

<b>Document Reference:-</b>		NSP/004/128	<b>Document Type:-</b>		Code of Practice			
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# NSP/004/128 – CoP for the Protection of Service Cables where External Thermal Cladding Systems are applied to Buildings

## 1. Purpose

The purpose of this document is to provide guidance on the protection and/or provisions for future access to surface mounted service cables and associated service equipment where the property on which they are mounted is subjected to the application of external thermal wall cladding systems. This document has been prepared to provide information both internally within Northern Powergrid and externally to customers or contractors carrying out these works.

This document supersedes the following documents, all copies of which should be destroyed;

Document Reference	Document Title	Version	Published Date
NSP/004/128	COP for the Protection of Service Cables where External Thermal Cladding Systems are applied to Buildings	1.1	July 2019

## 2. Scope

This document provides guidance on how Northern Powergrid equipment should be protected where thermal cladding systems are applied to properties supplied via the following arrangements:-

- Overhead service aerial cables
- Underground service cables
- Underground cables terminated into wall boxes supplying multiple properties via surface mounted service cables
- ABC/Mural wall mains systems supplying multiple properties

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### 3. Background

Following the introduction of the 'Green Deal' incentives, there has been a significant increase in the number of homes being subjected to external thermal wall insulation systems which are designed to provide a method of improving the thermal efficiency of properties without internal cavity wall systems.

External cladding systems are typically installed at the request of either individual house owners or via bulk schemes from local authorities resulting in a variety of installations varying from single properties to complete streets. In either case to comply with health and safety legislation when working on or around electricity cables it is the responsibility of the installation contractor to contact Northern Powergrid to seek advice and guidance on how this work can be carried out safely whilst still allowing Northern Powergrid access to its property.

**The installation contractor(s) or other third parties must not attempt to remove or touch any service cable, aerial wires or other associated equipment owned by Northern Powergrid. Only Northern Powergrid trained and authorised personnel are permitted to alter or work on these cables.**

#### 3.1. Inspection Survey

Before any cladding work is carried out around the service cable(s) or associated equipment Northern Powergrid shall carry out an inspection of the services to confirm their current type, condition and any associated safety issues that may arise if any of the options detailed within the guidance document are applied. Appendix 1 details a range of standard questions to be answered by the survey team.

*Note: Dependent upon the results of the survey, Northern Powergrid may decide to replace or divert the services at no cost to the customer or the installation contractor.*

#### 3.2. Thermal Insulation Cladding Systems

Thermal insulation cladding systems, typically involve the application of a 90mm thick layer of Polystyrene or Rock Wool insulation onto the external surface of the building which is then protected from the elements via the application of a 10mm concrete and mesh render layer or facia board system.

#### 3.3. Impact of Thermal Cladding Systems on Northern Powergrid Service Cables and Equipment

To allow Northern Powergrid to discharge its responsibilities under the ESQCR regulations the company needs to be able to inspect, maintain or replace the service cables and their associated equipment. The uncontrolled application of the cladding systems over this equipment will no longer allow this to be achieved and hence we need to design this future requirement into the installations. This documents sets out alternative solutions as to how this can be achieved with varying levels of Northern Powergrid involvement and associated costs.

##### 3.3.1. Summary of Available Options

Work Around Process - Installation contractors install cladding systems leaving a 100mm channel around the centreline of the existing cable system (with or without covers) or 50mm from the extremity of associated surface mounted equipment. Where cable channels are fitted with covers leaving the cables no longer visible, then the covers must be fitted with labels warning of the presence of live cables beneath. See clause 3.9 for further details.

*Note: Where the existing service cable run includes a direct service and a branch service, then it is envisaged that the 100mm channel will be large enough to accommodate both cables until they split.*

The required distance left around equipment other than cables will be as stated in this document not the equipment currently installed as replacement equipment may be larger than the existing installed equipment.

- i. **Removal / Re-attach Process** - Installation contractors request Northern Powergrid to temporarily remove and re-attach the service cables from the building surface at a chargeable cost.

