Torre Station Yard
Newton Road
Torquay
TQ2 5DD
Tel: [redacted]
Email: [redacted]

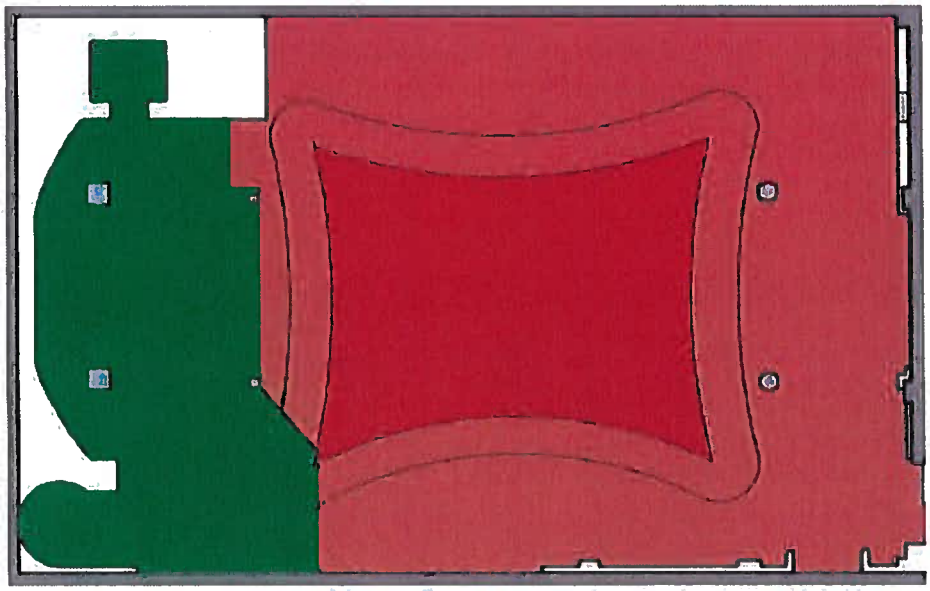
12th August 2020

Noise Impact Report/Assessment

Quay Club, Victoria Parade, Torquay TQ1 2BD

Noise Proposal

It is proposed to have full range music levels at a maximum of LAMAX 110db on the centre of the dancefloor (shown in red)



The comments, advice and technical measures listed in this report should allow the above statement, but there might be a need for further action limiting the system via the digital processor.

The Premises

Originally constructed as part of a hotel development, it was converted into a ballroom, then live music venue in the 50's. It then traded as a night club from 1988 under many names and a slightly checkered history, until 2014 when it was granted planning permission for change of use to a gym.

