GUIDELINES
FOR
BUILDING OVER/ADJACENT TO SYDNEY WATER ASSETS

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These Guidelines are intended to assist property owners, developers and consultants with the Building Plan Approval Process and advise of Sydney Water requirements when building over or adjacent to a Sydney Water asset.

1. PLANNING YOUR BUILDING

When you submit building plans for approval, one of Sydney Water's principal considerations is the location of your proposed building works in relation to Sydney Water assets. Generally, the only assets which can be built over are smaller size sewers. Larger sewers may be built over but you will first need to contact Sydney Water on 13 20 92 and, if necessary, arrange a meeting with Customer Connections staff to discuss Sydney Water's requirements. As a rule, construction is not permitted over water mains.

In many cases, determining the location of your proposed building works in relation to Sydney Water's assets will simply involve checking the location of the proposed works against Sydney Water's records. Service Location Prints, Sewer Service Diagrams and plans are available at all Sydney Water Quick Check Agents (see www.sydneywater.com.au ➢ Building Developing and Plumbing ➢ QuickCheck ➢ Quick Check Agents).

2. DEFINITIONS

adjacent — building works and/or foundations located partly or wholly within the Zone of Influence of an asset but not directly over the asset.

asset — includes but is not limited to water, sewer and stormwater pipes, chambers, maintenance structures, vent shafts and pumping stations

associated structure — for the purposes of Appendix 1 means a:

- Maintenance structure, namely a:
  - Maintenance Hole
  - Maintenance Shaft
  - Terminal Maintenance Shaft
  - Rodding Point
  - Lamp Hole
- Ventshaft.

building works — includes but is not limited to buildings, additions, garages and carports, outhouses, swimming pools, retaining walls and hard landscaping

Zone of Influence — the envelope within which above-ground and/or below-ground building works have potential to exert influence on an asset. The Zone of Influence (ZOI) commences at the required minimum horizontal clearance from Sydney Water's assets. (Refer Figure 1).

3. PLANS

Prior to commencement of any work, your building works plans must be presented to your local Council for approval and to a Sydney Water Quick Check Agent for approval.

3.2 If Sydney Water's assets appear to be affected:

If your proposed building works are in close proximity to a Sydney Water asset (i.e. within a distance equivalent to twice the depth of the asset), you will be advised by your Quick Check Agent that you need to contact a Water Servicing Coordinator (WSC) to approve your building plans. The WSC acts as your contact when dealing with Sydney Water.

Sydney Water recommends that you contact several WSCs to ensure you choose the one most appropriate for you. They are located across Sydney Water's area of operations and service all areas.

Prior to approving your building plans, the WSC can assist you in various ways, including:

- reviewing your proposed building/structure plans and discussing options with you;
- advising you whether a Service Protection Report is required to accurately determine the location and depth of Sydney Water's pipes;
- advising you whether structural engineering detail is required;
- arranging supervision of concrete encasement and piering; and
- specifying asset protection requirements and/or alternate options.

To assist in your selection of a WSC, Sydney Water recommends that you ask:

(a) How long will it take to approve my building plan?

(b) How much do you charge to approve my building plan?

(c) If I require a Service Protection Report, how much will it cost?

(d) Are there any other charges that I may have to pay before you approve my building plan?

If your proposed building works are in close proximity to a Sydney Water asset, your WSC can advise on options and alternatives for your building words and the impact on Sydney Water assets. Your WSC will advise you if you require a Service Protection Report or a Work As Constructed plan of Sydney Water's assets, which enables accurate determination of the location of the building works in relation to the asset. These documents must not be greater than 24 months old and must be valid when the building plan is approved.

If you require a Service Protection Report, your WSC can facilitate you engaging the services of an accredited supplier. For a list of Accredited Suppliers of Service Protection Reports, see Sydney Water's website at www.sydneywater.com.au ➢ Building Developing and Plumbing ➢ Supplier Information ➢ List of Accredited Suppliers ➢ Service Protection Report (Pegout).

Your WSC can order a copy of a Work As Constructed plan for you or you can lodge a "Request for Asset Construction Details" application at a Quick Check Agent.

4. PRIOR TO LODGING BUILDING PLAN

Commencing 9 October 2006, all building plan approvals where the proposed building/structure/works are within a distance equivalent to twice the depth of Sydney Water's existing and proposed assets must have the assets accurately plotted on the

building plan (site plan). This includes existing and proposed assets within the subject property, adjoining properties and dedicated road reserve (including footpath area).

To enable the accurate plotting of Sydney Water assets on building plans, changes to the requirements for Service Protection Reports will also commence as of 9 October 2006 (see Sydney Water web site www.sydneywater.com.au ➢ Building Developing and Plumbing ➢ Supplier Information ➢ Supplier Instructions ➢ Service Protection Report).

The person or company producing the building plan must accept full responsibility for the accuracy of Sydney Water's assets shown on the plan, utilising the information supplied on the Service Protection Report.

If a building plan is produced after the 9 October 2006 utilising a valid Service Protection Report dated prior to the 9 October 2006, the person or company producing the building plan should, if possible plot Sydney Water assets on the building plan (site plan).

