1. **INTRODUCTION**

The development and extension of residential property below ground level has attracted growing interest and concern. This type of development (“Subterranean Development”) provides the property owner with the opportunity to increase the size of a dwelling downwards, thereby increasing its floor area (sq ft/m), volume (cu ft/m), and hence a potential increase in market value.

Prevailing legislation has hitherto been inadequate and insufficient to protect the interests of home owners, tenants, commercial enterprises and others who may be adversely affected by major excavations and subsequent works. These works can be extremely disruptive to daily life and can cause excessive disturbance and distress over months – or even years.

2. **PURPOSE OF THE BILL**

The issue of Subterranean Development was raised extensively during the passage of the Localism Bill. But insufficient time was available to give adequate consideration to the proposed amendments. After consultation, the Government agreed to give Lord Selsdon time to introduce and debate a Private Members Bill with a view to accepting suitable recommendations for incorporation in Government legislation. The purpose of the “Subterranean Development Bill” is reflected in the long title of the Bill:

> “to make provision for the regulation of subterranean development work; to establish a code of practice for subterranean development work; and for connected purposes”

3. **THE NEGATIVE IMPACT**

The negative impact which a subterranean development may have upon neighbours can include:

- Anxiety over potential damage to own property (in particular foundations)
- Potential for soil erosion and interruption of pre-existing surface or sub-soil water flow
- Disruption, noise, damage and loss of privacy during construction
- Financial loss – eg reduction in rental income if letting, or sales price if selling, particularly where works are not simply transitory and short term in nature
  (advice has been given that this loss could be as much as 20% of revenue and capital value)

Feelings can run high, fuelled by suspicion, rumour, bad communication, poor controls and lack of consideration for others.

4. **THE OWNER OCCUPIER**

4.1 **General**

A key factor in the implementation of a Subterranean Development is cost and value. Whilst a declared objective may be the need for additional facilities which cannot be constructed above ground, it is apparent that a major motive may be the creation of added value. (“The Profit Motive”). Herein lies a difference between:

a) The owner occupier seeking increased accommodation and facilities for the family.
b) The developer who sees an opportunity for significant capital gain.
Both have the incentive of very high property values in inner London, parts of provincial cities and other high value locations. Critically, neither class of owner may be directly affected by the loss of amenity they inflict upon others.

4.2 **Owner Occupier and Family**

The owner occupier may need additional accommodation to suit a growing family. Rather than selling up and moving at considerable cost, proposals may be advanced to create more living space through a mansard roof development, for which planning approval is now relatively easy.

A second initiative might be an application to create a basement with additional space and facilities for the family.

Both these initiatives are likely to add significant value to the property. A secondary factor is that, if and when sold, no capital gains tax may be payable if the property is deemed to be the sole or main residence.

4.3 **The Developer**

The motive of the developer is, understandably, the creation of as much added value as possible (profit), through the expansion of the size of the property (sq ft/m) and fitting out to a high standard depending upon market demand and conditions.

For example, if a three storey terraced house of 2100 sq ft can be provided with a basement addition of 700 sq ft the area of the property is increased by one third, and the capital gain on sale can be most significant.

Inevitably the developer may be less concerned about neighbours than is the owner-occupier who must live with the consequences of inconsiderate development methods.

5. **THE RESIDENTIAL DEMAND**

5.1 **General**

There are a number of issues which are relevant when considering the suitability of properties or sites for subterranean development.

At present most of this activity is concentrated in, but not exclusively confined to, the London area. Here property values are high and added value more economic to create, despite potentially greater construction difficulties and risks to third party amenity.

Within the area residential properties fall in to three groups:
- Terraced Houses - many converted into Flats
- Semi-detached houses - mainly outside inner London
- Detached Houses - also mainly outside inner London

5.2 **Terraced Houses**

Terraced houses are now the prime contender for basement developments, since they are often freeholds under single family ownership. Collectively, they cover a vast area with perhaps an average of 20 houses on each side of many streets.

Granting approval for a basement development to one or more households in a terrace is likely to set a precedent. This may lead to many other households seeking, and expecting to receive, similar approvals, which could not reasonably be withheld. It is thus important to ensure that all households in that terrace are fully informed of any subterranean development proposal in that terrace. Houses on the opposite side of the street should also be similarly informed.
The gardens of terraced houses are usually relatively small and narrow. Granting approval for any subterranean development, other than under the existing footprint of the house, may impact unfavourably on properties on either side and to the rear. Communal amenities such as roadside trees, which require sufficient unobstructed subsoil for viable root development and stability, may also be affected.

5.3 Semi-detached Houses
Semi-detached houses will in general have larger gardens, often to front and rear. Hence modest subterranean development incorporating a modest non-invasive area outside the footprint of the house may on occasions be acceptable.

