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**Executive Summary**

The National Planning Framework “Ireland 2040” has, as one of its central principles, that more growth should take place within the urban core. In relation to Dublin it states that “Dublin needs to accommodate a greater proportion of the growth it generates within its metropolitan boundaries”

This, together with a shortage of development land, high land values and limits on building height is making basement development, often of significant scale, more attractive both as part of commercial developments and, increasingly, in residential areas as a popular way of gaining additional space.

Basements can affect the environment and nearby structures in a number of ways. The impacts of such development on the geological, hydrological and hydrogeological environment are of concern to Dublin City Council and the occupants / owners of neighbouring properties. While small, isolated basements may have little impact, the cumulative effect of incremental development of basements in close proximity, particularly when these are large, potentially creates a significant impact.

The objective of this policy document is to present a methodology where the impact of basement development proposals and underground construction on the surrounding ground and groundwater is assessed on a site specific basis, with any impacts mitigated where necessary. This policy document and the related (DCC Basement Development Guidance document) sets out the requirements to complete a risk-based impact assessment with regard to hydrology, hydrogeology and land stability. The required assessment shall be known as a “Basement Impact Assessment” (BIA). A BIA shall be submitted to DCC with all planning applications for development which include a basement.

The principal concerns from a Planning Authority perspective include (but are not limited to);

- Groundwater
- Cumulative effects of adjacent basement construction
- Land stability, ground movement and impact on adjacent properties
- Surface water flow and flooding
- Construction Activity and Temporary works e.g. ground anchors
- Other related factors

A “Basement Impact Assessment” (BIA) is to follow the format typically undertaken to complete an Environmental Impact Assessment process comprising of the following stages;

- Screening
- Scoping
- Ongoing Site Investigation, study and monitoring
- Continuous scoping
- Impact assessment and development of mitigation measures
- Review and decision making (by the Planning Authority)
The BIA process is to be Developer led. The screening phase requires Developers to look at the characteristic of the project, the existing site and the potential impacts on the surrounding environment. DCC may obtain the services of an independent expert to undertake a technical evaluation of the submission, as necessary.
1. Introduction

1.1 Context for a basement policy

In accordance with the National Planning Framework – Ireland 2040, the proposed strategy for Dublin promotes the consolidation of the city, maximising efficient use of land and integrating land use and transport, within the context of an over-arching philosophy of sustainability and quality of life factors.

The policies and objectives in the most recent Dublin City Development Plan “promote intensification and consolidation of Dublin city, all of which lies within the metropolitan area”. This is to be achieved in a variety of ways, including “infill and brownfield development; regeneration and renewal of the inner city; redevelopment of strategic regeneration areas; and the encouragement of development at higher densities, especially in public transport catchments”.

It is a key objective of the core strategy to protect and enhance the special characteristics of the city’s built and natural heritage. The principal measures enabling the City Council to achieve this objective are the Record of Protected Structures and the designation of Architectural Conservation Areas. The City Council has identified priority areas of special historic and architectural interest and within these areas will review the Record of Protected Structures, consider the recommendations of the National Inventory of Architectural Heritage and, where required, designate Architectural Conservation Areas.

With the current policies in mind and with the progression of building technology, it is only in relatively recent times that it was possible to construct buildings below ground (basements) which were capable of being reasonably watertight. The depth of the water-table had historically influenced the built environment in the city. Deep basements were not constructed in areas of the city where the water-table is close to the surface and where the natural materials are permeable.

With land values being at a premium in Dublin City, Developers are now looking to maximise the floor area for each new development site. This means that Developers are looking at the options of going both up and downwards with proposed and existing buildings. With restrictions on permissible building height in certain areas and the progress of building technology and available opportunities the prospect of constructing a basement is becoming more attractive.

