

# BUILDING SERVICES—MAINTENANCE AND REPAIR

This technical note provides information about the minor repairs to building services that are approved under the General Exemption Certificate—Queensland Heritage Places.

## Background

Well-maintained services are essential to the proper operation of any building or place. Meeting the needs of contemporary users of a place often means the upgrading of older services or the careful integration of new services. This work requires architectural skill and sensitivity to minimise the impact on the significant fabric of registered places.

## Repairs under General Exemption

Repairs to services approved under General Exemption are:

- repair of water, gas and electrical supply
- repair of telephone and other communication services
- repair and replacement of roof drainage, surface and subsurface sewerage and stormwater systems
- repair of fire detection and control systems, including smoke and heat detectors, fire sprinkler systems and associated alarms and communication systems
- repair of security systems and components such as fencing and surveillance systems that are present to maintain security appropriate to the nature and location of the place such as boundary and internal fences, gates and locking mechanisms; any electronic surveillance or alarm system; and any other system or component designed to ensure the security of the place or occupants
- repair of electricity, gas and heating systems including the replacement of non-original light fittings in original or later locations; the upgrading of wiring and the installation of new power boards and circuit breakers; and the repair of ventilation and air conditioning systems
- repair of water storages, dams, ponds, watercourses, batters, sea walls and other flood and erosion mitigation measures
- repair of lightning conductors.

## Maintenance and cleaning

Carry out regular inspections and maintain services in good working order. Regular maintenance is the most economic and practical way of extending the life of a place and its services. Be mindful of damage or faults that may arise in services between inspections. Rectifying these problems promptly will limit further damage or decay and will keep maintenance costs down. Owners, occupants and staff should know how to operate, monitor and maintain equipment and know where maintenance manuals are kept.

## Good practice

Good practices to adopt when undertaking repairs to services include:

- retaining as much as possible of the existing material
- using reversible processes where possible
- refixing replacement services in existing locations, or in better concealed locations if available
- reusing existing fixings, holes, openings, ducts, conduits, clips, brackets, etc wherever possible
- establishing checklists to ensure that all aspects of routine maintenance are completed
- recording works carried out—before, during and after.

## Lighting and electrical work

Where original fittings no longer exist and there is insufficient photographic or documentary evidence to reconstruct them, install an appropriate contemporary fitting rather than an off-the-shelf recreated one. Although recreated fittings can provide the general impression of older fittings, often their scale, finish, lack of detail and craftsmanship impart an artificial and inappropriate appearance to a registered place.

Seek advice from an architect or lighting designer experienced in heritage conservation for the installation of new lighting in historic buildings. The atmosphere and character of the building can be enhanced or destroyed by clumsy lighting. Simple and efficient fittings are preferred as they do not date or look false. Compact modern low-voltage, high-efficiency light fittings are now available and are appropriate for older buildings.

### Upgrading to modern standards

An older building may have a primitive lighting installation that has been altered and extended over time. Early installations with wood covers and later conduit with rubber insulated cables are likely to be defective and difficult to alter safely. Obsolete wiring, bad earthing, over-loaded cables and defective insulation are commonly present in older buildings. All installations should be checked and upgraded to modern standards by qualified electricians who have had experience working on historic buildings. Upgrading does not mean abandonment of significant fittings, switches and exposed cabling. Early switches may sometimes be reused by incorporating micro-circuit switching, and cotton insulated cable is still available.

New power outlets are best located on the skirting board and colour matched to joinery.

### External lighting

The same design considerations for interior lighting apply to external lighting of registered places. Exterior floodlighting can achieve dramatic effects but should only be used in a subtle manner and is not approved by General Exemption.

## Plumbing and drainage

Plumbing and drainage must always be well maintained. Some older buildings have pipes in walls, and wall movements can cause pipes to crack resulting in localised damp. Earth movements, tree roots or a lack of maintenance may cause sewerage or septic lines to fail. Blocked drains, or soggy patches in adjacent ground and associated odours are evidence of these problems.

New plumbing should be concealed wherever possible—under floors, in ceilings or in existing ducts, cupboards, service courts or lesser rooms. Try to conceal new plumbing on the exterior of a building or, where this is not possible, position it on a secondary facade and paint it the same colour as the wall if unable to conceal.

Older masonry buildings need to be thoroughly investigated to carefully identify suitable recesses for possible vertical passage of new conduits and pipes such as disused chimney flues.

### Fixtures

Often early plumbing fixtures in kitchens, bathrooms and laundries have been replaced as these areas are under constant use and have a high demand for upgrading. Some early and original fixtures that survive are rare and if important to the significance of the place should be conserved. These fixtures cannot be removed under General Exemption.