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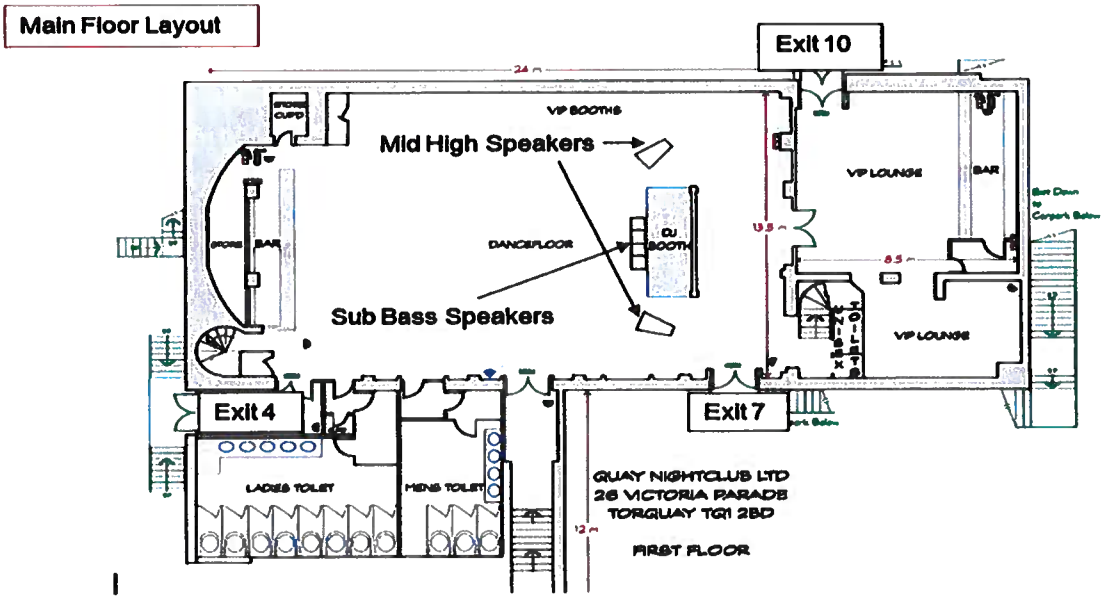
The venue is situated in the busy harbour area of Torquay with ground floor access to a first and second floor entertainment and bar area. The entrance leads up a long corridor with two 90 degree turns naturally reducing noise breakout to the harbour. At the top of the entrance corridor there is a set of heavy lined double fire exit doors. These are fitted with door closers and will be kept shut when possible. The main floor has a large central dancefloor with a DJ area to the right and a single ground floor bar to the left. There is a second floor balcony giving customers access to another bar and the outside smoke terrace (mentioned later).

To the rear of the main room is a small VIP bar area which will be open to increase capacity if required but mainly a chill out type venue. As previously mentioned this will Have a low level background sound system controlled via the main processor.

Main Floor Layout



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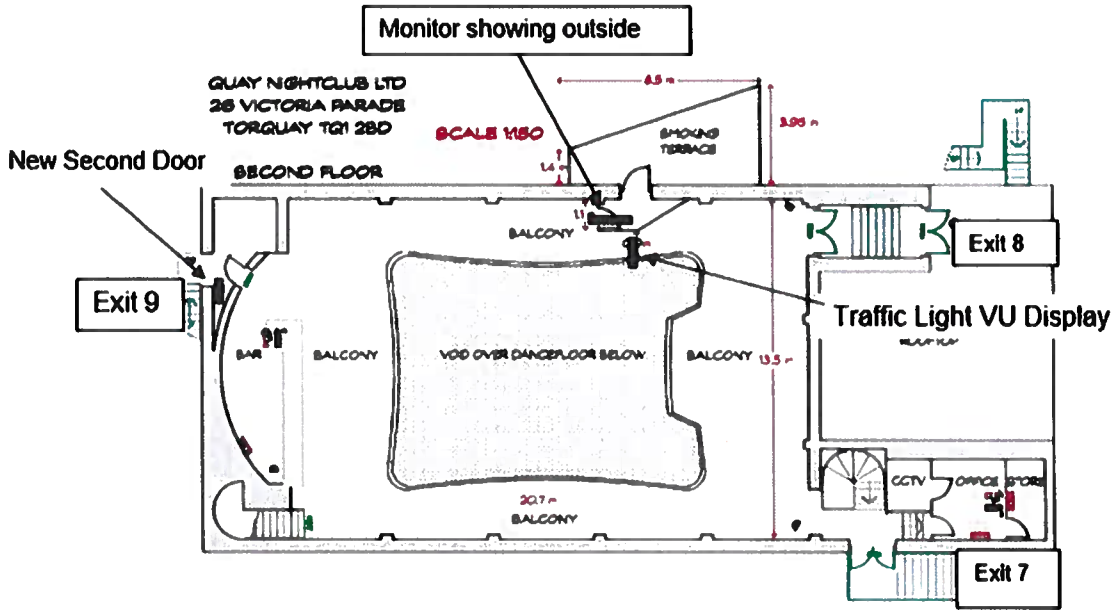
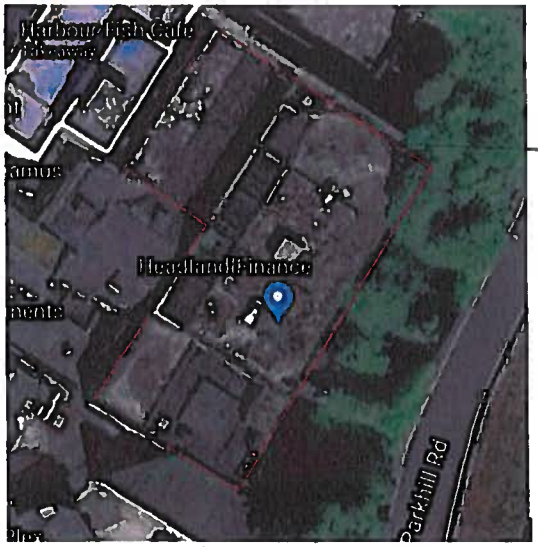
First Floor Layout