However, groundwater below the city is not static. It is continually flowing laterally from below areas where the groundwater level is high towards areas below which the level is lower. There is also the potential for vertical groundwater flow where groundwater is pressurised in a lower confined groundwater flow system below a relatively impermeable layer (such as boulder clay) or vice versa, where there is a lower confined groundwater head in the lower confined system. A breach of this confining layer during
construction can lead to a vertical flow movement of groundwater which can be relevant to the potential for contamination or altering the groundwater flow systems.

The objective of this policy document is to present a framework within which the impact of proposals for basements and underground construction on the surrounding ground and groundwater is assessed on a case-by-case basis, and mitigated where necessary. No assumptions should be made with regard to the development potential, or the feasibility of constructing a basement, until a full analysis as outlined in this document has been undertaken and the relevant approvals granted by the Planning Authority.

The constructions of modern, impermeable or water-tight underground buildings can have an effect on the lateral and or vertical flow; by impeding, diverting or increasing the flow. Potential impacts are required to be considered during the short-term construction phase of the works but more significantly the depth, position and configuration of the finished building may pose a greater impact in the longer term. This policy is intended to identify and mitigate against (where possible) potential impacts generated as a result of basement construction (Section 5), for the benefit of all concerned parties and stakeholders.

DCC wish to acknowledge that the basement policy and guidance, contained herein, was developed with reference to existing policies and guidance documents already adopted by the London Borough of Camden.

1.2 Disclaimer

It is important to note that, although prepared in consultation with industry experts this is a work in progress policy and it is based on best available data and guidance at the time of preparation. Accordingly, all information in relation to basement development and construction is provided for general policy guidance only, and may be substantially altered in the light of future data and analysis, or future events etc. As a result, all landowners and developers are advised that Dublin City Council and their agents can accept no responsibility for losses or damages arising due to assessments indicating the vulnerability of their lands to flooding, the impact of their proposed development on other properties or amenities, the impact on groundwater and cumulative effects, the design and use of their proposed development or the construction implications and so forth. Owners, users and developers are advised to take all reasonable measures to assess potential issues (as outlined in this policy document with reference also to the related guidance document) which may impact upon lands and buildings (including basements) in which they have an interest, prior to making planning or development decisions. The BIA Policy and associated guidance will be reviewed on an ongoing basis as is required.
1.3 **Basement development potential impacts;**

Basements can affect the environment and nearby structures in a number of ways. The impacts of such development on the hydrological and hydrogeological environment are of concern to both Dublin City Council and the occupants/owners of neighbouring properties, as are the potential for ground movements in surroundings areas and any ground incursions outside the basement that are required for temporary works.

A basement or underground development is considered as being an accessible area positioned below the existing street level or ground level, and would include any works that will remain permanently in the ground, such as embedded wall construction below the base of the accessible area.

The principal concerns from a Planning Authority perspective include (but are not limited to):

- Groundwater levels
- Cumulative effects of adjacent basement construction
- Land stability and ground movement
- Surface water flow and flooding
- Temporary works
- Other related factors

With the construction of basements there is the potential to alter the groundwater levels. This is particularly so if the basement and other adjacent basements are aligned across the main groundwater flow direction. Groundwater is not static and is continually moving towards the rivers, streams or the sea. Therefore, an impermeable subsurface structure may impede water movement underground. Groundwater levels up-gradient of the building may rise and downstream of a basement dam, groundwater levels can be lower. The velocity of groundwater flow may increase around the margins of a basement. In effect the water table can rise or fall, as a result of a new basement. Groundwater levels also naturally rise during periods of rainfall or snow melt recharge into the groundwater system. Groundwater levels also fall during periods of no recharge or as a result of groundwater drainage. Therefore, the seasonal changes in groundwater levels, flow, chemistry and bacteriology need to be determined in order to assess the potential impacts of a proposed new basement.

The important consideration from a planning perspective is context i.e. the natural flow system, the existing subsurface built environment and the hydrological and hydrogeological conditions. While small, isolated basements may have little impact, the cumulative effect of incremental development of basements in close proximity, particularly when these are large, can create a significant impact i.e. each of the impacts are potentially significant depending on the specific site location and environment.