Once broken or crazed, little can be done to repair early toilet pans. Ceramic or timber box cisterns can be relined with a metal trough and the valve rebuilt. Ceramic basins can be patched.

Other problems that might be encountered include failing floor coverings (in some cases a lead sheet surround) or the pan fixture becoming loose (particularly on timber floors). In these cases the lead sheet would have to be renewed by a plumber having skills in sheet lead.

This type of covering is usually formed into a tray by the use of battens to create an upstand. These may also need renewal. Re-fixing the pan to timber floors requires acid-resistant phosphor-bronze screws.

Lead supply pipes from the cistern to the pan can usually be maintained unless excessive movement has caused cracking which cannot be repaired by lead patching. Fatigue and creep in the lead work may make it economical to replace the pipework in brass or japanned metal. Reinstall decorative retaining brackets on exposed pipework.

Take care with lead repairs. The Lead Advisory Service Australia ([www.lead.org.au](http://www.lead.org.au)) offers a free service to provide advice and support about any lead-related questions or concern that you may have.

Where pans set into tile work have become loose, carefully cut away the cement grouting and reset. Check the flush-pipe joint—it may be loose or damaged. Employ a licensed plumber to carry out the works as they will need to ensure that the soil pipe has been correctly vented when originally installed.

## Ducting

Repairs to services must reuse existing ducting. The installation of new ducts is not covered by General Exemption.

## Heating and air conditioning

Under General Exemption repairs can be carried out to existing heating and air conditioning services to maintain their function and operation.

Air conditioning systems must be accessible for maintenance and should be visible for easy inspection. Prepare routine maintenance schedules for air conditioning systems that require changing and cleaning of filters, vents and condensation plants to control organic growths. As an air conditioning system ages parts are likely to fail. As they deteriorate this may result in inadequate ventilation to some areas which may then smell musty and wall surfaces may show staining, wet patches, bubbling or other signs of moisture damage.

If it is proposed to upgrade or install new heating and air conditioning systems in a registered place see General Exemption technical note: Building services—upgrades and installation, or contact the department to discuss the level of approval required.

## Lifts and fire stairs

Existing lifts and fire stairs should be regularly maintained and repaired. If it is proposed to install new lifts or fire stairs in a registered place contact the department to discuss the type of approval required.

## Sprinklers, fire and security controls

Owners of registered places are urged to protect their valuable assets by installing fire detection and alarm systems. Many older buildings are destroyed by fire because timbers are often dry and brittle and burn quickly. Old rubber wiring is a common cause of fire and should be replaced and circuit breakers added. Auto fire alarms and sprinklers are essential backup devices and should be regularly inspected. Seek advice from appropriate fire services consultants, authorities and the department about devices and installation suitable for your place.

## Services checklist

### Do:

- have a regular maintenance program to extend equipment life and to ensure proper performance

- use shutters, operable windows, curtains, awnings, shade trees, and other historically appropriate non-mechanical features to reduce the heating and cooling loads
- retain and upgrade existing systems whenever possible
- improve energy efficiency by installing insulation in ceilings
- retain decorative elements of a historic services system including switch plates, grilles, radiators and fans—be creative in adapting these features to work within the new or upgraded systems
- use existing conduits, ducts, chases, cupboards and shafts for new systems
- design climatic control appropriate to the space, for example, hidden systems for formal spaces, more exposed in industrial spaces, or secondary spaces
- select less visible areas, such as basements, ceiling spaces, under floors or secondary areas and elevations for the location of services
- maintain appropriate temperature and humidity levels to meet accommodation requirements without accelerating the deterioration of the building's materials (monitoring schedules can be set up if concerned)
- train staff to monitor the operation of equipment and to act appropriately in the event of emergencies or breakdowns
- have an emergency plan for the occupants, buildings, structures and any objects contained within in the case of serious malfunction or breakdown.

### Do not:

- install a new system if it is not needed
- switch to a new type of system unless there is sufficient space for the new system or an appropriate place to put it
- over-design a new system, for example, don't add climate control if not absolutely necessary
- make openings in registered building walls to add through-wall heating and air-conditioning units as these are visually disfiguring and destroy historic fabric (condensation run-off can further damage historic materials)
- damage historic finishes, mask historic features, or alter historic spaces when installing new systems
- drop ceilings or bulkheads across window openings
- seal operable windows

- place condensers, solar panels, stacks, vents, plant or other equipment on visible portions of roofs or at significant locations on the site
- overload the building structure with the weight of new equipment
- place stress on historic building materials through the vibration of new equipment
- allow condensation on windows or within walls to rot or spall adjacent historic building materials.

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