ADDITIONAL INFO.

18-12-2014

Glendale Countryside North East,
Upright House, Hill Street
South Shields. NE 33 1RN

41 Cambridge Avenue, Hebburn.

Tree categorization Arboriculture impact assessment, Tree protection plan, and Arboricultural Method Statement In accordance with B.S 5837 Trees in relation to design, demolition and construction 2012.

ST0052/15 COND

1. INTRODUTION.

1.1 Background.

1.1.1 The development proposal at 41 Cambridge Avenue identifies, as part of the design process, the requirement for an assessment of the arboricultural implications associated with the development and the position of trees within the site.

1.2 Request.

1.2.1 Mr Richard Ockerby.

1.3 Inspector.

1.3.1 Gavin Reichert TechArborA supervisor at Glendale Countryside NE. Weather conditions at the time of inspection was mild and over cast.

1.4 The Scheme.

1.4.1 The proposal is to extend on the east side of the existing property at 41 Cambridge Avenue. This would include the demolition of the existing garage and a one storey extension is proposed to be built a metre to the North of the original foot print of the garage.

1.4.2 I am aware that the trees that will be affected by the proposal do not belong to the owner of 41 Cambridge Avenue but most likely reside in local authority ownership.

1.5 The location access and topography of the site.

1.5.1 The site of the proposal is a well established suburban street located in Hebburn.

2 TREE SURVEY ASSESSMENT METHODOLOGY AND DATA

2.1 References.

- BS5837: 2012 'Trees in relation to design, demolition and construction – recommendations', BSI London.
- BS 3998: 2010 'Tree work - recommendations, BSI London.
- NHBC Standards 2007 'Buildings Near Trees' (Chapter 4.2), NHBC Amersham.
- 'The Body Language of Trees' A handbook for failure analysis. Claus Mattheck and Helge Breloer, 1994, TSO, London.

- 'Diagnosis of Ill-health in trees' R.G Strouts and T.G Winter, 2004, TSO, London.

- 'Principles of Tree Hazard Assessment and Management', David Lonsdale, 1999, TSO, London.

2.2 Scope of assessment and collection of data.

2.2.1 This assessment is concerned with the Arboricultural aspects of the site only.

2.2.2 A site visit was made by Gavin Reichert on the 29th July 2014. The inspection followed the Visual Tree Assessment methodology described by Mattheck & Breloer[1]. The survey followed the recommendations in paragraph 4.4 of the British Standard 5837: 2012 Trees in relation to design, demolition and construction – recommendations (the Standard). It collected the data listed in paragraph 4.4.2.5. Trees were categorized according to paragraph 4.5 and Table 1 – Cascade chart for tree quality assessment, and the root protection areas (RPAs) of the trees calculated according to paragraph 4.6 of the Standard.

2.2.3 Trees have been allocated an individual tree number, which is used to identify them throughout this report, on the Tree Schedule and on the Arboricultural impact assessment. There has been no need to identify trees on site with individual tags.

2.2.4 In accordance with the Standard trees are assessed against the criteria in Table 1 and categorised as either:

- U – Tree Unsuitable for retention
- A – Tree of high quality
- B – Tree of moderate quality
- C – Tree of low quality, or young tree with a stem diameter below 150mm.

2.2.5 Preliminary management recommendations for each tree are made including, where necessary, further investigation of defects that require more detailed assessment and the recommendations for tree management in accordance with BS3998: 2010 Recommendations for tree work. These recommendations identify tree work that is necessary at the time of the survey or would be necessary to implement the proposal.

2.2.6 The collected data is presented in the Tree Survey schedule.

2.3 Limitations.

2.3.1 Trees are large dynamic organisms whose health and condition can change rapidly, therefore due to the changing nature of trees and the other site

conditions this report and any recommendations made are only valid for the twelve-month period following the site survey and assessment.

2.3.2 This survey is not a tree safety inspection or risk assessment. Where clear hazards have been identified, these have been reported in the tree survey recommendations. It is recommended that a tree safety inspection and risk assessment is carried out following the significant change in site use following development.

2.3.3 This tree survey and quality assessment has been made using Visual Tree Assessment (VTA); which means visually while standing at ground level. No invasive or other internal decay detection devices have been used to assess the condition of stem, buttress zone or roots of any of the trees. No investigative trial pits have been undertaken at this stage.

