

# LIVERPOOL PLAINS SHIRE COUNCIL

## POLICY REGISTER

Policy No. 2.21

**POLICY TITLE: BUILDING IN THE VICINITY OF SEWER MAINS**

**File Reference No.:** 13.6.1  
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### **OBJECTIVES**

The objective of Liverpool Plains Shire Council's Building in the Vicinity of Sewer Mains Policy is to protect existing and future assets, both privately and corporately owned from potential damage. This policy also looks at allowing access for repairs, upgrades and inspection of LWU assets and whom is subject to the associated costs.

***All possible alternatives need to be considered before requesting written consent of Council's Water Services Manager to build over sewerage infrastructure.***

**POLICY STATEMENT**

**Initial Stages**

In planning a new development it is vital to ensure any encumbrances are identified and located on the site. These encumbrances may include for instance, but are not limited to: sewerage mains, water mains, stormwater pipes and easements. Plans of the existing sewerage reticulation are available for viewing at the office of Liverpool Plains Shire Council. Liverpool Plains Shire Council does not warrant or guarantee in any way the accuracy of these plans (and in fact acknowledges that the plans are not completely accurate) and provides them as a guide only.

The sewerage infrastructure shall be accurately located on-site by the Applicant, prior to the commencement of any design works for proposed buildings or structures and the actual location and depth shall be recorded on a site plan. Dimensions shall be taken from permanent buildings or structures, or property boundaries on-site. The site plan shall then be submitted to LPSC for updating of records.

**1. Consideration of build over sewer requests**

Any application to Liverpool Plains Shire Council to build adjacent/over sewer mains will only be considered if the alternative options outlined below are found to be not viable.

Liverpool Plains Shire Council's approach to 'Build in the Vicinity of Sewer' requests is as follows:

- Relocate proposed structure
- Relocate Utility's affected assets
- Provide protection measures and build over/adjacent to asset

It is the developer's responsibility to investigate and document the above options, in consultation with Liverpool Plains Shire Council. Some guidance regarding the above options is provided below.

***1.1. Relocation of proposed building***

In all instances the first option considered should be the relocation of the proposed building away from the existing sewer assets.

If this is not feasible due the position of the sewer main on the property adversely restricting the use of the land relocation of assets may be considered.

***1.2. Relocation of assets***

Liverpool Plains Shire Council will only consider relocation of existing sewer assets if the applicant can demonstrate that building away from the sewer adversely restricts the use of the land. Any relocation works need to ensure all required design standards (cover, grade, position) are still met and that the capacity or functionality of the assets is not reduced. All costs associated with the relocation of assets are to be funded by the developer/applicant.

*Relocation - Gravity mains*

Where approval to relocate a sewer is granted the Developer/Applicant will be required to submit plans in accordance with Liverpool Plains Shire Council design guidelines. Relocating the sewer following approval is required before construction of the proposed building/structure can commence. The applicant will need to liaise with Liverpool Plains Shire Council regarding the bypassing of live sewage flows.

*Relocation - Rising mains*

Where approval to relocate a rising main is granted the Developer/Applicant will be required to submit plans in accordance with Liverpool Plains Shire Council design guidelines. Following approval the applicant is required to relocate and ensure proper function of the rising main before construction of the building/structure can commence. The applicant will need to liaise with Liverpool Plains Shire Council regarding the bypassing of live sewage flows.

*Relocation – Easements*

The Developer/Applicant may be required to acquire/provide an easement in accordance with Liverpool Plains Shire Council requirements over a relocated gravity and/or rising main.

**1.3. Building over sewer**

The LWU will only consider a building/structure over the sewer main in exceptional circumstances and then only if the applicant can demonstrate that relocating the building/structure and/or relocation of the sewer is not feasible.

The Developer /Applicant shall consider an integrated approach and demonstrate that all associated risks can be managed with marginal costs if building over a sewer main is to be considered and accepted by Liverpool Plains Shire Council. All costs associated with the works are to be funded by the developer/applicant.