When a Service Protection Report is required, the supplier of the Report shall locate and peg/mark (Asset Indicators) Sydney Water assets and tie the peg/marks into property boundaries, permanent structures or recovery marks, that must remain in place and unaltered until all building works are completed. The supplier of the Service Protection Report shall accept full responsibility for the accuracy of the information provided on the Service Protection Report.

If your property requires a detail survey as part of your development/building application to your Local Consent Authority (Council), it is recommended that the Service Protection Report be carried out prior to the detail survey. The detail survey shall locate the pegs/marks indicating Sydney Water assets and the property boundaries, permanent structures or recovery marks shown on the report. The company or person preparing the building plan shall use the information on the detail survey to accurately plot Sydney Water assets on the building plan (site plan).

If a detail survey is not required, the applicant must provide a copy of the Service Protection Report to the company or person preparing the building plan. The company or person preparing the building plan shall locate the pegs/marks (Asset Indicators) and the property boundaries, permanent structures or recovery marks shown on the Service Protection Report and accurately tie them into the proposed building works.

If structural engineering plans are required for the building plan approval, they must show Sydney Water's existing and proposed assets on plan and cross sections, in accordance with the building plan. The structural plans must be produced in accordance with the specifications in this document.

5. REQUIREMENTS WHEN LODGING BUILDING PLANS

When you lodge your building plans for approval with a Quick Check Agent, you will need to submit your building plan (including site plan to scale).

If your proposed building works are in close proximity to a Sydney Water asset, the Quick Check Agent will advise you to engage the services of a WSC for the building plan approval. When you select a WSC you must provide them with your Building Plans and the Application Lodgement Summary for the Building Plan Approval Application (from the Quick Check Agent).

Note: In the event of plans being varied after approval, the revised plans must be submitted to your local Council and the Quick Check Agent.

5.1 If the building/works are over or adjacent to a Sydney Water asset:

Where it is determined that the proposed building works are within the Zone of Influence of a Sydney Water asset, approval of plans is usually conditional on your meeting certain requirements intended to safeguard both Sydney Water's asset(s) and your building works.

Proposed driveway crossings and/or any proposed works within dedicated road reserves (including footpath area) may impact on Sydney Water assets. If any building works are within the road reserve area, the builder/consultant/engineer shall ensure the finished surface levels do not impact or affect any Sydney Water asset. Any precautions or adjustment to Sydney Water assets shall be carried out in accordance with Sydney Water's requirements and all associated costs shall be the responsibility of the customer/applicant.

For building over/adjacent to sewer assets, refer to Appendix 1 Sewers - Permitted Building Works and Technical Requirements.

5.2 Possible precautions

The precautions you will need to take can only be determined after your proposed building works plans have been reviewed. However, the more usual precautions to be taken when building over/adjacent to a Sydney Water asset include maintaining adequate access to assets and extending foundations, piers etc below the Zone of Influence of a pipeline asset (refer to Figures) or to solid rock and concrete encasement of pipes.

This ensures that no part of the weight of the building works is transmitted to Sydney Water's asset and so eliminates, as far as practicable, possibility of the asset being damaged by the building works. Refer to Figures 2 and 5 for further details.

Foundations designs must be certified by a suitably qualified structural engineer.

6 WHEN CONCRETE ENCASEMENT OF SYDNEY WATER'S PIPES IS REQUIRED

All Sydney Water pipeline assets that are to be built over must be concrete encased unless otherwise determined by your WSC or Sydney Water. This serves to strengthen the pipes and to make the need for further maintenance unlikely. It also minimises the chances of leakages from pipelines.

All sewer pipelines requiring concrete encasement must be removed and replaced in-situ with pipe of approved material prior to encasing unless, once excavated, your WSC or Sydney Water's Field Inspector verifies that retention of the existing pipes are satisfactory.

Note: A Sydney Water accredited Constructor must be engaged to carry out the concrete encasement of pipes. Prior to works commencing, the Constructor must enter into an agreement with Sydney Water.

A list of Accredited Constructors is available on Sydney Water's web site at www.sydneywater.com.au ➢ Building Developing and Plumbing ➢ Supplier Information ➢ List of Accredited Suppliers ➢ Constructors *or* Constructors of Minor Works (Sewer) or by contacting Sydney Water on 13 20 92.

7 CLEARANCE REQUIREMENTS

Minimum clearances between the foundations of your building works and Sydney Water's asset will be specified. Clearances may also be specified from any concrete encasement surrounding a pipeline.

Minimum clearances enable Sydney Water to access its asset, should the need arise, without affecting the structural integrity of your works.

Sydney Water may consider other forms of practical access to its assets. Such access should be clearly indicated on your building/engineering plans.

8 MAINTENANCE STRUCTURES

Maintenance structures are designed to provide Sydney Water with 24 hour unrestricted access to its assets for both operation and maintenance purposes. For that reason, Sydney Water does not generally permit building works to be constructed over or near a maintenance structure.