2.3.4 The plan of tree positions in this report should be regarded as schematic. All dimensions have been measured unless otherwise indicated. Height has been measured and rounded to the nearest metre.

2.3.5 No document has been provided concerning: geology, hydrology or soil types; the history of previous land use that would include activities such as mining and excavations; existing drains and underground services; design details associated with the method of construction, nor design details associated with the installation of infrastructure and access roads.

3 CONSTRAINTS FROM EXISTING TREES

3.1 'A' Category trees on site

3.1.1 Category A trees can be summarised as those of high quality with an estimated remaining life expectancy of at least 40 years, such as those that are particularly good examples of their species, of particular visual importance as features or of significant conservation or historical value. The R.P.As for A category trees are marked light green on the site plan.

3.1.2 There are no category A trees.

3.2 'B' Category trees on site

3.2.1 Category B trees can be summarised as those of moderate quality with a remaining life expectancy of at least 20 years, such as those downgraded from A because of impaired condition such that they are unlikely to be able to be retained beyond 40 years, OR trees lacking the special quality necessary to merit an A category. The R.P.As for B category trees are marked mid blue on the site plan.

3.2.2 T1 and T2 are recorded category B trees.

3.3 C' and 'U' Category trees on site

3.3.1 Category C trees can be summarised as those of low quality with a life expectancy of at least 10 years, or young trees with a stem diameter below 150mm. They include unremarkable trees of very limited merit or of such impaired condition that they do not merit higher categories. The R.P.As for C category trees are marked light grey on the site plan.

3.3.2 T3 and T4 are recorded as category C trees.

3.3.3 Category U trees are those in such a condition that they cannot realistically be retained as living trees for longer than 10 years, such as those with serious irremediable defects that will lead to failure, or showing signs of irreversible overall decline or disease. This Category is used sparingly in a woodland with little public access because of the habitat value of dead or dying trees, cavities etc. The R.P.As for U category trees are marked dark red on the site plan.

3.3.4 There are no category U trees recorded.

3.3.5 There are no other species characteristics (such as fruit-drop or honeydew) of the surveyed trees that are relevant in the context of this report.

4 ARBORICULTURAL IMPACT ASSESSMENT

4.1 Tree over view

The trees that have been surveyed are located in a grassed area with a road junction to the east and with foot paths running round the outer perimeter. T1 is the tree that will be most affected by the proposal because of its crown and R.P.As proximity and the nature of the proposed extension. T2 is set further out from the property, the proposal should not have a direct impacted on it. T3 and T4 are both located on the boundary of the property. These are being both oppressed by the neighbouring trees causing poor form and in the future due to there potential size cause conflict with the existing property and proposed development.

4.2 . Below ground constraints of retained trees

4.2.1 Root Protection Areas (RPAs) represent below-ground constraints *(see tree protection plan)*.

4.2.2 The RPA of each tree is calculated according to section 4.6 of the Standard. However, this is a notional shape that indicates the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree's viability. It assumes that a tree is growing in open unobstructed soil, and so does not account for things such as changes in ground level, impermeable surfaces or structures and excavations.

4.2.3 The current proposal will result in some works having to be carried out within T1s RPA, namely the demolition of the old garage and foundations for the new construction. The foot print of the proposal has been set back by a metre

from the existing garages foot print, resulting in possibly foundations sited further away from T1. T1 is located on the boundary with 41 Cambridge rd, the boundary's topography is made up of a blocked paved driveway the garage area and in the rear is a large patio area. No digging investigation was carried out at the time of the site visit. But the ground conditions outlined above would suggest that the most likely area for the majority of the trees roots would be the grassed area to the east of the trees position. Therefore the 20% off set of the RPA stated in the British standard could be utilised in this instance.*(See tree protection plan para 5.3.1, 5.3.2 and 5.1.2 in regard to what the standard states as to restrictions and protection to be provided when working within the RPA.)*

4.3 Above ground constraints

4.3.1 Due to its proximity remedial tree pruning will have to be carried out on T1 before work begins on the proposal, this work would involve a crown lift to approximately 5 metres and a 1 to 2 metre reduction on the North side of the crown. This would accommodate the proposed development protect the and help balance the trees form due to competition with the neighbouring tree on the south side of its crown. T1 is in a state of late semi maturity, pruning will have to be carried out during T1s development because of its proximity to the existing property regardless of the proposed development. This work is outlined within the survey sheet and is to be carried out in accordance with BS3998: 2010 Recommendations for tree work.