*CCTV Inspection*

Any application to build over a sewer must include the following:

- A CCTV inspection of the subject sewer, undertaken by a contractor qualified and with the necessary experience to do so, or by Council at the applicant's expense.
- The results of the CCTV inspection are to be submitted to Council with the application. The inspection may be used as a dilapidation survey, with the developer required to fully fund any repair work required to rectify damage caused by their development.

*Results of the CCTV Inspection*

Depending on the results of the CCTV inspection Council may require the Developer/Applicant to:

- Reconstruct the sewer main in its existing location using construction materials as specified by Council and in accordance with requirements set down within Council Engineering Guidelines for Subdivision and Development and approved plans or;
- Reline the existing sewer main by the engagement of contractors qualified to undertake such work. The name of contractor and the relining technique to be utilised will be submitted to Council for approval prior to work commencing.
- All works on gravity sewer mains must be completed for the full extent between manholes.

### Stormwater Flow Paths

Typically, existing sewers are located along overland drainage paths. If new buildings are proposed over existing sewers, then the Major overland flow path for the site and catchment should be considered to minimise the risk of flooding to existing and future properties.

An integrated approach of water, sewer and irrigation and drainage assets needs to be considered simultaneously.

## **2. Where the policy applies**

This Building in Vicinity of Sewer Mains policy applies to the following three structure types:

- Heavy or Permanent Structures
- Light Weight or Semi-Permanent Structures
- Miscellaneous Structures (Rainwater Tanks, Driveways etc.)
- High rise developments

This policy applies to any development, such as the above which is built in the vicinity of LWU assets.

## **3. Category of structures**

### ***3.1 Category 1 - Heavy or permanent structures***

These structures are typically constructed from masonry, brick, steel, timber and concrete and it is neither reasonable nor practical to remove or dismantle the structure for the purpose of carrying out sewer repairs or refurbishment.

Examples of structures in this category include:

- Houses
- Factories
- Warehouses
- Brick Garages / Workshops
- Structures that are permanently habitable or used as a work place.
- In-Ground Swimming Pools

If category 1 structures are to be built in the vicinity of sewers, the requirements for protection of and access to the existing sewerage network in the following sections must be followed.

### ***3.2 Category 2 - Lightweight or semi-permanent structures***

These structures are typically of a type of construction that would make it reasonable to remove/dismantle and re-erect if access to the main, by excavation, was required.

Examples of structures in this category include:

- Pergolas
- Garden sheds
- Above ground pools (restrictions apply)
- Carports
- Timber / fibro / aluminium garages
- Glass houses / ferneries
- Barbecue facilities

These structures must be readily removable in the case of work required to take place on LWU assets. Asset protection measures as outlined in Section 5, may still apply to certain structures within this category.

Any future costs arising from the requirement to remove and subsequently reassemble these structures, as directed by Liverpool Plains Shire Council, will be at the full cost of the owner.

### **3.3 Category 3 – Miscellaneous**

Structures in this Category do not normally require protection of the sewer mains.

- Structures in this Category include:
- Fences
- Driveways (concrete, asphalt, pavers etc)
- Tarmac areas

As long as minimum depth requirements for sewer main have been met, no special protection measures for the sewer main should be required. However, if uncertainty exists in cases of anticipated high loadings or where sewer mains are less than minimum depth advice shall be sought from Liverpool Plains Shire Council.

Any special conditions applied to Category 3 structures would be on a case-by-case basis and would include in part a stipulation that any removal and reinstatement of the structures (involved with Council accessing the sewer main) would be at the cost of the owner.

Provisions required for access to the existing sewerage network still apply.

Note that Swimming Pools are discussed in Section 9 and Retaining Walls are discussed in Section 10.

## **4. Construction not permitted**

Structures will not be permitted to be built over and/or in close proximity to the following:

- Sewer rising mains, surcharge mains and critical gravity mains (generally all sewer mains of greater diameter than 300mm mains and/or deemed to be excessively deep ie. greater than 3.0m), as determined by Liverpool Plains Shire Council.
- Any gravity sewer that, in the opinion of the utility, is in a poor condition. Exposing of the sewer, and/or CCTV may be required prior to construction. This inspection may determine that repair/replacement may be required. Any subsequent repair/replacement work will be at the developers cost.
- Sewer manholes, lampholes, maintenance points and junctions where sufficient clearances cannot be achieved. (See Section 2.7)
- No building within Liverpool Plains Shire Council easements.