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Note: Where this methodology is employed, the installation contractor shall provide the replacement fixing points in the surface of the cladding to allow Northern Powergrid to re-attach its cable thus removing the liability for any damage caused to the cladding during the installation of the fixing points. Acceptable methods and location of fixing points to be agreed with the contractor where not already detailed within this document. Limitations for the use of this option may occur where the application of the cladding system results in insufficient available slack in the existing service cable length to allow this option.

- ii. **Replacement of Service** - Installation contractors shall request Northern Powergrid to temporarily remove the service cables from the building surface with a view that on completion of the works a new underground service route is established into the property. This option would be a chargeable cost.

Note: This option may be dependent upon the condition of the existing service cables or the ability of Northern Powergrid to establish alternative routes e.g. it may be unsafe or impracticable to unclip the service cable or the cable may be part of a wall mains system affecting other customers.

- iii. **Asset Replacement** - Following the site inspection of the cables and equipment and the subsequent condition report, Northern Powergrid may decide to carry out asset replacement works replacing all equipment at the companies cost. This option is similar to option (iii) but at no cost to the customer or installer.

Note: There may be a 12 – 24 month lead-in for service replacement work and may be dependent on third party agreement that could further delay the replacement programme.

### 3.4. Overview of Typical Servicing Arrangements

#### 3.4.1. Properties Supplied Via Overhead Service Cables

This service arrangement describes a situation where the property is supplied by attaching a service aerial from an adjacent overhead Low Voltage network pole. The service cable is attached to the property at a high level (typically just below the guttering) using a service bracket fixed to the property surface. The service cable is then routed along a horizontal or vertical path from the service bracket to the point on the building surface where it enters into the property and is subsequently terminated at the internal located metering position or alternatively terminated into an outdoor meter cabinet. Throughout this route the cable is normally secured to the building surface using cable cleats spaced nominally at 400mm when running vertically and 250mm when running horizontally.

##### 3.4.1.1. Application of Work Around Process - Option (i) in Clause 3.3.1

The application of the 'Work Around' method to a typical overhead service aerial can be split into 3 separate parts:-

- a) The area around the service bracket
- b) Service cable (Surface wiring)
- c) The area surrounding outdoor meter cabinets
- d) Outdoor Flush Mounted Meter Cabinets
- e) Area around the service bracket

To ensure that Northern Powergrid can gain access to replace this bracket in the future the installation contractor shall create a slot of approximate dimensions 400mm long by 100mm high using hardwood battens or similar durable material around the existing fixing position for the bracket. The wall surface can then be rendered up to the wood slot thus allowing Northern Powergrid to replace the service bracket at a future time without disturbing the cladding. To improve the visual impact around the service bracket it is permissible to create a form of removable cover, fixed onto the wood battens around the slot leaving a 75mm wide gap for the service cable to pass through. Care

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must be taken when creating the slot such that it allows for free movement of the cable without the risk of abrasion from the sides of the cover.

Note: if the service cable enters the property at this point the excluded cladding area may need to be increased to ensure that Northern Powergrid can re-utilise the cable entry position.

a) Service Cable (surface wiring)

Where a service cable traverse's across the surface of a building it shall be retained in situ and the installation contractor shall install a length of hardwood or equivalent durable material each side of the cable(s) leaving a minimum 40mm gap between the outer edge of the cable and the wood (nominally leaving a 100mm gap or channel along the cable run). Once the wood strips are in place the installation contractor can then render up to the wood strips. The channel that has now been created can then be covered with a UV stable, over paintable plastic cover or strip of fascia board material designed to be sympathetic in colouring with the rest of the cladding system. The cover or strip can then be secured to the wood strips using depth controlled screws (of insufficient length that they cannot inadvertently make contact with the cable if inserted in the wrong location). This method can be employed for all vertical and horizontal service cable runs.

Note: Where the service cable enters into the property the hole for the cable entry shall be retained within the channel area.