5 TREE PROTECTION PLAN

5.1 Root protection areas

5.1.1 The importance of protecting root areas can not be over stated. Any damage done to areas containing roots through compacting of soil or actuarial physical damage to roots is often detrimental to the tree that is to be retained. This will cause issues with the trees future health and stability leading on to possible damage to property or persons.

5.1.2 The standard advises *(para. 4.6.2)* that where pre-existing site conditions indicate that rooting has occurred asymmetrically, the shape of a tree's RPA can be modified to reflect this. However, any modification should reflect a soundly-based arboricultural assessment of likely root distribution. Of course any deep excavations existing within the RPAs will have prevented root development beyond it.

5.1.3 The standard advises (*para. 7.21)* to avoid damage to tree roots, existing ground levels should be retained within the RPA. Intrusion into the soil (other than for piling) within the RPA is generally not acceptable, and topsoil within it should be retained in situ. However, limited manual excavation within the R.P.A might be acceptable, subject to justification. Such excavation should be undertaken carefully, using hand-held tools and preferably by compressed air soil displacement.

5.1.4 The dimensions of the RPAs can be in the form of a circle or a square with sides of equal length around the trees. The measurement of the RPA can be

off set on one side only by up to 20% *(See para 5.1.1)*. The dimensions of the R.P.As for the tree surveyed are listed below.

5.1.5 T1s R.P.A.= 87.6 square metres, equates to a circle with a radius of 5.3 metres, a square with 9.4 metre length sides and a 20% offset of 1.1metres.

T2s R.P.A.= 110.4 square metres, equates to a circle with a radius of 5.9 metres, a square with 10.5 metre sides and a 20% offset of 1.2 metres.

T3s R.P.A.= 0.4 square metres, equates to a circle with a radius of 0.4 metres, a square with 0.7 metre sides and a 20% offset of 0.1metres.

T4s R.P.A.= 3.3 square metres, equates to a circle with a radius of 1 metres, a square with 1.8 metre sides and a 20% offset of 0.2 metres.

5.2 **Protective fencing around RPAs and areas of proposed new planting.**

5.2.2 Fencing should be erected around the R.P.As before any work starts or materials delivered on to the site to exclude all activity from it. The type of fencing to be used is stated in B.S 5837 *(see below)*. The standard also states in (*para 6.2.1.3)* that the protected area should be regarded as sacrosanct and once installed, barriers and ground protection should not be removed or altered without prior recommendation by the project arboriculturist and where necessary approval from the local planning authority.

5.2.3 The standard states that; to avoid disturbance to the physical protection provided for the trees that are to be retained it is essential that all construction operations undertaken in the vicinity of the trees is planned and allowances made. This will be of particular importance on this site because of its limited area. Factors that need to be included but not limited to are:

a) Site construction access.
b) The intensity and nature of the construction activity.
c) Contractors car park.
d) Phasing of construction work.
e) The space needed for foundations excavations and construction works.
f) The availability of special construction techniques.
g) The location and space needed for all temporary and permanent apparatus and service runs, including foul and surface water drains, land drains, soakaways, gas, oil, water ,electricity, telephone, television or other communications cables,
h) All changes in ground level, including the location of retaining walls, steps and
making adequate allowance for foundations of such walls and backfilling.
i) Working space for cranes, plant, scaffolding and access during works.
j) Space for site huts, temporary toilet facilities (including their drainage) and other temporary structures.
k) The type and extent of landscape works which will be needed within the protected
areas, and the effects these will have on the root system.
l) Space for storing (whether temporary or long term) materials, spoil and fuel and the
mixing of cement and concrete.
m) The effect of slope on the movement of potentially harmful liquid spillages

towards or into protected areas.

