

## TONBRIDGE OUTDOOR POOL

## OPTIONS IDENTIFIED BY CONSULTANT ENGINEER

**1. Simple Repair/Reinstatement (£11,000)**

This will be the quickest to carry out and will enable the pool to be opened the quickest.

This will involve replacing the damaged brackets as seen on site (probably about 10 in total), locally realign and repair pipes and carefully backfill using new imported pea shingle. This can then be capped off with thin concrete bedding, sand and paving slabs to reinstate "as was". This is very much a short term fix but will enable the pool to open early and to function throughout the summer. It is very likely that settlement will take place and probably more pipes will fracture. A more permanent solution will be essential and all of this area will need to be re-excavated and a more robust scheme carried out. The future repairs could be programmed in to a winter shut-down period. This will be the cheapest scheme initially.

**2. Upgraded Simple Repair Scheme (£76,000)**

This is still a fairly simple repair and should enable the pool to open reasonably early and should provide a medium term solution. It should also avoid all pipes having to be removed with simple repairs to the pipes and bracket replacement being adequate.

All loose fill needs to be removed from around the pipes to enable a base concrete slab to be installed on reasonable firm ground under. This work can be carried out in sections but will involve temporary propping to the excavations to enable workers to enter the trenches. We suggest the concrete slab is 150 mm thick and simply reinforced with a layer of mesh. The existing/replaced brackets can be embedded in the slab.

Over the slab and up the side of the excavation a non woven geotextile (terram 1000) can be laid to prevent future soil movements etc. The trench can then be backfilled with pea shingle which is self compacting.

The excavations can then be capped off with thin concrete bedding, sand blinding and paving slabs.

Providing a sound base is found and the works properly carried out, this should provide a medium term solution.

**3. Replace Existing Brackets with Heavy Duty Ones (£102,000)**

The existing brackets are not designed to support the pipes longer term and only provide temporary support whilst the backfill is place. They are fairly lightweight and spaced at about 1.5m centres.

This scheme would replace the existing brackets as well as provide intermediate brackets but the brackets would be heavy duty and designed to support the pipes if the ground settles. The existing pipes could remain in place but at 1.0m to 1.2m centres new purpose made galvanised steel brackets would be installed. This could be carried out in stages but would involve excavating down to the underside of the lowest pipe at each location. The brackets could be made from standard channel sections welded together and resin anchored to the pool side.

Back filling would be in pea shingle etc as the other schemes. Again temporary supports would be required to the excavations.

#### **4. Pressure Grouting (Not priced)**

This scheme is subject to further investigation works and agreement with specialist contractors. Pipes and brackets could be simply repaired/replaced and the excavations backfilled with pea shingle.

Prior to paving etc being placed probes could be pushed into the ground and the soils under the lowest pipes grouted under pressure to stabilise and prevent future movement and wash out.

This is probably the least disruptive solution but is dependent on site investigation works etc.

#### **5. Piled Raft Solution (£121,000)**

This would involve removing all pipes from around the area of the pool, providing temporary support to the trench and installing a series of driven steel piles in a staggered pattern to the base of the trench. A reinforced raft slab could be constructed on top of this which would provide a rigid base to support new brackets, new pipes and pea shingle back fill.

This will provide a very stable base and a long term solution.

#### **6. Sheet Piled Trench (£135,000)**

Around the perimeter of the services zone a continuous sheet piled wall could be installed. This wall could then be used to provide protection to workers in the area as well as vertical support to galvanised beams installed at about 1.5m centres spanning across from the piles to the pool walls.

Hangers could be provided to support the pipes which could be fixed to the hangers. These would provide permanent support to the pipes.

The trench would be backfilled with pea shingle etc as on other schemes.