Before any work is carried out using this method, the installation contractor shall provide Northern Powergrid with a method statement detailing how they will mitigate the risk of the drill slipping towards the cable whilst drilling the fixing holes for the wood strips each side of the cable. A typical method statement might involve the temporary placement of a second piece of wood or non-conducting material against the cable such that if the drill should slip on the brickwork it cannot damage the Northern Powergrid cable.

a) The area surrounding outdoor meter cabinets – Surface Mounted

Where a property is fitted with a surface type outdoor meter cabinet (e.g. where the complete cabinet is visible on the outside of the building), the installation contractor shall install a durable wood frame or equivalent around the cabinet such that it may be rendered up to the cabinet but leaving a 50mm gap surrounding box. In this way Northern Powergrid will still have full access to replace the cabinet or to install a metal anti-vandal frame to the front of the cabinet if the cabinet door ever becomes vandalised in the future. Where this meter cabinet is serviced by surface mounted cables protected by service tubes or capping systems, a similar covered channel arrangement shall be provided to that detailed for the service cable runs allowing Northern Powergrid the facility to replace the cable in the future without disturbing the cladding system.

a) Outdoor Flush Mounted Meter Cabinets

Where a property is fitted with a flush type outdoor meter cabinet (e.g. where the main box sits within the building brickwork), then Northern Powergrid will develop an extended version of the current design of Anti-vandal door replacement kits such that the cabinet can be extended out from the property wall with sufficient additional depth to allow the developer to frame out and render around the meter cabinet in a similar way to that of the surface mounted box.

### 3.4.1.2. Application of Removal / Re-attachment Process - Option (ii) in Clause 3.3.1

The application of the 'removal / re-attachment process' to a typical overhead service aerial can be split into 3 separate parts:-

- The area around the service bracket
- Service cable (Surface wiring)
- The area surrounding outdoor meter cabinets
- Area around the service bracket

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The work shall be carried out as detailed in clause 3.4.1.1

a) Service cable (Surface wiring)

Following the inspection of the property by Northern Powergrid and the confirmation that this process is safe to apply and viable from an available service cable length viewpoint, then Northern Powergrid will temporarily remove the service cable from the building surface and apply shrouding for protection whilst the cladding system is applied to the building surface. Northern Powergrid will only allow this process to be carried out where the installation contractor provides the cable re-attachment points on the surface of the cladding or facia system.

The installation contractor shall provide details of the proposed fixing system for consideration by Northern Powergrid. This may take the form of either an agreed marked route on the cladding surface with a known suitable fixing medium below or the pre installation of wall anchors/fixings such that Northern Powergrid can re-attach the cable to the new surface without exposing the company to the risk of damage to the new cladding surface.

a) The area surrounding outdoor meter cabinets

The work shall be carried out generally as detailed in clause 3.4.1.1 with the exception that an accessible area may need to be created adjacent to the entry points into the meter cabinets to allow the surface mounted cable to transit back to building surface to allow it to follow the same box entry point.

### 3.4.1.3. Replacement Service - Option (iii) in Clause 3.3.1

In general this option is only envisaged where the customer wishes to pay for the overhead service to be removed and replaced with a new underground service. Due to the timescales for the work this option will normally involve the temporary removal and shrouding of the service cable to allow the cladding works to proceed followed by the installation of a new direct underground service to the property. Where thermal cladding projects effects adjacent properties due to looped service arrangements, then Northern Powergrid will provide replacement direct service(s) to the adjacent properties.

## 3.5. Properties Supplied via Underground Service Cables

Properties serviced via underground service cables fall into two groups:-

- The underground service cable enters the property below ground level and then is routed to the service position inside the property.
- The underground service transits from below ground on the outside of the building running vertically up the property into a surface mounted outdoor meter cabinet or continuing up the wall to a point where it enters the building, this cable route is generally protected via a cable capping to provide mechanical protection to the cable.

To facilitate future access to underground service cables on the property described in arrangement (b), the installation contractor shall provide future access to these cables and the meter cabinet (where fitted) in the same way as detailed in clause 3.4.1.2 "service cable (surface wiring)".

## 3.6. Properties Supplied Via Underground Mains Cables Terminated Into Wall Boxes

Where properties are supplied via underground mains cables terminated into surface mounted high level fused or unfused cable boxes. The developer shall create a channel from ground level to the cable box by installing a length of hardwood or equivalent durable material each side of the cable(s) leaving a minimum 50mm gap between the outer edge of the cable(s) and the wood (nominally leaving a 150mm gap or channel along the cable run). Once the wood strips are in place the installation contractor can then render up to the wood strips. The channel that has now been created can then be covered with a UV stable, over paintable plastic cover or strip of facia board material designed to be sympathetic in colouring with the rest of the cladding system. The

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cover or strip can then be secured to the wood strips using depth controlled screws (of insufficient length that they cannot inadvertently make contact with the cable if inserted in the wrong location).