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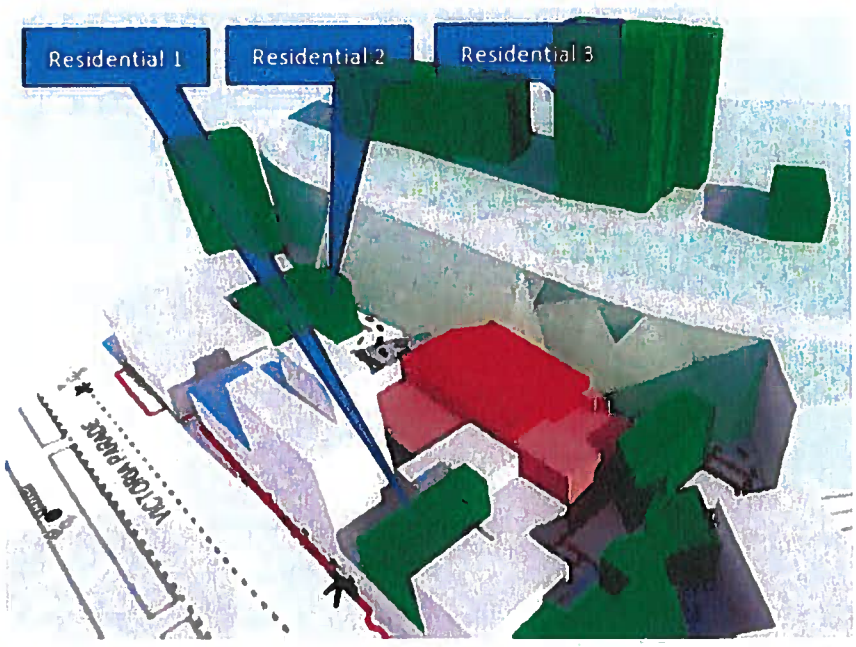
Residential Dwellings/Possible Noise Complaints



Traditionally there were two main complainants. Firstly the flats above Seamus O Donald (marked Residential 1) on Victoria Parade. The larger flat shares a party wall with the second room in the club. This was found an issue when the club was running as one large room. Now this area has been separated and is being treated as a second/chill out room with greatly reduced background levels.

The large block of residential flats (marked Residential 3) situated off Parkhill Road behind the club have previously complained about various issues regarding the premises. The complaints were mainly about customers in the smoking area as well as minor music levels emitting from defined areas.

The third possible complainant is the new apartments built to the rear of Victoria Parade (marked Residential 2) behind what is Cavern on the Quay. This is a slightly unknown area as they have been built after the club changed use to a gym so no night time running has been experienced. I would expect, because of their position, the ambient level to be higher than the levels around the club. This doesn't mean there will not be an issue but our current figures show very low breakout to this direction.

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Historical Noise Issues

There has been a history of noise issues at the premises and I have been involved in most since the club became Ritzy in 1990. This has been addressed in various ways including extending fire exit corridors, improving air handling, increasing insulation in the roof void as well as introducing roof baffles.