Person access from the street to all maintenance structures must be maintained. A minimum one metre horizontal distance is required between building works and the outer edge of maintenance structures and other assets. Refer to Figure 5 and Appendix 1 for further details.

9 INDEMNITY LETTER

A property owner who proposes to build over/adjacent to a Sydney Water pipe or structure may be required to provide a letter indemnifying Sydney Water against any claims arising out of the presence, operation and/or maintenance of a Sydney Water asset within the subject property.

10 POINTS TO NOTE

No building operations should commence before your building plans have been approved and you satisfy all Sydney Water's requirements. The Sydney Water Act provides for demolition of structures not approved by Sydney Water.

You will be responsible for meeting the cost of any building over/adjacent precautions. As such precautions can add to the cost of your project, you may be well served by taking time to reassess your proposal to determine whether it can be located in a position which does not span or encroach on the Zone of Influence of a Sydney Water asset.

By protecting Sydney Water's assets when you build you will ensure, as much as possible, that your development will not be affected at some future time by Sydney Water activities.

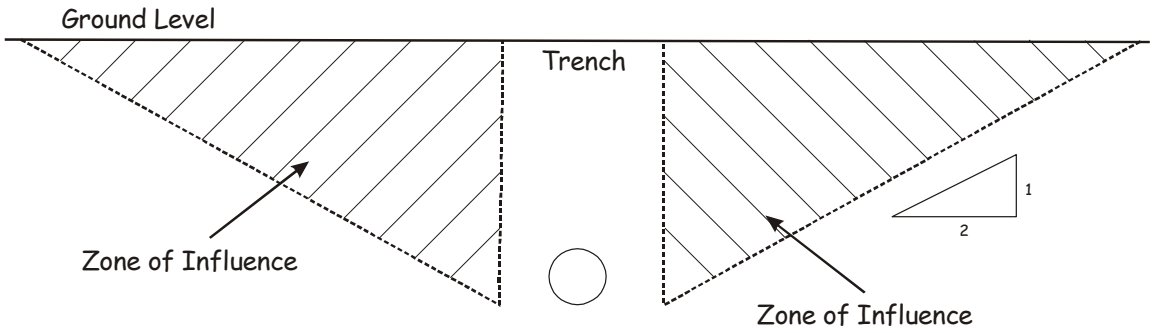
Ascertaining and complying with Sydney Water's requirements before carrying out building works should also obviate possible problems when endeavouring to sell a property.

FIGURE 1

ZONE OF INFLUENCE

Note: The Zone of Influence of a pipeline depends on the nature of the ground ("strata") in which the pipeline is located.

FIGURE 1.1 Sand, Filled Ground, Loam, Etc.



NOTE: In water charged ground, the Zone of Influence may extend further from the sewer than shown above.

FIGURE 1.2 Clay, Soil, Etc.