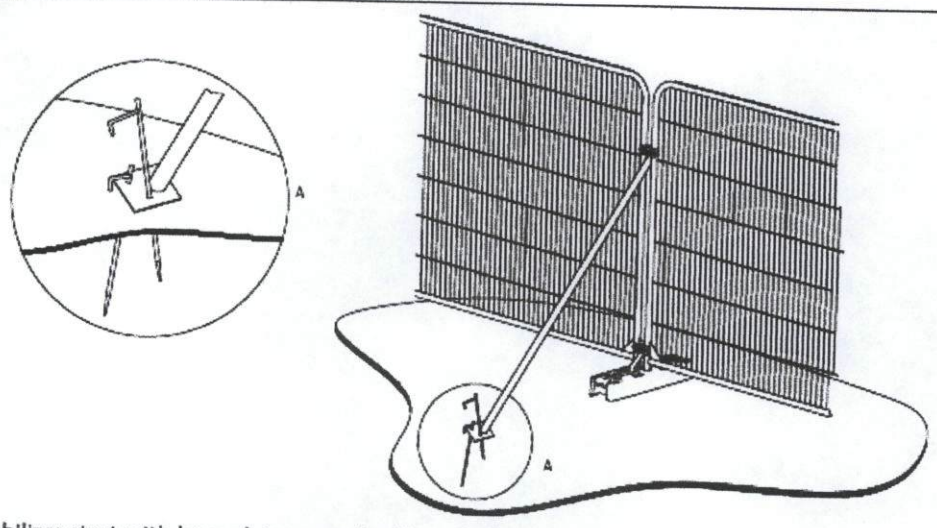
5.3 Temporary ground protection within the R.P.As.

5.3.1 Regarding T1s proximity to the proposed demolition and construction The standard states; *(para 6.2.3.1)* Where construction working space or temporary construction access is justified within the R.P.A this should be facilitated by a set-back in the alignment of the tree protection barrier. In such areas, suitable existing hard surfacing that is not proposed for reuse as part of the finished design should be retained to act as temporary ground protection during construction, rather than being removed during demolition. The suitability for this purpose should be evaluated by the project arboriculturist and an engineer as appropriate.

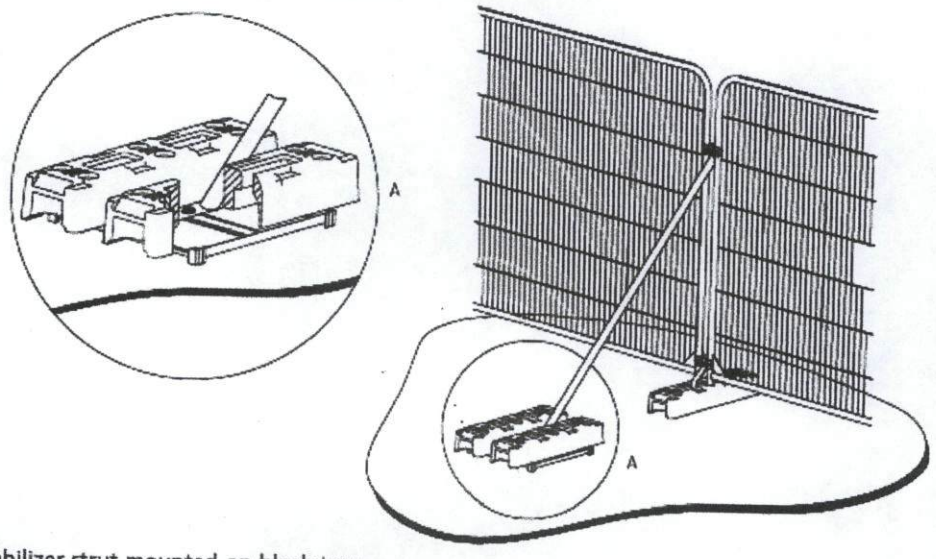
5.3.2 If the setting back of the tree protection barrier exposes unmade ground the standard states; *(para 6.2.3.2)* new temporary ground protection should be installed as part of the implementation of physical tree protection measures prior to work starting on site. Three examples for temporary ground protection as stated in the standard are:

a) For pedestrian movements only, a single thickness of scaffold boards placed either on top of a driven scaffold frame, so as to form a suspended walkway, or on top of a compression-resistant layer (e.g. 100mm depth of woodchip),laid onto a geotextile membrane.
b) For pedestrian-operated plant up to a gross weight of 2 ton, proprietary, interlinking ground protection boards on top of a compression-resistant layer (e.g 150mm depth of woodchip), laid onto a geotextile membrane.
c) For wheeled or tracked construction traffic exceeding 2 ton gross weight, an alternative system (e.g. proprietary systems or pre-cast reinforced concrete slabs) to an engineering specification designed in conjunction with arboricultural advice, to accommodate the likely loading to which it will be subjected.