## **5. Asset protection measures**

Where construction of any Category 1 or 2 structures will impose a load within an existing sewer assets zone of influence (see Section 2.6), Liverpool Plains Shire Council may request the developer to carry out any combination of the following protection measures:

- Concrete encasement
- Piering of foundations

The protection measures may also be required due to other factors affecting the asset such as available cover.

**5.1 Concrete encasement**

Concrete encasement of the sewer main may be requested for the protection sewer mains due to additional loads imposed by the works. Concrete encasement may also be requested if Liverpool Plains Shire Council minimum cover requirements cannot be met.

Any concrete encasement is to comply with the WSAA Standard Drawing (SEW 1205) and the following specification:

- Only rubber ring jointed vitrified clay and PVC pipes may be encased in concrete. Permission may also be given to replace other types of pipes with PVC pipes prior to encasement depending upon the location and criticality of the lines.
- In trenches of material other than rock, encasing is to extend 150mm under, on both sides and on top of the pipe barrel. For trenches in rock, encasing is to extend 100mm under the pipe barrel, 150mm on top of the pipe barrel and for the full width of the excavated trench.
- Unless otherwise specified, all flexible pipe joints are to be maintained. The minimum length of the encasement will be the total length of the sewer that is affected plus a minimum of 1000mm on the each side plus any additional length to ensure encasement starts and finishes at a flexible joint. (Subject to soil conditions and depth of sewer this length may increase)
- If a manhole is less than 2 metres from the end of encasement, as required above, the encasement is to be extended up to the second flexible joint from that manhole.
- Backfilling of the trench with suitable material as per specification must not commence until at least 48 hours after placing the concrete.
- Concrete encasement shall not be poured integral with any other foundation or structure. Concrete should be minimum class N20 or N25 where a reinforced concrete design is required.
- Sewer junctions that are permitted to be incorporated in proposed concrete encasement are to be upgraded to a rubber ring jointed junction in order to maintain flexibility at the junction branch.
- Where the encasing of sewers in adjoining properties is required, written approval from the adjoining owner to enter the property to carry out the works will be required prior to approval being granted for works to commence.

All costs associated with concrete encasements are to be borne by the developer. Liverpool Plains Shire Council works inspectors must be present when encasement work is being carried out.

**5.2 Piering of foundations**

Piering of the proposed structures foundations may be requested to transfer loads outside an assets zone of influence. A certified design prepared by a suitably qualified and experienced Engineer will be required to accompany foundation designs. The plan shall show the design of all footings, beams and piers and clearly note required clearances, ground levels and nominated soil classifications,

The following requirements apply to foundation piering:

The building and its foundations are to be designed in such a way that no building loads are transmitted to the utility's sewer and where possible, the pipe can be repaired or replaced at any time without affecting the stability of the building.

Foundations within an assets zone of influence will require piering to a minimum depth of 150mm below the zone of influence of the affected asset or until solid rock is encountered.

A minimum horizontal clearance of 1 metre is required between any piers and the face of a sewer main.

The use of displacement and screw pile construction methods will require approval by Liverpool Plains Shire Council and may require additional clearances to existing assets as directed.

