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QUALITY CONCEPT

WATER FEATURE

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SOVEREIGN HARBOUR, EASTBOURNE

A RESIDENTIAL DEVELOPMENT BY

PROWTING HOMES SOUTH EAST LTD

This document will consider the main water feature element for this development in terms of design, risk assessment, materials and construction and maintenance.

2. DESIGN CONCEPT

2.1 Water feature.

2.1.1 Risk Assessment.

The main risk associated with any water feature concerns the avoidance of people drowning or at a risk from doing so after falling in. It is not enough to merely restrict access to the water, for example by use of a railing, because if the barrier were to be breached, then there would be a problem climbing out of the water. It is necessary to define the edge of the pavement with a strong visual edge and for this edge to be upstanding to prevent wheelchairs and push chairs inevitably falling over the edge, but in the event of anyone falling in, it must be easy to climb out again, which suggests steps to the water feature. Any upstand sufficiently bold as it does not act as a trip hazard, and therefore a larger step will fulfill this function, with a slightly larger coping to cast a shadow, adding further definition.

2.1.2 The step sides would have to have non-slip surface to allow climbing out, with a slightly textured finish. It is essential to avoid algae that might cause the steps to become slippery, although might be blue/green toxic algae, all requiring either careful avoidance of algae generating conditions. Maintaining water quality needs to be considered carefully.

2.1.3 The water feature will be feed by mains water via a storage tank with an automatic top-up facility. Extensive artificial treatment will be used, these shall take the form of sand filtration, UV treatment and chemical dosing, together with the natural supply of rain water, the water quality will be safeguarded. The movement of the water by the use of jets and fountains will also aerate the water.

A quick drain-down facility will be constructed, which will be via the overflow system which will both allow routine maintenance and allow immediate remedial action in the event of any acts of vandalism, such as throwing of washing up liquid in the water.

2.1.4 Suitable control will be needed for the fountain equipment so that the system can be automatically switched off at a given time in the evening to avoid causing nuisance. The time of the shut down will have to vary according to season. Fountain height must be subject to wind sensors

in order to avoid excessive spray that might cause nuisance to residents, icing of pavements in freezing weather, slimy and slippery paved surfaces and water loss from the system.

2.1.5 Main Structure.

The structure comprises a three-pronged canal system in the shape of the letter "T" with the water to be 4m in width. A maximum water depth of 1000mm will be achieved in the centre. The main canal will be 232m long whilst the stem canal will be 84m in length, though this section will be split into three separate sections of canal separated by weirs.

- 2.1.6 For visual display, numerous fountains and jets are proposed, and these will aerate the water, which will minimise dissolved CO2 levels, further reducing the chance of algae growth. The fountains are to be arranged at approximately 6 metre intervals along the main canal only, whilst the stem of the "T" accommodates a 2-metre fall from the harbour wall, by means of 3 well-spaced weirs.
- 2.1.7 The weirs will create an appealing sound and splash effect. Water will be pumped up to the highest level and allowed to spill out of an aperture in a head wall into the first section of leg 2, and from there tumble over the weirs to reach the centre feature.
- 2.1.8 The sides of the canals will be formed as a series of Venetian style steps, continuously along the length of all the canals. These steps satisfy the requirements to minimise the risk of people falling into the water. The canal walls will be of concrete with a rendered finish to allow for waterproofing using a proprietary sealant material. The stepped profile of the canal will be formed over the main canal formation which for ease of construction will be "U" shaped. An in situ concrete fill over the waterproof basin will be formed in a profile suitable to form a base for the steps. These steps will be formed from high quality pre-cast concrete kerb units or similar – those containing a granite aggregate to provide a silver grey, rough stone appearance – which will also be non-slip. Careful selection of the proprietary brand will take place to ensure that the product has a high quality appearance. Jointing compounds will be waterproof to avoid spalling and any leeching of lime into the water.

2.1.9 Canal bed.

The bed of the canal will be finished with a wave pattern picked out in light and dark grey bands. The general tone of all paving and canal materials is light in order to reflect as much natural light as possible because of the shady situation.