5.4 Detached Houses
Wealthy owners of large detached houses with ample gardens and entrance areas seem to have adopted a “copycat mentality”, seeking to develop major underground areas to house swimming pools, a range of leisure and recreational facilities and often vast car parks. The long term impact of these sorts of development is unknown and probably unpredictable, but some form of guidelines are surely overdue.

6. THE NEED FOR BALANCE
The wish of home owners to enlarge their homes, and the opportunity sought by property developers for gain, needs to be balanced by the due consideration of environmental impact and unnecessary disamenity to other local residents.

7. UNDERGROUND CONDITIONS
7.1 The Focus upon London
At present it is only in the Greater London area and a few other high value locations that the high price of property, coupled with planning restrictions on surface development upwards, can justify the cost and disruption of subterranean development. However, the impact of the rapidly expanding excavations into underground London should be subject to constant study. A recently published book, “London Under” by Peter Ackroyd, is not only an excellent read, but also provides a raft of interesting and thought provoking information.

7.2 “Without Foundation.......”
It is not generally recognised that few properties in London have foundations (or “footings”) deeper than 12 inches – or the height of the proverbial pint of Guinness. Most of these ancient foundations have served the upper structures well, resting as they do on mixed cocktails of clay mud and sand kept stable by the largely overbuilt nature of the subsoil.

The present underground conditions and future trends are of vital importance in assessing the impact that the rapid growth of invasive subterranean structures may have upon existing buildings and infrastructure, particularly in the medium and long term.

Much of the London area was historically marsh, or bog land, which even after draining retained high moisture content. Ancient nomenclature demonstrates this well. For example:

- Westminster was known as “Thorney Island” and most old buildings were constructed on large timbers placed as “rafts” on the soil.
- Downing Street was built on faggots (bundles of sticks/twigs).
- Fulham was known as the “Foul Hamlet”.
- Belgravia and Chelsea were bog land, until drained by the channelling of the Westbourne River which now runs through Sloane Square Station down to the Thames.
- Wandsworth (Wendlesworth “Wendles Settlement”) is drained by the River Wandle.
7.3 The Subterranean Rivers and The River Thames

The impact of the numerous historic underground rivers, including their gravel terraces and silt layers, culverts and drains below London, cannot be ignored. Underground water tables are rising, due in part to climatic conditions and in part to the reduction in extraction. For example the closing down of London breweries and the disappearance of the use of steam as an energy source, have dramatically removed much of the demand for subterranean water supplies.

Surplus water has to find a way out. Statements that “water always finds its own level”, “water runs downhill” support the view that this surplus water and storm water inevitably make their way the Thames. The complex route through sand and gravel and rivulets leads via the natural drainage route to many subterranean rivers of London, and thence to that great river.

Of some significance will be the new Thames Tunnel for wastewater collection and dispersal. The impact of this on subterranean water flows has yet to be determined. The following extracts from a Thames Tunnel briefing note of 1 October 2011 are of some relevance:

“In an average year, 39 million tonnes of untreated sewage discharges into the River Thames when London’s sewers overflow after rainfall. In wetter years the figure can increase threefold.

The capital’s sewerage network, designed by Sir Joseph Bazalgette over 150 years ago, is straining under the demands of modern day London. Since Bazalgette’s day the city’s population has trebled, and continues to grow. There is also much less permeable surface available to soak up rainfall.”

THE PROPOSED THAMES TUNNEL ROUTE
The following plan shows the main London rivers which flow into the River Thames.

The table below lists each of the main rivers and their source and confluence where they join others.

**MAIN LONDON AREA RIVER THAMES TRIBUTARIES**

<table>
<thead>
<tr>
<th>River</th>
<th>Confluence</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Darent</td>
<td>Dartford</td>
<td>Westerham</td>
</tr>
<tr>
<td>Peck</td>
<td>Bermondsey</td>
<td>Dulwich</td>
</tr>
<tr>
<td>Mardyke</td>
<td>Purfleet</td>
<td>Holdens Wood</td>
</tr>
<tr>
<td>Ingrebourne</td>
<td>Rainham</td>
<td>Brentwood</td>
</tr>
<tr>
<td>Beam</td>
<td>Dagenham</td>
<td>Romford</td>
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<tr>
<td>Roding</td>
<td>Creekmouth</td>
<td>Dunmow</td>
</tr>
<tr>
<td>Lea - Hackney Brook - Moselle</td>
<td>Bow</td>
<td>Leagreave</td>
</tr>
<tr>
<td>Ravensbourne</td>
<td>Deptford</td>
<td>Keston</td>
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<tr>
<td>Neckinger</td>
<td>Shad Thames</td>
<td>Southwark</td>
</tr>
<tr>
<td>Walbrook - Langbourne</td>
<td>Finsbury</td>
<td>City of London</td>
</tr>
<tr>
<td>Fleet</td>
<td>Blackfriars</td>
<td>Hampstead Heath</td>
</tr>
<tr>
<td>Effra</td>
<td>Vauxhall</td>
<td>Crystal Palace</td>
</tr>
<tr>
<td>Tyburn – Tyburn Brook</td>
<td>Pimlico</td>
<td>Hampstead</td>
</tr>
<tr>
<td>Falconbrook</td>
<td>Battersea</td>
<td>Tooting Beck Common</td>
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<tr>
<td>Westbourne</td>
<td>Chelsea</td>
<td>Hampstead</td>
</tr>
<tr>
<td>Counters Creek</td>
<td>Chelsea</td>
<td>Kensal Green</td>
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<tr>
<td>Wandle - Graveney</td>
<td>Wandsworth</td>
<td>Waddon</td>
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<tr>
<td>Beverly Brook</td>
<td>Putney</td>
<td>Worcester Park</td>
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<tr>
<td>Stamford Brook</td>
<td>Hammersmith</td>
<td>Acton</td>
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<tr>
<td>Bollar Brook</td>
<td>Chiswick</td>
<td>Acton</td>
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</tbody>
</table>
There is understandably growing concern about the impact of a major uncontrolled growth in subterranean development, and hence there is a need for ongoing research and adequate monitoring.