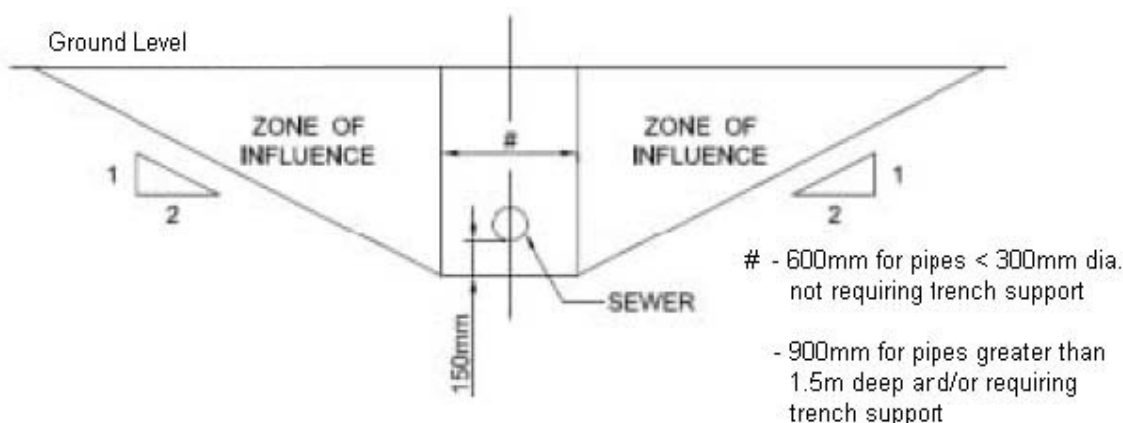
**6. Zone of influence**

The Zone of Influence is an area extending both horizontally and longitudinally along the alignment of an underground asset. This area is considered as that part of the ground where:

- Settlement or disturbance of the ground surrounding the pipe may cause damage to buildings or structures on the surface above.
- Loads from buildings or structures on the surface may have an impact on the buried pipe.

The zone of influence shall be determined by extending a line at an angle of 2 (Horizontal): 1 (Vertical) to the surface, starting from a point 150mm below the invert of the sewer main and half of the trench width measured horizontally from the pipes centreline (See figure below)

**Figure 1 Zone of Influence**



It is Liverpool Plains Shire Council discretion whether to consider a steeper angle of repose (max 1H:1V) for stiff soils (clays etc). Geotechnical investigations and a report from a suitably qualified and experienced Geotechnical Engineer need to be provided by the applicant to support such requests.

**7. Clearances from access structures**

Any proposed structure shall not prevent future access to existing maintenance structures associated with sewerage assets. These include manholes, lampholes/maintenance shafts and sewer dead ends.

A minimum horizontal clearance of 1.5m is required around existing access structures as well as a minimum vertical clearance of 3m. The horizontal setback shall increase to 2m if two or more sides of an access structure are built around. The fourth side must be open and accessible at all times.

### ***7.1 Access requirements***

Liverpool Plains Shire Council requires that all sewer access structures be accessible at all times in case of maintenance or emergency situations.

Developments on properties with sewer manholes or lampholes must provide at least 0.9 metre wide clear access to the sewer structures ie. along the boundary between fence and building.

This is necessary to allow Liverpool Plains Shire Council staff access with their "tools of trade" such as cleaning rods and lid lifting equipment.

Developments which locate sewer manholes or lampholes in security areas must make suitable arrangements for access by Liverpool Plains Shire Council sewer operations staff for maintenance or emergency work.

## **8. Existing encumbrances**

Where structures have been built over an underground pipeline without Council approval then Council may require that the structure be demolished, moved or substantially modified so that it complies with this policy.

Where it is necessary to access an underground line for maintenance or repair work Council will not be held liable for the cost of restoring any illegal structures and the property owner may be charged for extra work required due to the illegal structure.

Where a structure has been given permission, previously by Council, to be built over a pipeline then no further extensions, additions or reconstructions will be allowed without further assessment. Council recognises that the existing structure presents a risk to both the building and Council's liability. Therefore Council will assess each structure on its own merit to give permission for additions.

## **9. Swimming Pools**

### ***9.1 Above ground swimming pool***

Above ground pools without floor decking around the pool, and not constructed of concrete or fibreglass, are considered to be semi permanent structures that are able to be removed on request to enable access to the sewer.

Special sewer protection provisions are not required for these pools provided that they are placed on the existing natural ground levels and minimum cover requirements to the sewer are met. Clearances to sewer access structures described above still apply. The owner should be advised that all costs associated with removal and reinstatement of the pool for access to the sewer main will be at the owner's cost.

Above ground pools with permanent decking are considered to be permanent structures and are subject to the conditions outlined in Section 9.2.