2.1.10 Fountains.

Fountains will be confined to legs 1 and 3 of the central feature where they will be of two principle types. Horizontal jets from each alternate sides interspersed with vertical jets. The horizontal jets will produce a fan jet of water in an arc towards, but not completely, to the opposite side of the water feature, allowing plenty of room for water splashing, while the vertical jets will extend to a maximum of 600mm in height and comprise a mix of water and air, to give a dancing, white frosty effect. The actual height of the jet will be determined by a wind sensor to avoid spray that might otherwise cause nuisance and empty the canal. In the centre of the water feature at the confluence of the arms will be a special feature fountain. This will comprise of flower shaped series of horizontal, arching jets with four inner circle foam jets and a central vertical jet with a height of approximately 7 metres.

2.1.11 Lighting

Underwater lamps, placed under the jets, will illuminate the fountains. All such lighting will utilise white light only, to ensure a dramatic but elegant effect. The lighting for the fountains must be additional to general background lighting required for the safe passage of residents around the development. The water feature lighting must be timed to co-ordinate with the fountains, switching off at a given time (varying according to season), so not to cause nuisance to adjacent residents.

2.1.12 Underwater lights will be positioned to illuminate each jet of water, with special emphasis on the central fountain feature. Further underwater lights will also be positioned under the weirs to highlight the spilling water.

2.2.1 Pedestrian Paved Areas

The main paths surrounding the water feature shall be paved in a modern maritime pattern, in keeping with the contemporary design for the residential blocks. The paths will be constructed from insitu concrete to a sea-wave patten. A pattern that will run laterally along the pavements, picked out in boldly contrasting tones of grey. This contrast will largely be defined by the integral colour of the aggregate, which will be finished exposed, by spray and brush method. A dark grey aggregate will then sharply contrast with a pale grey finish, the two bands of concrete separated by stainless steel strip partitioning. The background concrete will be enhanced by the addition of concrete dye to ensure the tone is complementary to the aggregate. The edging will be a concrete sett unit to match the coping of the wall/seat, and will provide a crisp contrasting trim to the wave pattern concrete.

MATERIALS OF CONSTRUCTION:-

3.1 Water feature.

- 3.1.1 The containment walls of the water feature will be formed with reinforced concrete. The venetian style steps will be constructed of concrete and finished with a proprietary block (probably Blanc de Bierge) and painted and jointed with cement martar, colour to match blocks. The coping for the wall will over sail the wall by 20mm each side, and will be formed using a Blanc de Bierge coping stone or similar.

MAINTENANCE AND MANAGEMENT

- 4.1 The water feature needs specialist maintenance in connection with the proper functioning of the plant and equipment and also in terms of periodic cleaning and sweeping out. The fountain design and installation company will preferably carry out this work as follows

Proposed Maintenance schedule for fountain

Weekly

Check that the fountain is working to the desired program sequence

Check the water and remove any obstacles

If chlorine or other treatment is used, check the level of chlorine or other solution in the dosing tanks and fill as required

Check all nozzles, clean and adjust if necessary

Check the level of water in the main basin

Check the filters and back flush if necessary

Check the condition of lights and clean them if necessary

Check that all pumps are working well

Check operation of heating equipment (Winter only)

Monthly

If the weekly maintenance is carried out regularly the monthly maintenance will be:

Clean the strainers on the pump inlet pipes

Clean the sand filters with the back wash system.

Cleaning the technical rooms.

Clean the internal part of the UV's

Check all the equipment in the technical rooms, electrical boards, pumps, filters, UV lighting, heaters and dosing equipment

Check the system valves

3 Monthly

Check the General control of the electrical boards

Check the Control sequence of all the clocks

Remove and service all sump pumps in technical rooms, storage tank and drainage tank

Remove and service all end suction pumps in the pump chambers

Annually

Emptying the fountain basin and cleaning with high pressure washer and suitable cleaning equipment

Clean all the pipes with high pressure cleaner

Check all the electrical cables and lighting and replace any faulty components

Check all the end suction pumps for faults, wear and performance deficiencies and carry out annual recommended maintenance

Change the UV lighting elements

Check and clean all the sand filters and back flush or change sand as required

Clean and clean all technical room equipment

Check all sump pumps operation and performance and carry out annual recommended maintenance

Please note that replacement of damaged components will be additional to the regular maintenance package.