To cater for the possible replacement of the cable box in the future without disturbing the cladding system the installation contractor shall create a similar timber frame system around the cable box but leaving sufficient space to allow a modern replacement cable box to be installed in place of the existing box. Modern 200A fused wall boxes required a minimum space of 900mm high x 500mm wide. This includes sufficient space to replace the existing cable box and allow for the service cables to exit from the bottom of the box before turning 90° up the sides of the cable box and continuing along the surface of the property as surface wiring to the individual properties.

These dimensions incorporate the standard 50mm gap around the equipment and hence the cladding system can be installed up to this point. To improve the aesthetics of the installation, consideration shall also be given to the installation of additional timber work around the existing cable box allowing a removable cover system to be installed without disturbing the main cladding installation. The removable system shall follow the same requirements as that proposed for the normal service cable runs.

### 3.7. Wall / Eaves Main Installations (ABC or Insulated single cores)

Wall / Eaves Mains are a generally described as a legacy supply arrangement where multiple properties are supplied from a four core cable system attached directly to the building surface using either bunched insulated cables or Aerial Bundled Conductors (ABC). The mains route typically follows a horizontal run along a terrace of properties located either at a high level just below the building guttering or a mid-level between the upstairs and downstairs windows. Each property or pairs of properties are then supplied via a service dropper cable connected to the wall mains system. The service cables are secured and routed along the building surface in a similar way to that already detailed in clause 3.4.1. Wall/Eaves mains systems are typically supplied from a fused or un-fused underground cable terminated into a high level wall box as detailed in clause 3.6.

Where the existing wall main system's consist of cables with non-plastic external cable sheaths or coverings i.e. it is manufactured with a material other than PVC or XLPE, then Northern Powergrid will adopt this system into a suitable work program with a view to the replacement of the existing wall main and services with a new underground cable located outside of the property line of the premises with individual underground services installed into each property in a similar way to that detailed in clause 3.5 of this document.

#### Note

*The above statement does not preclude the replacement of the existing wall main system with a modern replacement wall main system e.g. Through the use of an ABC wall main system located in the optimal position on the properties but with all properties provided with direct services.*

Where the existing wall main system has already been confirmed as being acceptable for continued use or the old system has been replaced with a modern wall main replacement system then both the wall main and the associated service cables will require ongoing protection and access requirements as detailed in clause 3.4.1.2 (b) of this document but with the following variations to cater for the application of service connectors and cables onto the increased diameter wall main. The gap between the length of hardwood or equivalent durable material and each side of the cable(s) shall be a minimum of 80mm (nominally leaving a 200mm gap or channel along the cable run).

The temporary "remove and re-attach option" described for service cable in clause 3.4.1.1 is not applicable to wall main systems due to the risks associated with moving and supporting the associated service connections onto the main.

#### Note

*Typical timescales for work identified as needing to be adopted into mains replacement work programmes can often take up to two years. Hence where enquiries for cladding work are received on properties containing wall main systems, then both the main and service routes must be protected as described above irrespective of the final replacement system or delayed until a new underground system has been deployed.*



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### 3.8. Wall Mounted Service Joint Boxes

Where wall mounted service joint boxes have been installed to extend an existing service cable or replaced a damaged section of service cable then the channel for the service cable route will need to be widened to accept the increased diameter of the joint box such that we still retain a minimum clearance of 50mm from the outside of the joint.

Note the “remove and re-attach” process as detailed in clause 3.3.1 (II) cannot be employed where any service joints are present in the service run due to the risk of disturbing the service connections.

### 3.9. Warning Labels

Where channel covers are installed over service cables, they shall be fitted with rigid UV stable PVC “Danger 240 Volts” warning labels. Where channel covers are installed over wall main systems or Underground cables supplying high level wall boxes as detailed in clause 3.6 then the covers shall be fitted with rigid UV stable PVC “Danger 415 Volts” warning labels. The warning labels shall be glued to the covers with a frequency of installation of a minimum of 1.0m apart. For further details see example shown in appendix 3.