### ***9.2 In-ground swimming pool***

#### ***In-ground Fibreglass pool***

The following requirements apply to fibreglass pools:



- Minimum horizontal clearance from the pool to the face of sewer pipe of 1.5m
- If a fibreglass pool is constructed within the zone of influence of a sewer main it should be designed and certified as being self supporting with foundations founded below the zone of influence.
- No pool shall be located closer than 1.5 metres to any sewer maintenance structure (manholes etc).

#### In-ground Concrete pool

The following requirements apply to concrete pools:

- Minimum horizontal clearance from the pool to the face of sewer pipe of 1m.
- If the concrete pool is within the zone of influence of a sewer main, then the foundations of the pool shall be founded below the zone of influence (eg. piers) to ensure the pool is self supporting.
- No pool shall be located closer than 1.5 metres to a sewer maintenance structure (manholes etc).

### **10. Retaining walls**

The construction of retaining walls is subject to the following requirements:

- Where the footings of a wall would encroach on the zone of influence the wall is to be designed in accordance with Section 5.
- Generally walls over 1.0m in height would not be permitted within 1.0m of the main.
- Minimum cover over the main is to be maintained or an Engineer's assessment is required for protection of the main.
- The wall is to be set back at a minimum of 1.5m from the centre of a sewer maintenance structures.
- A retaining wall less than 1.0m in height will be permitted over or within the zone of influence without the requirement for an Engineer's design provided that:
  - the wall is at least 3.0m from an adjoining property or building/structure;
  - the wall would not be subject to vehicle loadings.
- Any retaining wall crossing a sewer main must be supported over the main with a reinforced concrete foundation designed in accordance with Section 5 to ensure no loads from the wall are transferred to the sewer main ie. bridging slab foundation.

### **11. Filling over sewer mains**

The allowable depth of fill that can be placed over a sewerage main depends on the material type and stiffness class of the existing pipe. Site filling that increases the depth to the main above 2.5m will require an application to Council and subsequent approval. Any application must include certification from suitably experienced qualified civil, structural or geotechnical engineer that:

- The loading imposed will not adversely affect the underlying sewer, or
- The remediation work proposed will prevent any adverse loading on the underlying sewer

The placing of fill to excessive depths over Council's main is not permitted (5m is a maximum depth for practical access) regardless of the structural capacity of the pipe. No fill is to be placed over sewer manholes and manholes are to be raised in conjunction with any site filling. Finished lid levels of maintenance structures, relative to ground level, will be advised by Liverpool Plains Shire Council based on the land use and prevalence of flooding.

## **12. Excavations over and adjacent to mains**

### ***12.1 Excavations***

Generally excavations over or adjacent to a sewer main are not to reduce the earth cover over the main to less than the minimum limits as detailed in Council's Engineering Guidelines for Subdivisions and Developments.

Any proposal to reduce cover over a sewer to less than the limits imposed in these guidelines will require an application to Council and subsequent approval. Any application must include, amongst other things, certification from a suitably experienced qualified civil, structural or geotechnical engineer that:

- The loading imposed will not adversely affect the underlying sewer, or
- The remediation work proposed will prevent any adverse loading on the underlying sewer

### ***12.2 Earth embankments***

On sloping sites there is potential that earthworks down slope of an existing sewer main could present a risk for land slip or erosion of soil providing cover and/or side support to an existing sewer main.

Any proposed regrading of land immediately down slope of an existing sewer main should be designed with a slope no steeper than 3 (horizontal) to 1 (vertical) to ensure future erosion and/or land slip does not reduce cover and/or support to the existing sewer main. Steeper embankments would be permitted where the embankment is certified by a suitably experienced qualified civil, structural or geotechnical engineer and approved by Council.

Retaining walls may be required to provide support down slope of existing sewer mains if substantial regrading is proposed.

## **13. Abandoned mains**

Pressure or gravity mains which have been abandoned due to relocation to suit a particular development may remain in the ground providing the abandoned mains are capped to prevent the movement of water. Liverpool Plains Shire Council may require certain abandoned mains to be backfilled with grout depending on size, material type and proximity to other structures.