Basement construction also induces ground movements in the surrounding area and the impact of these movements on adjacent properties and infrastructure need to be assessed and mitigated, where required. In the extreme case, where insufficient lateral
support is provided during the construction of the basement, or where seepage or uplift situation have not been properly considered, adjacent land stability can be compromised. Consideration of the stability of adjacent properties is also required where there is proposal to dewater a site during construction and/or in the longer term.

In some situations, ground anchors that extend outside the property boundaries are proposed for temporary works for basements. The implications of such ground inclusions on the possible long term development options in the adjacent areas, needs to be properly assessed.

The risk of flooding must be assessed as part of any basement proposal and the proposed uses of the basement must be consistent with the identified level of risk.

It is the purpose of this policy therefore to ensure that if the development of a basement structure is proposed all potential impacts have been identified and mitigated against at the Planning Application Stage.

1.4 Existing planning guidance
This basement/subterranean development policy is intended to complement the planning guidance offered in the current Dublin City Development Plan and should be understood in the context of all planning matters outlined in the current Dublin City Council (DCC) Development Plan and other related DCC planning requirements/guidance.

1.5 Relevance of basement policy
This basement development policy and the BIA submitted by the applicant shall form a “material consideration” in the outcome of planning decisions.

1.6 Utilising Policy Guidance for development applications
This document outlines the Planning Authorities policy for the construction of all basements within Dublin City Council area. When making an application for a new basement the “DCC Basement Development Guidance document” (www.dublincity.ie) should be referred to in conjunction with this Policy Document.

2. Planning and Legislative Background

2.1 Protection of groundwater
The Groundwater Regulations, 2010 (SI no. 9 of 2010) were established to strengthen the protection of groundwater following the publication of the Water Framework Directive (2000/60/EC), SI 722/2003 and the Groundwater Directive (2006/118/EC) by providing a legal status for quality, quantity and classification standards. The regulations impose a duty on public authorities to comply with the standards and objective of the relevant standards. Amongst other requirements imposed on a public body is that they are to protect, enhance and restore all bodies of groundwater. They are also prohibited
from undertaking any of its functions in a manner that knowingly causes or allows deterioration in either the chemical status or quantitative status of a body of water. These regulations are likely to be applicable to new basements both during the construction and over the longer term.

The European Floods Directive 2007/60/EC, as transposed into Irish Law under SI 122/2010 includes requirements for the assessment and management of the risk of flooding from all sources, including Groundwater.

In November 2009, the OPW published “The Planning System and Flood Risk Management - Guidelines for Planning Authorities”. This identified groundwater flooding as well as overland flow and other flood risk areas relevant to basements. The OPW document sets out the approach to Flood Risk Assessment which remains the Government policy in this area.

2.2 Planning and Development Act

As a Planning Authority, Dublin City Council has obligations under the Planning & Development Act to create a Development Plan which, among its objectives, should include for “the conservation and protection of the environment”, “protecting and preserving the quality of the environment including the…..protection of waters, groundwater”.

Under the Planning and Development Act 2000 (as amended) the Planning Authority can regulate “the size, height, floor area and character of structures” and “the purpose for and the manner in which structures may be used”. The Planning Authority can also require the “Carrying out flood risk assessment for the purpose of regulating, restricting and controlling development in areas at risk of flooding” and can set objectives “Regulating, restricting or controlling development in order to reduce the risk of serious danger to human health or the environment”.

2.3 Current Dublin City Development Plan

The current City Development Plan contains certain policy statements relating to basements to be considered when reviewing planning applications for basement construction. References to basements in the Development Plan primarily relate to domestic basements but can be applied in other instances if deemed appropriate. Reference is made to the size of a proposed basement, the impact on the water table and streams, the use of SUDS and measures to protect adjoining structures, archaeological and conservation area impacts, amongst others. Strategic Flood Risk Assessment is also required whereby the city has been split into zones with different development justifications being required dependent on the flooding characteristics for that zone.

