

AVOIDANCE OF BURIED SERVICES

This document is for internal and contract specific use only.

Disclaimer

NGG and NGET or their agents, servants or contractors do not accept any liability for any losses arising under or in connection with this information. This limit on liability applies to all and any claims in contract, tort (including negligence), misrepresentation (excluding fraudulent misrepresentation), breach of statutory duty or otherwise. This limit on liability does not exclude or restrict liability where prohibited by the law nor does it supersede the express terms of any related agreements."

TABLE OF CONTENTS

PURPOSE AND SCOPE	1
PART 1 – PROCEDURAL	1
1 RESPONSIBILITIES	1
2 PROCESS	3
3 FORMS AND RECORDS	4
PART 2 - DEFINITIONS AND DOCUMENT HISTORY	5
4 DEFINITIONS	5
5 AMENDMENTS RECORD	6
PART 3 - GUIDANCE NOTES AND APPENDICES	7
APPENDIX A – GROUND EXCAVATION PROCESS	7
APPENDIX B – LEARNING POINTS FROM PREVIOUS SAFETY BULLETINS	8

PURPOSE AND SCOPE

National Grid Capital Delivery is seeking to eliminate inadvertent contacts with buried services during construction activities and to eradicate the associated risks to workers. This Business Procedure will allocate responsibilities to the Development Engineer to identify Information for inclusion in the Enquiry Document and the Construction Interface Engineers to ensure that the Contractor has suitable methods in place to manage buried hazards.

The principles of the HSE Guidance document HS(G)47 – Avoiding Danger from Underground Services, details the minimum standard to achieve legal compliance. However, National Grid endeavours to achieve "best practice" on all safety, health, and environment issues.

Capital Delivery (Electricity) has therefore raised the standard of avoidance management by;

- Adopting a "Safety by Design" philosophy
- Advocating advanced planning and preparation of high risk activities
- The safe positive location of buried services.

Only after such exhaustive and disciplined preparation should tightly controlled and managed excavation be allowed to continue.

This CD/BP addresses the end-to-end construction process. Effective Management from feasibility and design through to on-site delivery will eliminate the dangers from underground services.

PART 1 – PROCEDURAL

1 RESPONSIBILITIES

The key responsibilities associated with this procedure are as follows;

1.1 Development Engineer (DE)

The DE will identify the requirement for any ground mapping surveys and will arrange for them to be undertaken using the Survey process identified in UKBP/TP137.

Develop an “Underground Hazard Plan” for the construction site (See definitions in part 2 for a description).

Use the Underground Hazard Plan to develop the design. This should be made available at the feasibility stage for the Investment Team to discuss the preferred designs and to enable the team to eliminate high risk options.

Identify and document all risks associated with ground penetration and using a hierarchy of controls state the mitigation factors in choosing the preferred design.

If deemed appropriate commission trial holes to verify the positioning of proposed excavations to verify that the project solution chosen is the most practical, minimal risk option

1.2 CDM Coordinator (CDMC)

1.2.1 NDP 4.2

As part of Investment Team, provides input into Investment feasibility and development, assessing risks in the context of the Underground Hazard Plan.

1.2.2 NDP 4.3

Include the Underground Hazard Plan as part of the Pre Construction Information Pack for tendering purposes.

Assess all risks and control measures associated with excavation that are identified within a tenderers solution.

1.2.3 NDP 4.4

Review the developed Construction Phase SHES Plan and ensure that the supplier has fully developed the Ground Penetration Plan.

1.3 Construction Interface Engineer (CIE)

1.3.1 NDP 4.4

At the first Pre Site Start Meeting review the Construction Phase SHES Plan & Ground Penetration Plan.

Ensure the Contractor has Management Systems in place to locate and identify buried hazards. 2.2.3 Suggests a colour scheme which could be utilised by the Contractor.

Ensure that the Principal Contractor has updated the Underground Hazard Plan to show the position of new and amended hazards.

Ensure that the weekly Site meetings include discussions of excavation works in advance of their execution.

Assess the Ground Penetration Plan for all activities to be undertaken, and ensure that it effectively minimises the associated risks.

Review excavation related method statements and identify the safety hold-points in order to control the operations at the appropriate supervision level if required.

Ensure the practical application of agreed method statements without deviation, through sensible monitoring.

2 PROCESS

This procedure applies to all UK Capital Delivery (Electricity) Development Engineers with responsibility for the development and management of Capital Delivery projects and for Construction Interface Engineers associated with on-site excavation activities. An end to end project process for managing the avoidance of underground hazards is shown in Appendix A.

Apply the process from feasibility through to the production of “as built” records while applying the following measures.

Apply the Hierarchy of Underground Service Avoidance Strategies

- a) Avoid excavation by design
- b) Divert services (where possible) prior to full site mobilisation
- c) Safe service location and excavation using ‘No Dig’ techniques where possible

2.1.1 Avoid Excavation by Design

Design teams should, where reasonably practical, adopt a principle of identifying non-excavation solutions.

2.1.2 Divert Services Prior to Full Site Mobilisation

Where known services can be readily identified, in advance of significant works, diverting the service route outside the construction site should be considered. In preparing to divert services the processes under 2.2 should always be employed.

2.1.3 Safe Service Location and Excavation

Plan ahead with good quality information, carefully plan and document the method of excavation, prepare and identify routes in advance of excavations and positively identify and mark underground hazards and no dig zones. Only then should carefully controlled excavation take place.

2.2 Manage the Excavation Throughout the Project Process

2.2.1 Design Out the Risks

Where underground hazards may have a significant impact on the practical delivery of any solution, surveys must be used to verify that either, the ground is clear of hazards or to ensure the exact locations of the hazards are identified. Surveys should prioritise the use of non-ground penetrating techniques, such as Ground Penetrating Radar and Cable Avoidance Tools, before the need for trial holes is established. Only with advance knowledge of the impacts of hazards upon a proposed solution can the scheme team be sure the correct option has been chosen.

2.2.2 Provide 2 Way Information

Suppliers should be invited to tender against projects providing high quality unambiguous site plans clearly depicting underground hazards. The suppliers should respond by providing a Ground Penetration Plan within their offer. This document should provide details, including risks and control measures, as to how they intend to excavate in order to deliver each stage of their proposed solution. This information should be developed and reviewed throughout the project. All learning points from previous safety bulletins should be considered and built into the Ground penetration Plan. Past learning points to date are listed in Appendix B.