### 3.10. Survey Reports

Appendix 1 provides examples of thermal rendering survey sheets which shall be completed by competent Northern Powergrid staff for each property prior to the decision been made to allow thermal rendering systems to be applied around our equipment.



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## 4. References

### 4.1. External Documentation

Reference	Title
None	

### 4.2. Internal Documentation

Reference	Title
None	

### 4.3. Amendments from Previous Version

Reference	Description
Whole Document	Document reviewed no changes required – Paul McAdoo 03/10/2023 Doc approved by email Paul Black 05/10/2023 Doc republished to grid and externally - LB 23/10/2023

## 5. Definitions

Term	Definition
ESQCR	Electricity Safety, Quality and Continuity Regulations

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## 6. Authority for Issue

### 6.1. CDS Assurance

I sign to confirm that I have completed and checked this document and I am satisfied with its content and submit it for approval and authorisation.

		<b>Date</b>
Liz Beat	Governance Administrator	23/10/2023

### 6.2. Author

I sign to confirm that I have completed and checked this document and I am satisfied with its content and submit it for approval and authorisation.

**Review Period** - This document should be reviewed within the following time period;

Standard CDS review of 3 years?	Non Standard Review Period & Reason	
Yes	Period: n/a	Reason: n/a
Should this document be displayed on the Northern Powergrid external website?		Yes
		<b>Date</b>
Ged Hammel	Senior Policy & Standards Engineer	27/06/2016

### 6.3. Technical Assurance

I sign to confirm that I am satisfied with all aspects of the content and preparation of this document and submit it for approval and authorisation.

		<b>Date</b>
Malcolm Gordon	Public & Site Safety Manager	21/06/2016
Paul McAdoo	Lead Policy and Standards Engineer	03/10/2023

### 6.4. Authorisation

Authorisation is granted for publication of this document.

		<b>Date</b>
Paul Black	Head of System Engineering	05/10/2023

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## Appendix 1 – Northern Powergrid thermal rendering survey sheet

<b>NORTHERN POWERGRID THERMAL RENDERING SURVEY SHEET</b>	
<p><b><u>Section 1: General Information.</u></b></p> <p><b>How many properties are involved in the enquiry?</b></p> <div style="display: flex; justify-content: space-between;"> <div>1 – 2 properties <input type="checkbox"/></div> <div>3 – 4 properties <input type="checkbox"/></div> <div>5 – 6 properties <input type="checkbox"/></div> </div> <div style="display: flex; justify-content: space-between;"> <div>7 – 10 properties <input type="checkbox"/></div> <div>11 – 20 properties <input type="checkbox"/></div> <div>Above 20 properties <input type="checkbox"/></div> </div> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Additional Comments:</p> <hr/> <hr/> </div>	
<p><b><u>Section 2: LV Network Configuration</u></b></p> <p><b>How is the existing LV Network supplied?</b></p> <div style="display: flex; justify-content: space-between;"> <div>Overhead <input type="checkbox"/></div> <div>Underground <input type="checkbox"/></div> </div> <p><b>If supplied via Overhead, is there sufficient vehicle access to pole?</b></p> <div style="display: flex; justify-content: space-between;"> <div>Yes <input type="checkbox"/></div> <div>No (Additional Comments) <input type="checkbox"/></div> </div> <p><b>Does the LV/Service pole have other utilities connected (Street lighting/BT)?</b></p> <div style="display: flex; justify-content: space-between;"> <div>Yes (Additional Comments) <input type="checkbox"/></div> <div>No <input type="checkbox"/></div> </div> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Additional Comments (Access/Work restrictions):</p> <hr/> <hr/> </div>	
<p><b><u>Section 3: Service Arrangement/Configuration</u></b></p> <p><b>How is the existing service supplied to property? (Tick where appropriate)</b></p> <div style="display: flex; justify-content: space-between;"> <div>Overhead (If Overhead see section 4.) <input type="checkbox"/></div> <div>Underground (If Underground see section 5.) <input type="checkbox"/></div> </div> <div style="display: flex; justify-content: space-between;"> <div>Wall mains <input type="checkbox"/></div> <div>Loft Mains <input type="checkbox"/></div> <div>Other <input type="checkbox"/></div> </div> <p><b>Is the existing service cable to property?</b></p> <div style="display: flex; justify-content: space-between;"> <div>PVC <input type="checkbox"/></div> <div>VIR <input type="checkbox"/></div> <div>Other (Additional Comments) <input type="checkbox"/></div> </div> <p><b>If PVC, is it suitable for continued use?</b></p> <div style="display: flex; justify-content: space-between;"> <div>Yes <input type="checkbox"/></div> <div>No <input type="checkbox"/></div> </div> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Additional Comments:</p> <hr/> <hr/> </div>	