All reference to construction and development already contained in the “Dublin City Development Plan 2016 – 2022” still remains to the fore when the Planning Authority is assessing proposed development. The policy contained herein is to be read in conjunction with the current Dublin City Development Plan and any other exiting DCC policies.
3. DCC Basement Development Policy Requirements

3.1 DCC basement policy requirements

A basement or underground development is considered as being; an accessible area positioned below the existing street level or ground level and would include any works that will remain permanently in the ground, such as embedded wall construction below the base of the accessible area. The main principles for introducing a basement development policy are set out in this section. Each of these requirements should be addressed within an applicant’s BIA submission.

The DCC basement policy requires Developers to ensure that basement development, as evidenced in their BIA submission;

- Protects and enhances where possible the groundwater quality, quantity and classification (groundwater environment)
- Provides evidence that the construction of basements shall not place the groundwater at undue risk
- Provides evidence that the structural stability of adjoining or neighbouring buildings are not put at risk. The Developer should also identify the risk to land stability of the site and adjacent areas and provides appropriate mitigation, as required.
- Provides an in-depth management plan for any demolition works and for the construction of a basement. The Developer is required to adhere to this plan (“Construction Management Plan”) if the application is deemed successful
- Is in accordance with the proper development of the area with a high quality design
- Does not cause harm or undue nuisance to neighbourhoods and adjoining buildings where development is to occur, during and after construction.
- Ensures adequate consideration is given to traffic planning during construction and thereafter.
- Does not have an adverse effect on existing patterns of surface water drainage, including infiltration into groundwater and is consistent with DCC’s Policy on Sustainable Urban Drainage Systems (SUDS).
- Does not increase groundwater infiltration into existing sewers and drains beyond permitted restrictions.
- Shall not significantly impact on groundwater or surface water flows to the extent that this is likely to increase the risk of flooding. This flood risk is to be evaluated, in accordance with the OPW 2009 Guidelines, during and post construction with appropriate mitigation provided.
- Does not include basement development for residential use, below the estimated flood levels in flood zone areas Zone A or Zone B (see DCC Development Plan for Zone locations).
- Accounts for the impact of the future planting and mature development of trees on site. A thickness of at least 1m of soil on the “roof” of a basement
is required to mitigate against and minimise surface water runoff, with various SUDS measures incorporated.

- Ensures that, all basement developments shall account for and accommodate the existing groundwater contained within and flowing through their site. As a minimum standard there is to be at least 0.5m wide of clear space provided between the site/property boundary and the outer extent of a basement. This 0.5m wide space and shall extend over the full height and around the perimeter of the basement and shall be filled with suitable, highly permeable material (with appropriate wrapping).

- Accounts for the characteristic of the site. In the case of a domestic basement development to the rear of a property (garden) generally should not exceed the footprint of the original building and be no deeper than one full storey below ground level. Domestic basement development should generally not extend to more than 50% of the amenity/garden space.

- Provide appropriate evidence for larger schemes, including those consisting of more than one storey in depth or extending beyond the footprint of the above ground building, to demonstrate to the Planning Authority’s satisfaction that the development does not harm the built and natural environment or local amenity.

- Takes account of the content of the “Dublin City Development Plan 2016 – 2022” for construction and development related matters. This policy is to be read in conjunction with this document and all other current DCC policies.

- Conserves and where possible enhances the biodiversity value of the site

- Ensures appropriate handling and dealing with waste removal, including contaminated/hazardous ground arising during construction – details to be included in the “Construction Management Plan”.

- Ensures that the impact of the proposed construction methodologies and temporary works and ground anchors are fully assessed and any necessary mitigation measures put in place.

- Does not impact negatively on the surrounding areas, both private and public.

All requirements, as accounted for in this policy document are to be evidenced in detail within a BIA which is to be submitted as part of the planning application submission for that particular development. The BIA (and content) submitted as part of a planning application is to become a material consideration in the conditioning of a planning application.

