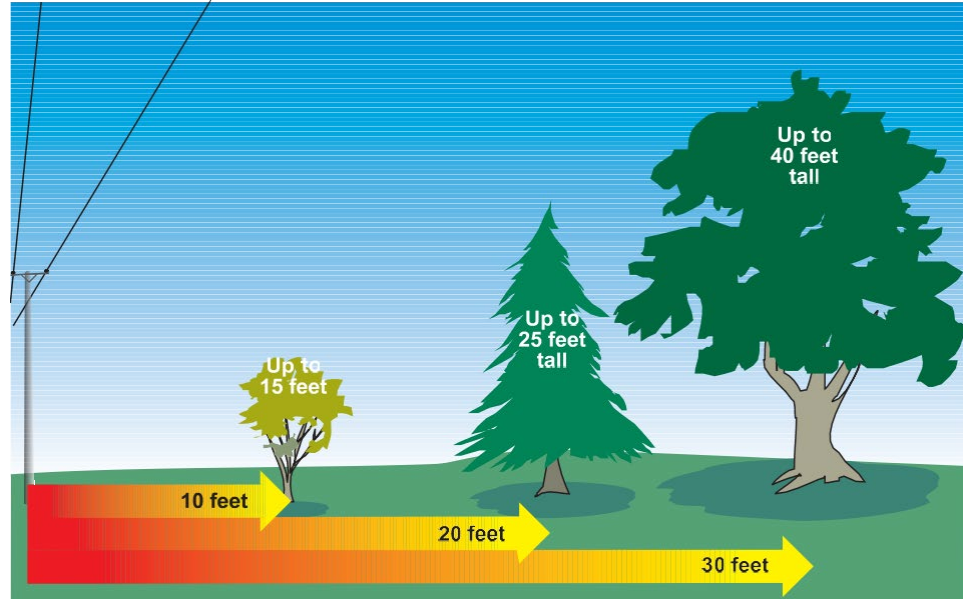
B. Minipillar

C. Metering Cabinet

D. Minipillar

LANDSCAPING FOR SAFETY

Keeping our lines clear of timber is very important both for your safety and continuity of supply



ELECTRICITY SUPPLY BOARD
BOORD SOLATHAIR AN LEIBTEAGHAIS

There are two ways of keeping our lines clear. Timber cutting crews clear the network of nearby timber on a regular cycle.

However, you can prevent the problem by planning your landscape - not only for beauty but also with safe, reliable electric power in mind:

- 1** Select trees and shrubs as above, based on the size you expect them to be when they mature, and plant accordingly.
- 2** Avoid plantings which obstruct access to other items of ESB property, like substations, transformers and minipillars.