Figure 3 **Examples of above-ground stabilizing systems**

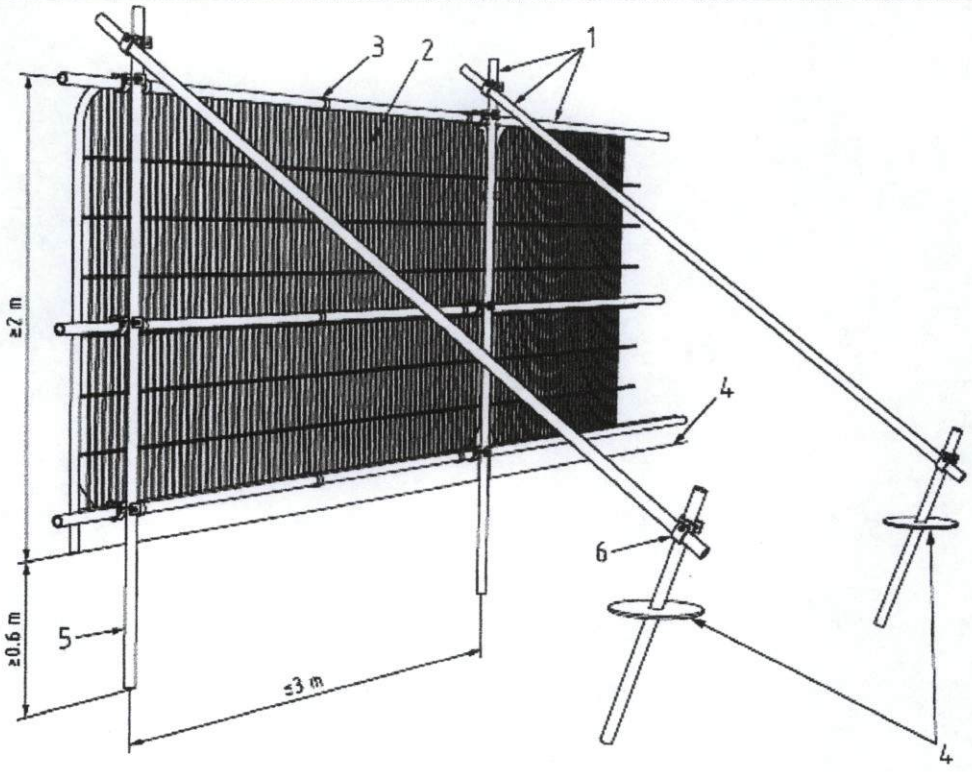


a) Stabilizer strut with base plate secured with ground pins



b) Stabilizer strut mounted on block tray

Figure 2 **Default specification for protective barrier**



Key

1 Standard scaffold poles
2 Heavy gauge 2 m tall galvanized tube and welded mesh infill panels
3 Panels secured to uprights and cross-members with wire ties
4 Ground level
5 Uprights driven into the ground until secure (minimum depth 0.6 m)
6 Standard scaffold clamps

6. ARBORICULTURAL METHOD STATEMENT.

6.1 Considerations to be taken into account regarding T1.

6.1.1 This current method statement is to outline some of the requirements stated within the BS 5837 standard. Most of this Arboricultural method statement focuses on T1, this is due to the south east corner of the proposed extension proximity and partial incursion into T1s R.P.A. As already mentioned *(above section 4.2.3)* The ground conditions around T1s R.P.A would allow the 20% R.P.A off set to the south east into the grassed area between the tree and the road *(see site drawing)*. This area contains more air and water pore spaces needed by the root system for nutrient uptake and oxygen intake needed for metabolism.

6.1.2 The tree protection plan need to be fully in place before any works is to be carried out. This includes the remedial tree works *(above section 4.3)*. The temporary ground protection must be put in place wherever ground within the R.P.A are exposed *(above section 5.3)*.As shown on the over head drawings of the R.P.As part of the western section of T1s R.P.A is located under the already existing driveway which has a degree of load baring capacity. However the exact weight tolerated by this surface is unknown to me, so for the benefit of the Arboricultural method statement I suggest that reinforcement may be needed if heavy equipment weighing more than 2 tons operate in this area. This may not be the case if a structural engineer states otherwise. The Protective fencing *(above section 5.2)* also needs to be fully in place before work on the site takes place.

