

# Basements and Deep Building Construction Policy 2014

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RESPONSIBLE EXECUTIVE	General Manager City Assets and Environment
POLICY OWNER	Manager Infrastructure

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## 1. Purpose of the Policy

The purpose of the Kingston Basements and Deep Building Construction Policy (2014) (Policy) is to assist Kingston City Council manage the construction of buildings and other structures with below ground level elements for the benefit of the whole community.

The Policy states the approach, methods, principles and procedures that Council will follow in order to manage the construction of underground structures to ensure consistent, equitable and transparent outcomes are achieved.

## 2. Scope

This policy is applicable to all properties in the City of Kingston. This includes all private, Council and Government owned properties involving significant excavation for structures below native surface levels. Examples include, but are not limited to, basements, underground car parks, dwellings, tanks, swimming pools and retaining walls.

## 3. Definitions

- a. **Acid Sulfate Soils** – means naturally occurring soils, sediments or organic substrates that are formed under water logged conditions which contain iron sulphide minerals or related oxides. These soils commonly occur within Kingston.
- b. **Aquifer** – means a geological structure or formation or an artificial land fill permeated or capable of being permeated permanently or intermittently with water.
- c. **Stormwater** – refers to water that runs off all urban surfaces such as roofs, foot paths, car parks, roads, gardens and vegetated open spaces and is captured in constructed storages and drainage systems. This excludes roof water captured directly by rainwater tanks, water captured in natural rivers, creeks, streams and lakes, and water sourced from private dams for primary production purposes.
- d. **Groundwater** – refers to any water occurring in or obtained from an aquifer and includes any matter dissolved or suspended in any such water.

## 4. Responsible Executive

The **General Manager City Assets and Environment** has responsibility for this policy.

## 5. Policy owner

The position responsible for writing and / or reviewing the policy and ensuring it is kept up-to-date with any legislative or operational changes is the **Manager Infrastructure**. This position can be contacted for assistance and information about this Policy.

## 6. Related Documents

This policy refers to the following State legislation, local laws and standards –

- a) Local Government Act 1989

- b) Water Act 1989
- c) Environment Protection Act 1970
- d) Building Regulations 2006
- e) Kingston Local Law 2
- f) AS/NZS 2890.1 – Off Street Car Parking

This policy refers to the following internal plans and strategies:

- a) Kingston One Vision, Council Plan 2013-2017
- b) Kingston Council Civil Design Standards
  - i. Civil Design Requirements for Developers - Part A: Integrated Stormwater Management
  - ii. Civil Design Requirements for Developers - Part B: Road Works & Construction Plans
- c) Kingston Flood Mitigation Strategy
- d) Kingston Integrated Water Cycle Strategy
- e) Kingston Basements and Deep Building Construction Guidelines 2014

## 7. Delegation Authority

Delegations under the following Acts and Regulations that apply to this Policy:

- Local Government Act 1989

## 8. Policy Statement

Developers of projects within the City of Kingston shall be required to design and construct underground structures in a manner which is consistent with the Kingston Basements and Deep Building Construction Guidelines and Kingston Civil Design Standards.

Council's goal is to promote sustainable design principles, protect natural resources and ensure a safe environment.

## 9. Objectives

The objectives of this Policy are to:

- Promote sustainable designs for underground structures;
- Protect natural groundwater resources;
- Prevent inundation of underground structures due to poor design and construction techniques;
- Reduce potential for damage to properties, adjacent properties and council infrastructure due to consolidation or subsidence of soil;
- Ensure a safe, accessible and sustainable road environment for all users near underground car parks;

- Ensure the design of vehicle crossings and footpaths adhere to relevant design standards;

## 10. Basement Design and Construction Principles

### 10.1. Protection of Natural Resources

Groundwater is a valuable natural resource that should be protected. Underground structures should minimise their impact on the natural state of groundwater equilibrium.

### 10.2. Sustainable Development

Council encourages the adoption of sustainable development principles, including minimising energy consumption by developments. Underground structures should use sustainable groundwater management practices.

### 10.3. Safety

Council has a responsibility to ensure the safety of all residents. Vehicle crossings and driveways associated with underground structures must not create hazards to pedestrians and other road users. Vehicle crossings into underground structures must comply with design standards. The relevant conditions are given in 'AS/NZS 2890.1 - Off street car parking'.

### 10.4. Minimise Flood Risks

Entrances into basement car parks shall be designed to minimise the risk of inundation from overland flows from the stormwater network

## 11. Underground Construction – Techniques

There are several different methods of basement construction; however, most will fall into the category of wet or dry (tanked).

### 11.1. Wet Basement

Wet basements typically have a slotted subsurface drainage collection system on the outside of the wall to collect groundwater and relieve hydrostatic pressures. This is usually collected into pits that are pumped out. Since the water in this type of system is groundwater, Council has no obligation to accept this to the legal point of stormwater discharge.