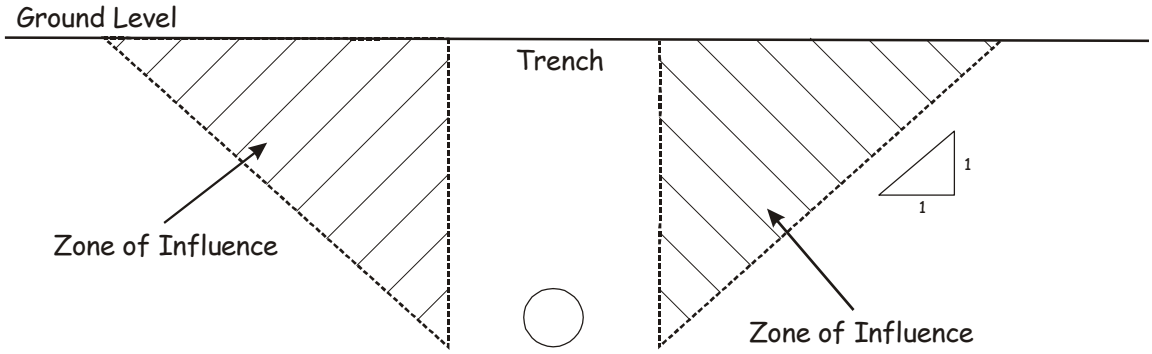


FIGURE 2

FOUNDATIONS IN ZONE OF INFLUENCE

FIGURE 2.1 Building Adjacent To Pipeline

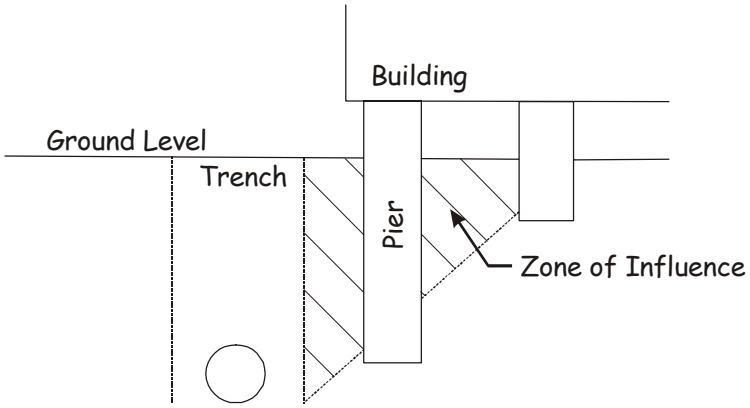


FIGURE 2.2 Building Over Pipeline

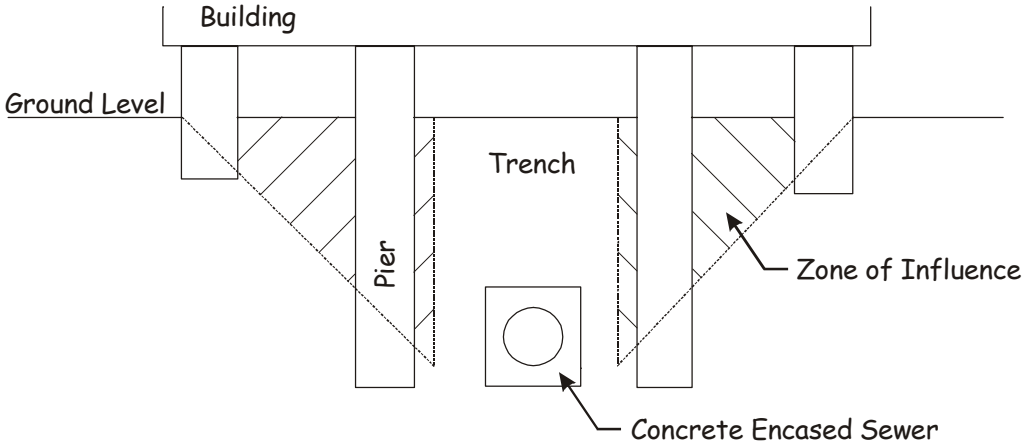
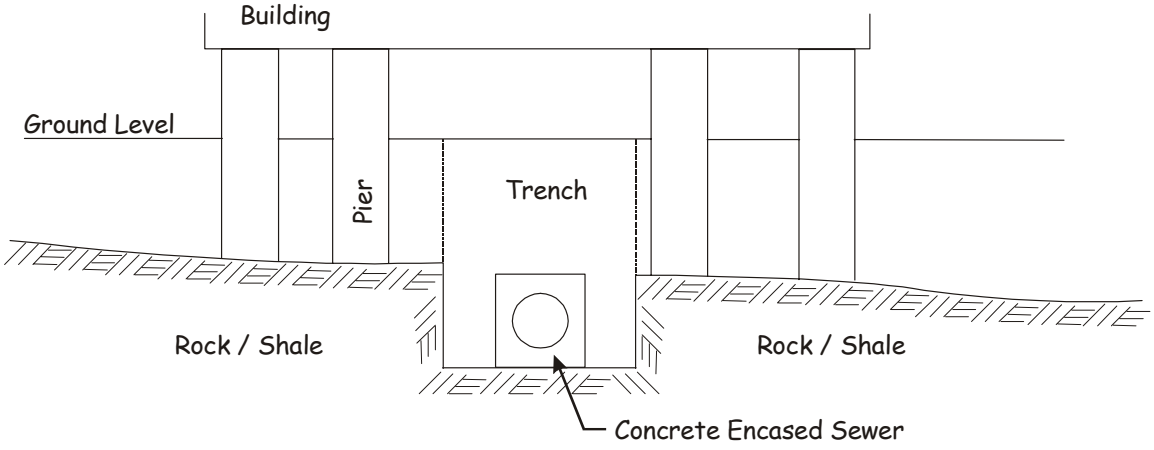


FIGURE 2.3 Building Over Pipeline – Rock/Shale Strata



Where a pipeline is constructed through rock or hard shale, piers are only required to be taken to the level of the rock/shale.