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**Section 4: Overhead**  
**Is the existing configuration a direct or branched/looped service?**  
 Direct ☐ Branched/Looped (Additional Comments) ☐  
 Additional Comments:  


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**What is the existing location of the meter cabinet?**  
 Indoor ☐ Outdoor ☐  
**How is the service cable attached to property?**  
 Soffits/Barge Boards ☐ Brickwork ☐ Other (Additional Comments) ☐  
 Additional Comments:  


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**Section 5: Underground**  
**Does the existing underground cable feed into an existing wall box?**  
 Yes (Additional Comments) ☐ No ☐  
 Additional Comments (Approx. location of Wall Box):  


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**Is the existing configuration a Direct or Branched/Looped Service?**  
 Direct ☐ Branched/Looped (Additional Comments) ☐  
 Additional Comments (Approx. location of Wall Box):  


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**How is the service cable attached to property?**  
 Soffits/Barge Boards ☐ Brickwork ☐ Other (Additional Comments) ☐  
 Additional Comments (Approx. location of Wall Box):  


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**Information Classification – PUBLIC**

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## Appendix 2 – Photo examples of good and poor cladding arrangements

Good Arrangements		Comments
		<p>These two photos demonstrate a good example of “the work around” process whereby the contractor leaves a channel around the service cables and then covers them with a UV stable PVC cladding material.</p> <p>The covers can be removed to provide future access to the cables if required and are marked up with danger live equipment labels to warn both Northern Powergrid staff and other third parties of the presence of live cables below the cladding channel.</p> <p>The only improvement requirement.</p> <p><b>Note</b>  <i>As an improvement point there should have been a larger hole created through the PVC cladding where the overhead line service cable attaches to the gable end. To protect against the risk of abrasion to the service cable</i></p>
		<p>This is a further good example of “the work around” process.</p> <p>In both this picture and the examples above the PVC cover has been recessed compared to the finished rendered surface. It is equally acceptable to apply the cover flush with the new finished surface.</p> <p><b>Note</b>  <i>The requirement for warning labels becomes particularly important where customers or contractors paint the cladding covers to blend them into the general background colour of the rendering.</i></p>
Poor Arrangements		Comments



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	<p>Northern Powergrid has no issue with this arrangement as it provides full access to the cables and wall mounted equipment.</p> <p>However from an aesthetics viewpoint the methodology demonstrated in the previous reduced channel width / PVC covered system offers a significant visual improvement for the property owner.</p>
	<p>This photo shows an example of an underground cable terminating in a wall box on the gable end with a service aerial cable between the two properties. Whilst acceptable from an access viewpoint it would be improved if the enclosed system had been employed</p>
	<p>Bad Example</p> <p>In this example the cladding contractor has totally enclosed the wall main and service cable beneath the cladding material, proving no future access to the cables</p>
<p><b><u>Detach and re-attach methodology</u></b></p>	



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Detach and re-attach methodology applied to a Brick bond style cladding system.

In this case the finished system is acceptable to Northern Powergrid providing the cables are moved by Northern Powergrid competent staff and the wall fixings are provided by the contractor for Northern Powergrid to utilise.

**Note**

This arrangement could be improved if the overhead service aerial cable shown protected with yellow high visibility shrouding had been provided with a larger hole to stop insulation chaffing as it passes through the hole.

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### Appendix 3 – Example of Warning labels

Warning labels shall be a minimum size of 75mm x 25mm x 1mm thick