3.2 Further DCC planning policies

Whilst adhering to the policy requirements as outlined in Section 3.1, each of which are to be addressed in the BIA submission, it does not preclude the applicant from meeting other important and relevant DCC policy requirements. When a basement development
is proposed, the Planning Authority shall also require the following items to be evidenced as part of the overall planning application submission;

- The basement development conserves existing protected and heritage buildings/sites, conservation areas, sites of archaeological interest etc.
- The basement development provides an extensive structural stability and conservation report in the case of listed buildings, or properties adjoining or adjacent to listed buildings.
- The basement development provides a management plan for demolition and/or construction where basement works are proposed in conservation areas or adjacent to a listed building.
- The basement development does not harm the architectural character of buildings and surrounding areas e.g. trees and gardens and character in such areas are not to be harmed.
- Ensures that adequate sunlight/daylight penetration is provided
- Ensures that adequate ventilation is provided
- Ensure that basements are provided with a means of escape allowing access to a place of safety that provides access to the external ground level

These requirements are to be included within the Planning Application and their examination is to be referenced accordingly within the BIA submission.

3.3 Application of basement policy

This basement development policy document is applicable to all development in Dublin City which propose a new basement or underground development. Equally an extension to an existing basement or underground development shall require adherence to this policy. Underground development shall include such instances whereby ground or lower ground floors require excavation, for example when a ground floor is required to extend into higher ground which requires excavation.

The level of detail to be contained within a BIA for any particular basement development shall be dependent on the development category. For the purposes of this policy basement developments have been split into three categories depending on their scale, potential impact etc. Details of these categories are outlined in Section 7 of the Dublin City Council "Basement Development Guidance Document".

4. Implementation of Basement Development Policy

4.1 Relevance of basement development policy

When making decisions the Planning Authority shall follow the policy as set out in this document in conjunction with other relevant planning requirements and guidance. This Policy Document should be read in conjunction with the accompanying “DCC Basement Development Guidance document”.
4.2 Submission of a Basement Impact Assessment (BIA)
Applicants for all developments which include a basement will be required to submit a Basement Impact Assessment (BIA) for that particular development (see “Basement Development Guidance document”) – see also Section 7 of the Dublin City Council “Basement Development Guidance Document” for details of development category.

4.3 Purpose for implementing basement policy
When considering a planning application for basement construction, as well as the normal Planning considerations, the Planning Authority shall have regard to the outcome of the Basement Impact Assessment (BIA) carried out for that proposed development and the likely impact of that proposed development on the existing natural and built environment.

4.4 Measures to be demonstrated by the applicant
The planning authority may, by way of condition, require the developer to take such measures as are required to reduce or remove the impact of the proposed basement development on the natural and built environment, with particular reference to the potential impacts of the proposed development on;

- Groundwater levels and flows
- Groundwater quality
- Surface water flows and infiltration
- Urban Drainage
- Existing users of groundwater
- Planting, landscaping and biodiversity
- Structural and other impacts on adjacent properties, including the public realm – submission of a pre-condition survey of adjacent structures may be sought
- Construction Stage Impacts (e.g. impact of dewatering the site on land, buildings and the environment beyond the site boundary, temporary works, noise, dust, traffic etc.)
- Future developments adjacent to the property

5. Impact of Basement Development and Submission Requirements

5.1 Background
The Planning Authority will only permit basements and other underground development where the applicant can demonstrate that it is consistent with the planning and development policies for the area, and that the proposed basement will not unduly impact upon the environment, including the water environment, biodiversity; adjacent structures etc. The level and type of information required by the Planning Authority in order to facilitate their appraisal of any proposal is defined by this Policy Document and will be determined by the scale, location and complexity of the proposed development.
As outlined in Section 3.3 the level of detail to be contained within a BIA is dependent on the development category, as outlined in Section 7 of the Dublin City Council “Basement Development Guidance Document”.