FIGURE 3

BUILDING OVER PIPELINE

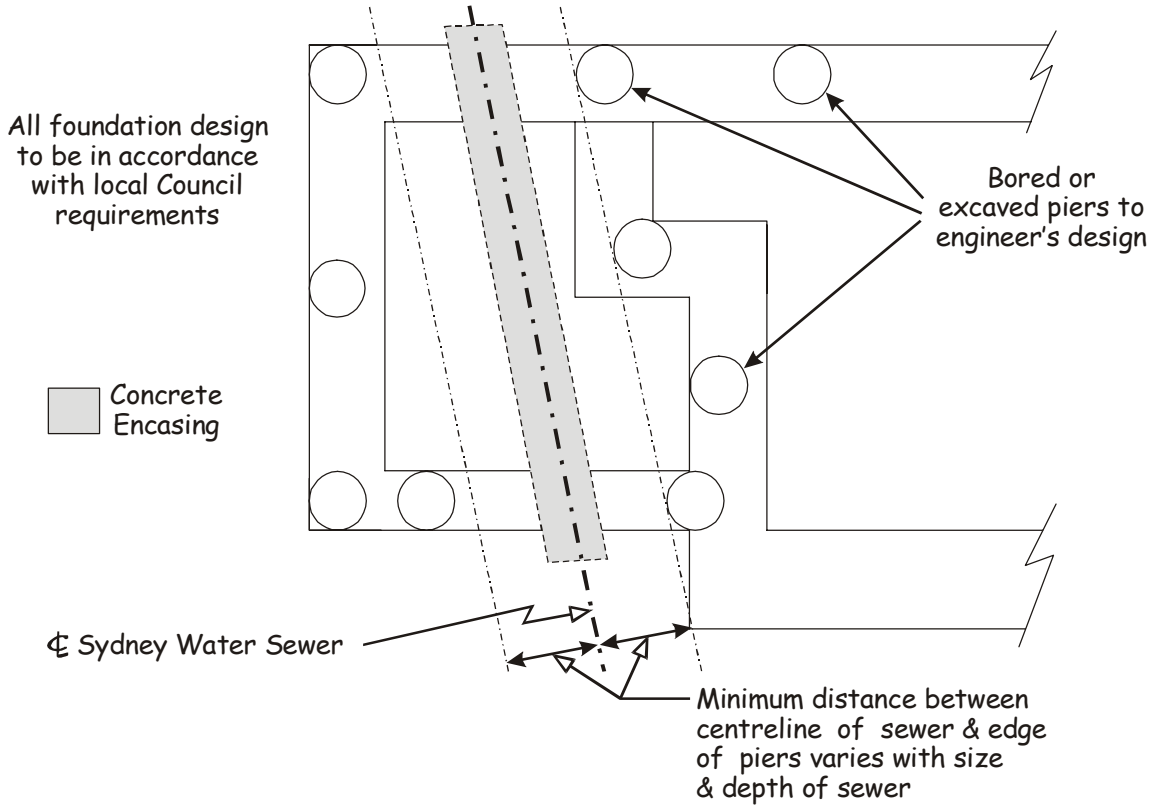


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FIGURE 4

REINFORCED CONCRETE POOL ADJACENT TO PIPELINE

FIGURE 4.1 Pool Base Below Pipeline Invert and Zone of Influence

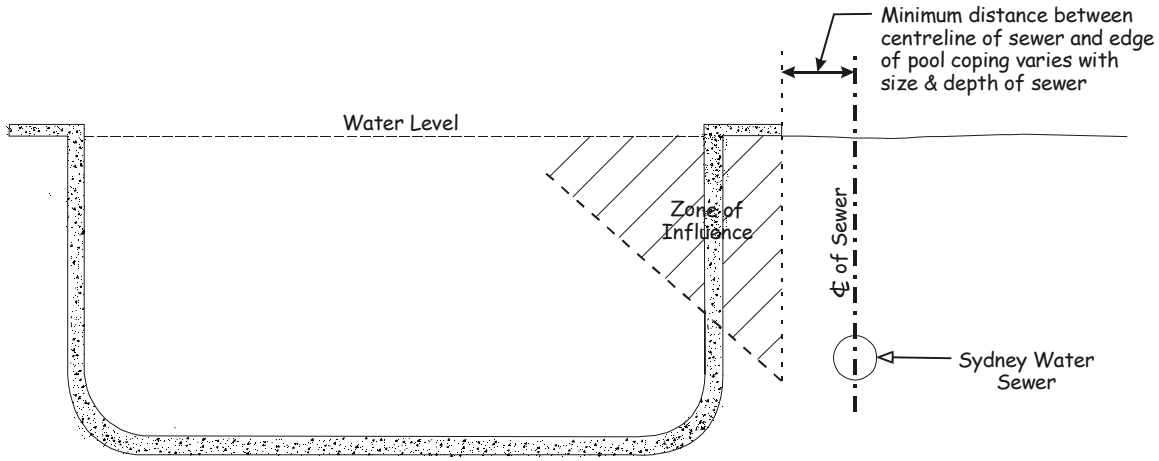


FIGURE 4.2 Pool Base Above Pipeline Invert and Zone of Influence

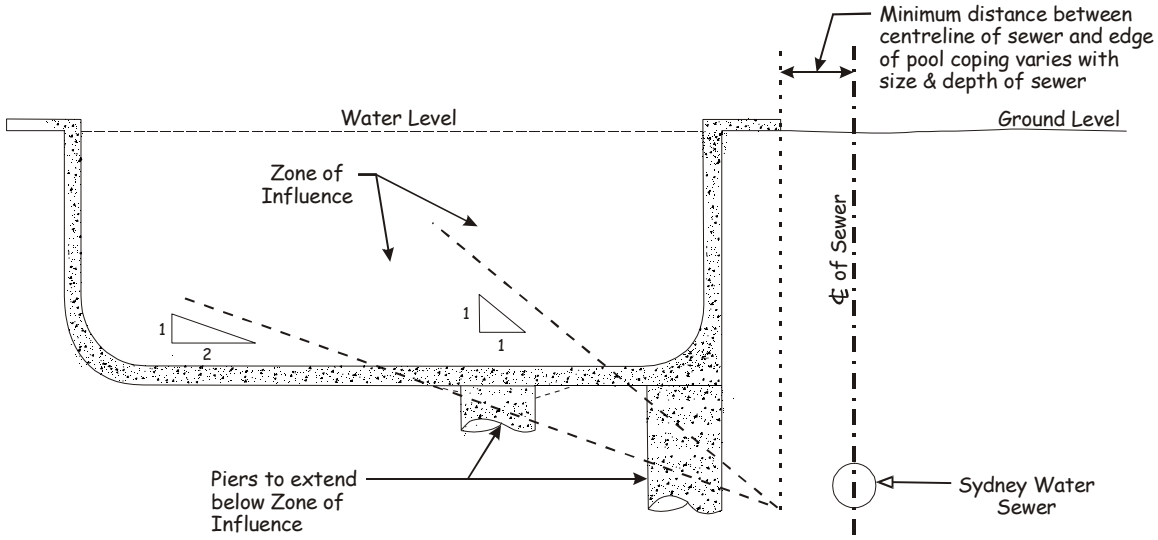
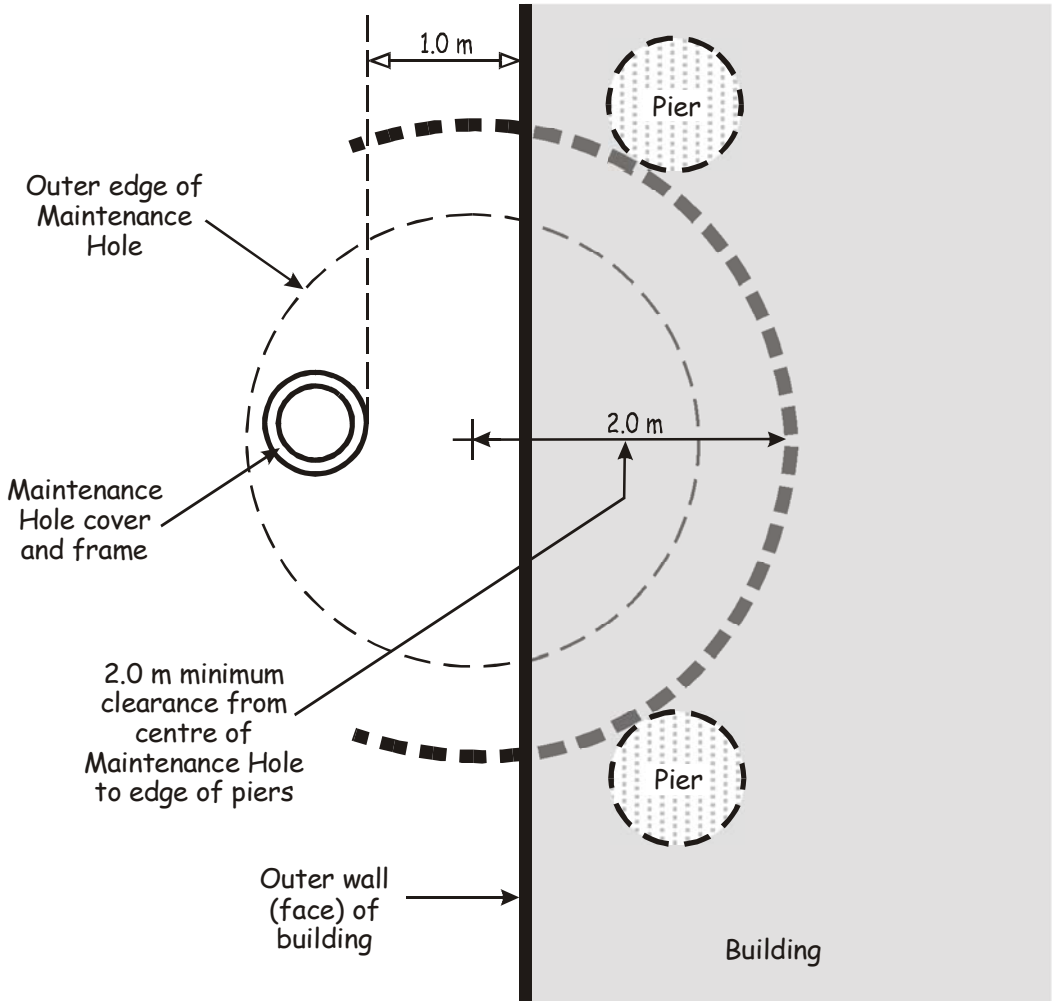


FIGURE 5

MAINTENANCE HOLE – MINIMUM CLEARANCES



APPENDIX 1

BUILDING OVER/ADJACENT TO SYDNEY WATER ASSETS

SEWERS

PERMITTED BUILDING WORKS AND TECHNICAL REQUIREMENTS

1. INTRODUCTION

These Requirements are to be read in conjunction with Guidelines for Building Over/Adjacent to Sydney Water Assets. They describe building works permitted to be located **over and/or adjacent** to Sydney Water sewers and associated structures, as well as detailing technical requirements pertaining to such proposals.