8. **HEALTH AND SAFETY ISSUES**

Inevitably, irresponsible works by unqualified contractors can lead to unforeseen or unnecessary problems during construction. Thus health and safety issues are of prime importance and may raise concerns for both developers and neighbours. The following recent article from “Building.co.uk” draws attention to potential dangers.

**Building.co.uk**

Thursday 01 December 2011

**Third of basement construction sites branded unsafe**

30 November 2011 | By Rebecca Seales

HSE inspectors visited 109 London sites in a series of raids, issuing 76 enforcement notices

A third of basement construction sites in London were found to be unsafe following a series of raids by safety inspectors this month.


Enforcement action was taken at 40 sites, where 76 notices were served. Four projects were deemed to be so dangerous that inspectors were forced to close the sites.

More than half of the prohibition notices served dealt with the risk of workers falling from height, either into unfenced excavations or through unprotected floor openings.

Basement extensions have become more common across the capital as homeowners seek to extend their properties underground, but have raised concerns over safety in many quarters.

London has seen two deaths in the past 12 months resulting from basement construction projects.

As a result of poor standards found during the inspections, the HSE has arranged a free awareness event open to all those involved in basement construction, including contractors, project managers and designers, on 19 January 2012 at Wandsworth town hall.

HSE principal inspector Andrew Beal said: "Safety standards in many basement projects are well short of acceptable, as our inspection initiative shows.

“Companies constructing basements must not be complacent about the risks. We encourage contractors, project managers and designers, to attend our free event in January and learn from those in the industry who are already working safely.”

**Relevant Health and Safety Websites**
9. EXAMPLES OF SUBTERRANEAN DEVELOPMENT WORKS
10. SPECIALIST ADVISORS

10.1 The Pyramus and Thisbe Club
The Pyramus & Thisbe Club was founded in 1974 to bring together surveyors of competence and standing with a serious professional interest in matters relating to party walls and a willingness to disseminate information amongst fellow members concerning difficult or interesting cases.

The club is named after Pyramus and Thisbe, the two lovers separated by a wall in Shakespeare’s A Midsummer Night’s Dream (“The wall is down that parted their fathers”).

The letter to new members from the founder, John Anstey, stated:
“The number of specialists in party walls seems to be growing and it is apparently a concomitant fact that party wall work is becoming more concentrated in the hands of specialists. I thought therefore, that there were many advantages in some sort of informal association in which practitioners could exchange views..........Interesting papers, awards and notes of trick situations could be circulated, and there might be considerable scope for settling differences”.

10.2 The Surveying and Engineering Advisory Panel
Under the guidance of the Pyramus and Thisbe Club, an experienced advisory panel was appointed to assist Lord Selsdon in the drafting of the Subterranean Development Bill and to advise on relevant technical and procedural issues.

The panel comprises:

- Robin Ainsworth BSc (Hons) MRICS FBEng FFPWS - Ainsworth Surveying Services
- Lawrence Hurst BSc FCGI FICE FI StructE FB Eng - Hurst Peirce & Malcolm
- John W. Lynn DipBS FRICS – IGL Surveying
- John PMS Lytton Bsc (EstMan) FRICS MCI IRRV Hon FBEng - John Lytton & Co
- David Moon DipBS FRICS - Davis Brown
- Graham North FRICS MCI Arb – Anstey Horne & Co
- Alistair Redler BSc FRICS - Delva Patman Associates
- David Reynolds BSc(Hons) - Drivers Jonas Deloitte
- Dr Hugh D St John BSc PHD - Geotechnical Consulting Group

The panel has extensive experience of all aspects of subterranean and related developments. Their expert knowledge and guidance will be most helpful to all those in the public and private sectors concerned with protecting the environment and the interests of householders and others.

11. THE SUBTERRANEAN DEVELOPMENT BILL [HL]
To find the “Subterranean Development Bill [HL]” please use the link below and press (Ctrl+)