

- intervals not exceeding 120m for pipes \leq 600mm diameter.
- intervals not exceeding 160m for pipes 700mm & 800mm diameter
- intervals not exceeding 200m for pipes from 900mm to 1100mm diameter
- for pipe diameters \geq 1200mm interval may reach 300m, subject to DMAT approval
- at any additional locations designated by DMAT

The above mentioned spacing values are based on typical installation conditions and shall only be taken as indicative. The Consultant shall undertake design calculations and site investigation to determine manholes spaces to suit the site conditions / layout.

Manholes shall be located to provide safe access for maintenance but also to minimise disruption to the general public and property owners during maintenance. The positioning of manholes should consider the size of the excavation required to construct the chamber and the impact this may have on adjacent utilities.

Particular features to note are:

- All manholes shall be provided with access ladders.
- Manhole covers shall be sized to allow for access for maintenance equipment, man-entry with breathing equipment and removal of a casualty by stretcher. In particular, means for direct access from the surface shall be provided for all installations requiring regular maintenance, such as penstocks.
- Blanked-off stub pipes shall be incorporated in manholes where necessary to allow system extension and future connections

Manhole cover levels shall conform to the cover levels in Table 4-4

Location	Cover Level
Paved areas	final paved level.
Landscaped areas	final ground level +0.1m
Open, unpaved areas	final ground level +0.25m.

Table 4-4 - Manhole Cover Levels

In exceptional cases and where agreed with DMAT the manhole may have a recessed cover, in which case the location shall be precisely identified in relation to adjoining permanent features and shown on the record drawings.

The spacing of shafts for trenchless construction shall be as agreed with DMAT.

Safety Note – Manholes

- ✓ Pipes of 900mm diameter or greater shall be fitted with stainless steel safety chains at the manhole upstream openings.
- ✓ In the layout and location of manholes, particular attention shall be paid to providing safe conditions for inspection and maintenance work and for dealing with emergencies and man-rescue.
- ✓ Where covers with a lift weight greater than 25kg are used then portable lifting mechanism for ease of lifting and no damages to the coating of covers shall be used.
- ✓ Where covers are in public areas or where the depth of the manhole or chamber is greater than 2m, provision shall be included for locking the covers. Provision for locking the covers should be considered for both vandalism and road safety, and that should in agreement with DMAT.