5.2 Scope and format of Basement Impact Assessments (BIA`s)

5.2.1 The principal intention of developing a BIA policy is to formalise the planning requirements and to ensure sustainable basement construction. A BIA will be required to be submitted to DCC with all planning applications for development which includes a basement or underground development. A basement or underground development is considered as being an accessible area positioned below the existing street level or ground level. The BIA process is to be developer-led, with DCC providing guidance in the earlier stages and a determination following submission.

5.2.2 The BIA shall follow, in general, the format of an Environmental Impact Assessment (EIA) process (“Guidelines on the information to be contained in Environmental Impact Statements”, Environmental Protection Agency, 2002). Each BIA submission is to be specific to the site and the particular proposed development. It should be submitted as part of the overall planning application for the particular development. A BIA shall as a minimum contain the following stages:

- Scoping
- Ongoing Site investigation, study and monitoring and ongoing reviews of the scope based on inputs from site investigation.
- Impact assessment and development of mitigation measures
- Review and decision making (by the Planning Authority)

The BIA stages are summarised later in this document and in more detail in the DCC “Basement Development Guidance document”.

5.2.3 A non-technical summary of the information that applicants shall have gathered at each stage of the BIA is required to be submitted and is to be drafted in a format which can be fully understood by those with limited technical knowledge.

5.2.4 At each stage in the process the person(s) undertaking the BIA process should have the appropriate qualifications and experience. The BIA shall include, as an Appendix, the names of those contributing to the BIA, together with their qualifications and a summary of their CV.

5.2.5 As there is a potential to impact upon areas outside of the site boundary each of the BIA stages should assess the potential impact on the site of the proposed basement scheme and also on adjacent properties within a reasonable radius (extent may vary depending on scale, complexity and potential impacts etc. of development).

5.3 Scoping

5.3.1 The scoping stage of the BIA requires applicants to identify the potential impacts of the proposed scheme which require further investigation (including
unknown items). The defined scope should be specific to the site and proposed development.

5.3.2 During the scoping stage it may be beneficial for the applicant to consult with the planning authority similar to a pre-planning consultation. In addition, it may be beneficial for the applicant to liaise with all relevant local stakeholders who may be affected by a proposed basement to fully understand and address their concerns.

5.3.3 The scoping stage should include the appropriate level of site investigation, including groundwater studies and monitoring.

5.3.4 Both during construction and after construction of the basement there is the potential to impact upon the built and natural environment beyond the proposed site boundary. The applicant should identify these potential impacts as part of the scoping stage.

5.3.5 Further details of the necessary scoping requirements are described in the DCC “Basement Development Guidance Document” – Section 5.

5.4 Ongoing site investigation, study and monitoring

5.4.1 Site investigation is undertaken to develop an understanding of the site and its immediate surroundings. Site investigation will be required during the scoping process and throughout the development of a BIA.

5.4.2 The degree of investigation will vary depending upon the matters of concern identified the scoping stage, and therefore will be dependent on the location of the proposed basement within the Dublin City area, its size and setting in relation to existing development on the site and its relationship to adjacent properties and nearby features of importance.

5.4.3 The BIA site investigation comprises several stages, including:

- Desk study, including site walkover
- Field investigation, including intrusive investigations, pumping tests and water chemistry and bacteriology sampling
- Monitoring of seasonal and, as appropriate, tidal groundwater levels at different levels below and around the site
- Pre-condition survey of adjacent properties
- Interpretation and reporting by suitably experienced professionals

5.4.4 The applicant should account for potential impacts outside of the site boundary when planning for suitable site investigations to ensure all relevant information and data is obtained for analysis and inclusion in the BIA.

5.4.5 Hydrogeological processes are subject to seasonal and longer term cyclical influences. Measurements taken at one particular time may not indicate how conditions might be in one or six months from that time. Ongoing monitoring of groundwater levels in areas over a substantial period of time may therefore be necessary pre-planning, pre-construction, during construction and post construction. Dependent on the location, extent and nature of the development it is possible that groundwater levels and movement shall need to be monitored and assessed over a ‘hydrological year’; running from the start of October to the
end of the following September. Please refer to Section 5.4 and Section 6.2 of the “Basement Development Guidance Document” for more detail on monitoring periods. **It is important to start carrying out these investigations in a timely manner to allow for inclusion of the analysis in the planning phase, BIA submission.** Inevitably, such data shall be required well in advance of the final design phase.