The Requirements represent "deemed-to-comply" solutions. Alternative solutions may be accepted provided it can be demonstrated that they meet equivalent performance criteria or provide an equivalent level of asset protection.

> Applications to build over/adjacent in respect of any works not specifically covered by these Requirements must be referred to Sydney Water for advice.

2. SCOPE OF REQUIREMENTS

These Requirements apply to:

- Gravity pipe sewers of ≤DN 225, depth to invert ≤6.0 m and all pipe materials **except** as set out below
- Associated structures.

The requirements <u>do not</u> apply to the following:

- Pipe materials as follows:
  - Cast Iron and Cast Iron Cement Lined
  - Ductile Iron Cement Lined
  - Mild Steel
  - Asbestos Cement and
  - Reinforced Concrete
- Non-pipe sewers (e.g. oviform sewers)
- Sewers located in tunnels
- Sewers located in Mine Subsidence areas (for maps of subsidence areas, visit www.minesub.nsw.gov.au)
- Sewers located in water charged ground
- Sewers located in known or potential landslip areas
- Building works which incorporate special foundations having potential to impact the sewer e.g. ground anchors.

3. DEFINITIONS

See Guidelines Clause 2 for Definitions.

4. TYPES OF BUILDING WORKS

Type of Building Works	Description
A Shed ≤10 m^2 in area, Open Carport, Open Verandah, Pergola, Gazebo, Deck, Sail	• Essentially "stand-alone" lightweight structure not structurally integrated into another building • Foundation slab on ground (max 100 mm thick) with no edge beams or thickened pads and nil or minimal reinforcement • STRUCTURE IS CONSIDERED TO BE READILY REMOVEABLE
B Garage, Shed or Workshop > 10 m^2 in area	• Essentially "stand-alone" structure not structurally integrated into another building • Certified foundation design required
C Residence	• Domestic single- or multi-unit dwelling to a maximum of three-storey walk-up • Includes extensions to existing such buildings
D Commercial / Industrial Building	• Non-residential building, either single or mixed-use • Residential building > three-storey walk-up • Includes extensions to existing such buildings
E Eave and/or Cantilever on Building	• Roof and/or other extension (eg. balcony) that extends beyond the external wall(s) of the building/structure
F Fence	• Lightweight structure of metal, wire, timber or similar • A non-lightweight fence (eg. stone or masonry) is to be considered as a retaining wall • STRUCTURE IS CONSIDERED TO BE READILY REMOVEABLE
G Retaining Wall	• A wall > 1 m in height above footing and requiring Council consent • A stone or masonry fence > 1 m in height i.e. a fence which is not readily removable is considered to be a retaining wall
H Driveway, Paving	• Paved area or area of concrete including stamped or stencilled concrete
I Above-ground Swimming Pool / Spa Water Tank ≥ 10,000 L	• The majority of the structure is above ground and does not require certified foundation design • Swimming pool or water tank is NOT concrete or fibreglass • STRUCTURE IS CONSIDERED TO BE READILY REMOVEABLE
J In-ground Swimming Pool / Spa / Stormwater / Detention Tank	• The majority of the structure is below ground
K Excavation (cut/fill) and Landscaping	• Alteration to existing ground level • Landscaping includes rockeries etc but not retaining walls

BUILDING WORKS TYPE	PERMITTED BUILDING WORKS AND TECHNICAL REQUIREMENTS		
	Sewer [1, 2, 3]	**Maintenance Structure** [4]	**Ventshaft**
A Shed ≤10 m^2 in area, Open Carport, Open Verandah, Pergola, Gazebo, Deck, Sail	Construction over and/or adjacent permitted provided supports/piers not directly over sewer. Indemnity letter required. Peg out required if piers/support within Zone of Influence No other special requirements.	**Construction over maintenance structure not permitted.** Construction adjacent: • Minimum 1 m horizontal clearance from face of building works to outside rim of maintenance structure entry point • Minimum 1 m all-round clear access to be maintained • Level of maintenance structure cover to be adjusted to match any altered adjoining ground level [5] • Subject to approval, maintenance structure cover may be incorporated in slab • Person access from the street to maintenance structure to be maintained • If vertical clearance between top of maintenance structure and underside of building works is ≥2.8 m, refer to Type E works	**Construction over ventshaft not permitted.** Construction adjacent: • Minimum 1 m horizontal clearance between face of building works and outside edge of ventshaft base • Minimum 1 m all-round clear access to be maintained between structure and nearest edge of ventshaft base