Risks associated with this type of construction include the potential for large amounts of groundwater being collected in the drainage system. If discharged to the street network, this will overload the system. This water is not stormwater and must be disposed of on site or via a trade waste agreement reached with the local sewer authority. Other risks are those associated with changes to the local water table level. This may cause subsidence in adjacent properties.

Closed systems to re-inject the groundwater back into the water table are acceptable however Kingston has many areas of ground water with high levels of organic fines which may not make this method practical.

### 11.2. Dry (Tanked) Basement

A tanked basement is considered waterproof and is designed to withstand the hydrostatic pressures of a saturated soil. Waterproofing agents are applied to the

concrete during construction to prevent ingress of water. This type of construction requires no groundwater collection and is the preferred method of construction by Council.

### **11.3. Retaining Walls**

Retaining walls are an engineered method of holding soil at unstable angles to create or protect usable spaces. Most retaining walls rely on the soil behind the wall being drained in a similar way to a wet basement. Kingston allows the drainage of some retaining walls to be connected to the Legal Point of discharge if simple requirements are met. Alternatively retaining walls should be designed to withstand hydrostatic pressures and constructed using appropriate materials.

### **11.4. Soil Management**

Stockpiling of excavated materials must be conducted to best practice guidelines, especially in areas of Coastal Acid Sulphate Soils. Leachates must be prevented from contaminating the environment.

Details of the requirements for Underground Construction Techniques can be found in the Basement and Deep Building Construction Guidelines (2014).

## **12. Control of Groundwater and Stormwater**

Legal advice provided to Council is that stormwater and groundwater are separate entities.

The Victorian Water Act 1989 recognizes that the Crown has control over groundwater, while the Responsible Drainage Authority (either Kingston City Council or Melbourne Water) have control over stormwater drainage. Within the municipality, Southern Rural Water is the Responsible Authority for groundwater.

Kingston City Council, acting as the drainage authority, is not legally required to accept any groundwater into the stormwater drainage network. It may do so on a case by case basis under delegation.

It should also be noted that the Building Code of Australia relates specifically to stormwater, not groundwater.

## **13. Requirements for Developers**

All areas of Kingston have potential issues with groundwater for deep constructions as the predicted water table varies between 0 and -5 metres from natural ground surface. Some areas are known to be very high risk with respect to high water table and related issues such as prevalence of Acid Sulfate Soils.

Prior to application for a building permit, developers must conduct a site investigation to assess the local hydrology. The results of the site investigation must be presented to Council in the form of a Groundwater Assessment Report (GAR).

Pending the results of the GAR, Council will assess whether the site is likely to experience issues associated with groundwater management. Developers may be required to submit a Groundwater Management Plan (GMP) at the discretion of Council's Development Approvals Engineer.

Details of the requirements for the GAR and GMP can be found in the Basements and Deep Building Construction Guidelines (2014).

### 13.1. Design Phase

Prior to detail design stage, site limitations should be fully explored. This may include a GAR where natural surface levels on the site are low (below 10.000 AHD) or groundwater is known to be close to the surface. Basement and floor levels shall set to a safe level above the water table.

### 13.2. Construction Phase

Site limitations with respect to groundwater that have been identified in the initial design phase should be considered prior to the commencement of construction. Any excavation within 1.00 metre of the groundwater table will require a documented management plan to be submitted as part of or in conjunction with a Construction Management Plan. All necessary permits for the drainage of or de-watering of the site shall be in-place prior to construction commencing.

## 14. Specific Wording

For wording specific to legal documents (i.e. legal point of discharge and planning permits), refer to the Basements and Deep Building Construction Guidelines (2014).

## 15. Decision Guidelines

There are no exemptions to this policy except where noted below:

- i. **Groundwater Assessment Report (GAR).** The proposed construction of underground services, stormwater drains, sewers, strip footings and swimming pools do not require the submission of a GAR unless otherwise determined by the Manager Infrastructure.
- ii. **Groundwater Management Plan (GMP).** A GMP is not required where the geotechnical assessment indicates that the groundwater table is more than 2.0 metres below the proposed structure at its lowest level surveyed relative to the Australian Height Datum unless otherwise determined by the Manager Infrastructure

An exemption based on geotechnical advice obtained prior to construction does not remove a developer's obligation to submit a GMP should groundwater be encountered during construction.

## 16. Enforcement

Where a property owner or developer contravenes the conditions of an Infrastructure permit or the planning permit, enforcement action will be pursued.

## 17. Transition/Translation arrangements

Policy commencement date is 30 November 2014. All new constructions commencing after this date will be subject to the Policy.

## 18. Review

The Policy shall be reviewed before 30 October 2019.