5.4.6 The location of Piezometers utilised on the site should be digitally recorded and coordinates provided. Piezometers should (if possible) be positioned in areas accessible post construction and be maintained for future monitoring and reference.

5.4.7 The Geotechnical Design Report for the project, as required in IS EN 1997, should address the issues relevant to the BIA (see Section 5.5.6).

5.4.8 Further details of the necessary site investigation requirements are described in the “Basement Development Guidance Document” – Section 5.4.

5.4.9 As part of the continuous investigation, study and monitoring the scope of the BIA shall be revised, expanded and updated accordingly prior to submission.

5.5 Impact assessment and development of mitigation measures

5.5.1 This stage is concerned with evaluating the direct and indirect implications of the basement construction itself and the longer term impacts of the proposed finished project. Essentially this involves a comparison between the present situation (i.e. the baseline pre-construction) and those potential impacts, during construction and post construction (long-term). Each phase is to be assessed separately within the BIA.

5.5.2 The Impact Assessment stage of the BIA should describe, quantify and then aggregate the effects of the development on those attributes or features which have been identified in the scoping stage.

5.5.3 It is important to recognise that the Planning Authority is particularly concerned with the potentially significant impact a development can have beyond the site boundary. Where permission is not given by adjacent landowners for structural surveys or subsurface investigations to be carried out, the undetermined structural conditions and ground conditions beyond the site boundary should be identified as a significant risk and should be assessed and mitigated against accordingly.

5.5.4 Seasonal variations in groundwater levels should be accounted for as part of the impact assessment. An extensive period of data should be available to make an informed assessment (see “Basement Development Guidance Document”) – see Section 5.4.5 above.

5.5.5 The BIA submission must contain details of the retaining wall and basement design for the basement excavation. All temporary and permanent works details are required to be submitted including where piles and ground anchors or similar are intended to be used. The engineering interpretation will require calculations of predicted ground movements and structural impact to be provided. Compliance with the DCC Ground Anchor Policy and associated
5.5.6 A “Construction Management Plan” is required to be submitted. This Plan should contain the structural/geotechnical design submissions (as required in IS EN 1997). Further details of typical contents of a “Construction Management Plan” submission is outlined in the DCC “Basement Development Guidance Document” – Section 5.5. Prior to final submission to the Planning Authority for approval, the “Construction Management Plan” will need to be certified by a suitably qualified and experienced engineer and hydrogeologist who are independent of the design team.

5.5.7 The cumulative effect of the incremental development of basements in close proximity, particularly when these are large, can potentially create significant impacts on the groundwater regime. Therefore, Basement Impact Assessments must identify neighbouring basements and make the assessment considering all nearby basements during and post construction. Both existing and planned (with planning permission) underground development must be included in this assessment. Each Basement Impact Assessment must account for and respond to the issues of cumulative impacts.

5.5.8 In order to avoid cumulative effects and in an effort to be as fair and equitable as possible to all development proposals, all basement developments shall account for and accommodate the existing groundwater contained within and flowing through their site. Any scheme with a proposed basement shall ensure that the ability of groundwater to exit and/or to pass through the site shall remain unchanged post construction. Groundwater levels upstream or downstream of the development are not to be altered as a result of the development i.e. each basement development shall implement measures to ensure that the volume of groundwater, within and passing through the site pre-development shall be unchanged post-development and there should be no impact upon groundwater levels up-stream or down-stream of the groundwater gradient.

5.5.9 Further to the point made above, in an effort to be as fair and as equitable as possible, as a minimum standard, all basement development is required to provide at least 0.5m wide of clear space between the site/property boundary and the outer extent of a basement. This 0.5m wide space shall extend over the full height and around the perimeter of the basement and shall be filled with a suitable, highly permeable material (with appropriate wrapping), thus reducing the potential for cumulative effects if further basements are to be constructed nearby.