6.3 Demolition of existing garage.

6.3.1 Part of the proposed extension will involve the demolition of the existing single story garage, this operation will potently damage T1 due to its close proximity. It is there fore critical that all operations are undertaken in accordance with the guidance in B.S 5837 standard. The method stated for demolition in the standard is; (*Para 7.3.4)* Where trees stand adjacent to structures to be removed, the demolition should be undertaken inwards within the footprint of the existing building (often referred to as "top down, pullback"). The paved area within the north section of T1s R.P.A will need to be reinforced if it remains in situ. If removed temporary ground protection will need to be installed in the R.P.A zone.

6.4 Special engineering for foundations within the RPA.

6.4.1 With regard to foundations the standard states that *(para 7.5.1;* The use of traditional strip footings can result in extensive root loss and should be avoided. The insertion of specially engineered structures within the RPAs may be justified if it enables the retention of a good quality tree that would otherwise be lost (usually categories A or B). Designs for foundations that would minimize adverse impact on trees should include particular attention to existing levels, proposed finishing levels and cross sectional details. In order to arrive at a suitable solution, site-specific and specialist

advice regarding foundation design should be sought from the project arboriculturist and an engineer. In shrinkable soils, the foundation design should take account of the risk of indirect damage.

6.4.2 Roots damage can be minimized by using:

a) Piles, with site investigation used to determine their optimal location whilst avoiding damage to roots important for the stability of the tree, by means of hand tools or compressed air soil displacement, to a minimum depth of 600mm
b) Beams, laid at or above ground level, and cantilevered as necessary to avoid tree roots identified by site investigation.

6.4.3 This is relevant because of the proposals foot prints incursion of up to 800mm into T1s R.PAs north west tip. Because of the level of this incursion it may be except able to use the hand digging method firstly as a means of investigating the location of any roots and if roots are within this area the following conditions stated within the BS 5837 standard are meet:

7.2.2 Roots, whilst exposed, should immediately be wrapped or covered to prevent desiccation and to protect them from rapid temperature changes. Any wrapping should be removed prior to backfilling, which should take place as soon as possible.

7.2.3 Roots smaller than 25mm diameter may be pruned back, making a clean cut with a suitable sharp tool (e.g bypass secateurs or handsaw), except where they occur in clumps. Roots occurring in clumps or of 25mm diameter and over should be severed only following consultation with a arboriculturist, as such roots might be essential to the tree's health and stability.

7.2.4 Prior to backfilling, retained roots should be surrounded with topsoil or uncompacted sharp sand (builder's sand should not be used because of its high salt content, which is toxic to tree roots), or other loose inert granular fill, before soil or other suitable material is replaced. This material should be free of contaminants and other foreign objects potentially injurious to tree roots.

6.5 Provision for underground services.

6.5.1 Below is what is set out within BS5837 regarding the provision for any underground services if needed for the proposed extension.

6.5.2 Regarding underground services the BS5837 standard advices:
(Para 7.7.1) Mechanical trenching for the installation of underground apparatus and drainage severs any roots present and can change the local soil hydrology in a way that adversely affects the health of the tree. For reason, particular care should be taken in the routeing and methods of installation of all underground apparatus. Wherever possible, apparatus should be routed outside R.P.As. Where this is not possible, it is preferable to keep apparatus together in common ducts. Inspection chambers should be sited outside the R.P.A.

6.5.3 At present the underground services are not on the proposals plan, as stated above the easiest way to avoid possible detrimental damage being done to the root system of retained trees is to avoid there R.P.A's. If this is not possible the BS5837 standard suggests other insulation methods that do not involve trenching. These are shown on the table below.

6.5.4 *(Table from para 7.7 BS5837.)*

Method	Accuracy mm	Bore dia. mm	Max sub. m	Applications	Not suitable for
Microtunnelling	<20	100 to 300	40	Gravity-fall pipes, deep apparatus, watercourse/roadway undercrossing.	Low cost projects due to relative expense.
Surface-launched directional drilling	=100	25 to 1 200	150	Pressure pipes, cables including fibre optic.	Gravity-fall pipes,e.g. drains and sewers
Pipe ramming	=150	150 to 2 000	70	Any large-bore pipes and ducts.	Rocky and other heavily obstructed soils
Impact moling D)	=50 E)	30 to 180 F)	40	Gas, water and cable connections, e.g. from street to property	Any application that requires accuracy over distance in excess of 5m.