Alternatively the abandoned mains are to be removed and the trench backfilled and compacted to at least 98% standard compaction. Note that Workcover requirements will govern the handling of any Asbestos Cement materials.

## **14. Planting of trees**

Tree roots can penetrate into sewerage pipes through joints or damaged sections of pipes, causing blockages and subsequent overflows. As a result, certain species are not recommended to be planted near sewer mains. A list of the highest risk species is provided in Appendix 1. All tree plantings shall be located a minimum of 2.0m horizontal clearance from the sewerage infrastructure.

**15. Costs**

The Developer/Applicant will be responsible for all costs associated with:

- All investigation and design and any costs associated with seeking approval
- If approval is granted then any construction costs
- Repairing any damage to a sewer main or associated sewer infrastructure caused by construction over or near an existing sewer.

If Liverpool Plains Shire Council decides to upsize a sewer main subject to relocation by a developer, then a cost sharing arrangement may be agreed to between both parties that reflects the extra costs associated with installing a larger diameter main at the time of relocation by the developer. Note this may not apply where the upsizing of the pipe is required due to the subject development.

The Developer/Applicant will have no claim on Council for any costs incurred in the event that approval is not granted.

**DEFINITIONS**

In this policy, unless the context requires otherwise:

*Applicant:* means a person who applies to LPSC for Council's written consent to build over, interfere with access to, increase or reduce the cover over sewerage infrastructure.

*Access chamber:* means a below ground structure with a sealed cover constructed in the line of the sewer or sanitary drain to facilitate maintenance of the sewer or sanitary drain;

*Sewer:* means a conduit for the carriage of sewage, which is vested in LPSC;

*Sewerage infrastructure:* means infrastructure used to receive, transport and treat sewage or effluent, including, for example, sewers, access chambers, maintenance holes, vents, engines, pumps, structures, machinery and outfalls vested in LPSC as the sewerage service provider;

*LPSC:* means Liverpool Plains Shire Council;

*LWU:* means Local Water Utility

*CCTV Inspection:* means Closed Circuit Television Inspection;

# APPENDIX 1 – PLANTS TO AVOID NEAR SEWER MAINS

| <b>Botanical name</b>    | <b>Common Name</b>           | <b>Damage rating</b> |
|--------------------------|------------------------------|----------------------|
| Cinnamomum camphora      | Camphor Laurel               | Extreme              |
| Ficus species            | Fig Trees & Rubber Plants    | Extreme              |
| Populus species          | Poplars                      | Extreme              |
| Salix species            | Willows                      | Extreme              |
| Erythrina species        | Coral Trees                  | Very High            |
| Eucalyptus species       | Large Gum Trees              | Very High            |
| Jacaranda mimosifolia    | Jacaranda                    | Very High            |
| Liquidambar styraciflua  | Liquidambar                  | Very High            |
| Araucaria species        | Norfolk Island & Bunya Pines | Very High            |
| Brachychiton acerifolium | Illawarra Flame Tree         | Very High            |
| Casuarina species        | Casuarinas                   | Very High            |
| Melia azedarach          | Australian White Cedar       | Very High            |
| Pinus species            | Pine Trees                   | Very High            |
| Platanus acerifolia      | Plane Tree                   | Very High            |
| Schinus molle            | Pepper Tree                  | Very High            |
| Ulmus species            | Elms                         | Very High            |
| Bougainvillea species    | Bougainvilleas               | High                 |
| Cortaderia selloana      | Pampas Grass                 | High                 |
| Grevillea robusta        | Silky Oak                    | High                 |
| Ilex species             | Hollies                      | High                 |
| Lagunaria patersonii     | Norfolk Island Hibiscus      | High                 |
| Ligustrum species        | Privets                      | High                 |
| Magnolia species         | Magnolias                    | High                 |
| Nerium oleander          | Oleander                     | High                 |
| Phoenix canariensis      | Canary Island Date Palm      | High                 |
| Phyllostachus species    | Bamboos                      | High                 |
| Toxicodendron species    | Rhus Trees                   | High                 |
| Lophostemon confetus     | Brush Box, Tristania         | High                 |
| Wisteria species         | Wisteria                     | High                 |