In providing the highly permeable 0.5m wide space between the site boundary and the basement structure the design team should ensure that erosion and undermining beneath the adjoining site/property would not be possible.

If such a measure is regarded by the developer’s design team as being inadequate to account for the volume of groundwater observed within a
particular site the Developer is required to identify more robust measures in order to meet the requirements described in Section 5.5.8.

5.5.10 If the identified consequences of basement construction are deemed by the developer to be problematic, mitigation should be incorporated into the proposed scheme and the new net consequences determined and demonstrated in the BIA e.g. where there is predicted structural damage to neighbouring property, or where ground water related impacts on neighbouring properties is predicted to be damaging to residential amenity. Any proposed mitigation measures should be described in the BIA report with details of how these reduce and/or alter the impact of the proposed basement on the surrounding environment. Mitigation measures which may be included in basement development proposals comprise (but are not limited to):

- Controlled or adequate drainage
- High permeability corridors around or through basement structures
- Grout injection to prevent vertical flow from lower groundwater flow systems
- Underpinning of neighbouring structures and
- Setting the basement in from property boundaries

5.5.11 As part of the basement design it should be demonstrated in the “Construction Management Plan” submission as to how dewatering of the site, during construction, is to be undertaken over the entire duration of the construction period. Consideration of suitable locations for groundwater re-charging within the site area (for the entire duration of the works) or discharge off the site should be accounted and provided for. A discharge licence shall be required from the relevant owners of any pipeline into which the discharge is proposed.

5.5.12 When a dewatering process begins ground movements of the adjoining area is of particular concern. As part of the “Construction Management Plan” submission it should be clearly indicated as to how the potential for ground movements are to be mitigated. The limits of permitted groundwater level fluctuation during the construction process are to be identified at BIA preparation stage and adhered to during construction (and also for the longer term if dewatering is intended post-construction). Methods as to how the ground water levels are to be recorded and fluctuations appropriately alarmed are also to be described in detail in the “Construction Methodology” and subsequently adhered to during construction phase.

5.5.13 If there is an intention to continue to dewater the basement/development for a period longer than the construction period it should be highlighted as part of the impact assessment and the discharge accounted for.

5.5.14 Dewatering volumes and quality of discharge along with groundwater level variations on the site in question during construction are to be recorded and made available to Dublin City Council and as required to the relevant authority.

5.5.15 The impact of the development on proposed or existing Sustainable Urban Drainage (SUDS) measures must be considered.
5.5.16 Further details of the necessary impact assessment requirements are described in the DCC “Basement Development Guidance Document” – Section 5.5.

5.6 Review and decision making

5.6.1 The final stage of the BIA is undertaken by the Planning Authority and consists of an audit of the information supplied by the applicant and a decision on the acceptability of the basement proposal.

6. Related DCC Corporate Policies

6.1 Reference to other DCC Corporate policies

In addition to the requirements outlined in this policy document Developers of basement structures are advised to be cognisant of existing DCC policies and requirements relating to development. Examples where specific policies exist include (please note that not all relevant DCC policies may be recorded below and it shall be the responsibility of the planning applicant to comply);

- Roads and Public Areas
- Ground Anchor Licences
- Traffic and temporary traffic management measures
- Dewatering and pollution control
- Waste management
- Drainage Planning/SUDS
- DCC City Architects
- Air, Noise and vibration controls and requirements

6.2 Further guidance to DCC Corporate policies

A summary of the related policies are included in the DCC “Basement Development Guidance Document”, Section 8 and in the Dublin City Development Plan.

7. References

Environmental Protection Agency, Guidelines on the information to be contained in environmental impact statements, 2002.


London Borough of Camden (Ove Arup & Partners Ltd), Camden geological, hydrogeological and hydrological study, Guidance for subterranean development, November 2010