BUILDING WORKS TYPE	PERMITTED BUILDING WORKS AND TECHNICAL REQUIREMENTS		
	Sewer [1, 2, 3]	**Maintenance Structure** [4]	**Ventshaft**
B Garage, Shed or Workshop >10 m^2 in area	Construction over and/or adjacent permitted subject to: • Peg out to confirm location of sewer • Sewer to be made maintenance free • Certified design of foundations if works are within Zone of Influence (design may incorporate concrete encasement of sewer) [6]	As for Type A works	**Construction over ventshaft not permitted.** Construction adjacent: • Minimum 1 m horizontal clearance between face of building works and outside edge of ventshaft base • Minimum 1 m all-round clear access to be maintained between structure and nearest edge of ventshaft base Certified foundation design required in respect of impact on sewer as well as ventshaft
C Residences	As for Type B works For multi-storey additions that do not increase the original foundation area, any existing approval to build over/adjacent to a sewer remains valid If no building over/adjacent approval for ground floor construction, indemnity letter required	As for Type A works For multi-storey additions that do not increase the original foundation area, any existing approval to build over/adjacent to a maintenance structure remains valid	As for Type B works except that ventshaft may be attached to external wall of works
D Commercial / Industrial Building	As for Type B works	As for Type C works	As for Type B works except that ventshaft may be attached to external wall of works

BUILDING WORKS TYPE	PERMITTED BUILDING WORKS AND TECHNICAL REQUIREMENTS		
	Sewer [1, 2, 3]	**Maintenance Structure** [4]	**Ventshaft**
E Eave and/or Cantilever on Building	As for Type B works except that sewer does not have to be made maintenance free if minimum 2.8 m vertical clearance between finished surface level and underside of eave/cantilever	Construction over and/or adjacent to maintenance structure permitted subject to: • Minimum 1 m horizontal clearance between face of building works at finished surface level and outside rim of maintenance structure entry point • Minimum 2.8 m vertical clearance between top of maintenance structure cover and underside of eave/cantilever • Level of maintenance structure cover to be adjusted to match any altered adjoining ground level [5] • Certified design of foundations	As for Type B works
F Fence	Construction over and/or adjacent permitted	**Construction over maintenance structure not permitted.** Construction adjacent: • Minimum 1 m clear access to be maintained except on boundary fences • Maintenance structure cover level to be adjusted to match any altered ground level [5]	**Construction over ventshaft not permitted.** Construction adjacent: • Minimum 1 m all-round clear access to be maintained between structure and nearest edge of ventshaft base
G Retaining Wall	As for Type B works except concrete encasement not required if: • wall has no structural footing e.g. Koppers log wall or • any structural footing is ≤1m wide and wall intersects sewer within an arc of 90° ± 45°	As for Type F works Subject to approval, maintenance structure cover may be incorporated into wall	As for Type F works

BUILDING WORKS TYPE	PERMITTED BUILDING WORKS AND TECHNICAL REQUIREMENTS		
	Sewer [1, 2, 3]	**Maintenance Structure** [4]	**Ventshaft**
H Driveway, Paving	Construction over and/or adjacent permitted. Depth to top of sewer to comply with WSA 02 [7] Driveways designed for heavy traffic load are to incorporate construction joints at maximum 2 m intervals to minimise driveway/paving damage if need to excavate sewer	**Construction over or covering of maintenance structure access cover not permitted.** Construction adjacent and/or around: • Maintenance structure access cover may be incorporated into driveway / paving subject to approval • Maintenance structure access cover level to be adjusted to match finished driveway / paving level [5]	To be protected against vehicular impact (e.g. by bollards) Ventshaft base may be integrated into paving or driveway
I Above-ground Structure, Swimming Pool / Spa Water Tank ≥ 10,000 L	As for Type A works Depth to top of sewer to comply with WSA 02 [7]	As for Type A works	As for Type A works
J In-ground Swimming Pool / Spa/Stormwater/ Detention Tank	As for Type B works In addition, maintain following minimum clearances between centreline of sewer and edge of pool coping: • 600 mm for sewer <2.5 m depth to invert • 900 mm for sewer ≥2.5 m depth to invert	As for Type A works Additionally, foundation design to be certified	As for Type B works
K Excavation (cut/fill) and landscaping	Cut not to reduce pipe cover to less than that specified in WSA 02 [7] Fill not to increase depth to invert to > 6 m	Maintenance structure cover level to be adjusted to match altered ground level [5] Person access from the street to maintenance structure to be maintained	Stability of ventshaft base not to be compromised by cut/fill Ventshaft may be integrated into landscaping provided minimum 1 m all-round clear access to be maintained

NOTES:

1. Minimum horizontal clearance of 600 mm from centre line of sewer to edge of piers/structure required for sewers ≤2.5 m depth to invert and 900 mm clearance for sewers >2.5 m depth to invert.
2. Vertical clearance between top of sewer concrete encasement and underside of any slab/footing/structure etc to be minimum 150 mm. Minimum clearance may be reduced to absolute minimum of 50 mm with use of 50 mm thick compressible membrane.
3. Concrete encasement of sewers to extend minimum of 600 mm beyond face of building works.
4. Nearest face of piers to be ≥2 m from centre of maintenance structure. Refer Guidelines Figure 5.
5. Adjustment of maintenance cover level may be carried out only by Sydney Water or under a Minor Works Agreement by a Sydney Water accredited S1 or S2 Constructor.
6. Concrete encasement is deemed to render a sewer essentially “maintenance free” i.e. need for future access not anticipated.
7. Sewerage Code of Australia (Sydney Water Edition) WSA 02.