Overall the most effective way of reducing external noise has been to design and limit the sound system. This is mainly due to the fact that the Mecca ceiling in the venue has no noise cancelling properties being a floating plaster structure.

Speaker placement/Sound system design

After working in various formats with Ritzy, Route 66, Play and Pure we have found that a simple point source system with minimal speaker placement works best. The most successful setup was when the building traded as Play, where we installed two mid high cabinets with four bass cabinets. These were originally positioned facing away from the old smoking terrace to reduce breakout into this area. The smoking terrace is no longer being used so we have now positioned the sound system on the opposite side.

New Sound System

Main Room

We have installed a Martin Audio Wavefront system comprising of two W8c mid high enclosures with four W215 bass enclosures. The mid high cabinets are flown at balcony height from a single 6mm steel wire via isolation pads. The sub bass are 15" front loaded devices which reduce the amount of "sub" bass and bass travel. Front loaded cabinets have a short throw and reduce the amount of energy that escapes into the building substructure. They also give the effect of large bass energy close by on the dancefloor thus making the system sound rounded when bass levels are limited.

VIP Room

This room will have a small background system comprising of four full range flown Martin Audio CDD8 speakers with a single 15" bass cabinet. The system level will be set as background at a projected 86db.

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Sound Control

Both rooms will be controlled via the main digital processing. This is a BSS London Blu unit allowing full control and limiting on all frequency bandwidths as well as crossover points, equalization and DJ control. The London Blu is still the industry standard in digital sound processing with full network facilities and remote management if required.

The digital limiter gives us the ability to set levels on all band widths and to lock settings off which then will be password protected. This eliminates unwanted adjustment, and restricts access to the sound system setup to ourselves.

Proposed Sound Sources and Levels

The venue is looking to run a traditional night club, playing music from most genres. They will include the typical themed evenings including 70's, 80's and other nights.

It has been requested that the sound system be installed and setup with not only the customer in mind but the communication between staff and customer. Levels at the bars and seating area will be greatly reduced compared to the main dancefloor by some 5db overall.

Measurement Location	Broadband	Octave Centre Band Frequency (Hz)						
	(A)	63	125	250	500	1K	2K	4K
Centre of Dance Floor (Red)	110	106	108	108	106	103	103	103
Seating Area (Orange)	107	105	106	105	104	101	100	101
Bar Area (Green)	107	100	106	105	102	100	100	100

L_{Max} Sound Pressure Levels (dB) – reference level 2×10^{-5} Nm^{-2}

Existing External Ambient Levels

Measurements were taken on Friday August 14th between 10pm and 1am to give an idea of the running ambient/background levels on the harbourside. The

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measurements were taken on the roof of the venue and show a level of between 49 to 62db LAEQ.

We would like to mention that this would normally be taken on a busy night but because of Covid-19 this has been difficult. The levels would be expected to be higher in this area during the high summer months.

The area has many late night establishments nearby some trading to 4am but mostly on Friday and Saturday nights.

Main Sound Readings

We ran four three-minute tests to ascertain the initial effectiveness of sound insulation and protection. The system was run to 110db centre of the dancefloor and readings then taken from various locations for measurement comparisons.

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Measurement Location	Full Range (A)	Band Frequency 32	63	96	125	250	500	1k	2k	4k	16k
Centre of dancefloor	110	102	104	104	106	107	106	102	104	104	102
Position One	55	43	48	47	43	47	44	41	41	40	42
Position Two	50	41	44	43	42	40	33	32	31	30	28
Position Three	67	56	58	54	53	51	47	46	47	45	43
Position Four	53	46	48	43	42	45	45	46	43	42	43
Position Five	56	44	48	48	44	43	43	40	40	41	41

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Observations and Actions from Tests

Main Extract System

The main issue with noise leakage is the roof/ventilation area. The existing system was blocked off and removed, as such, by the previous club operator Bed Bar. The fan will be re instated with a frame built encapsulating the outer vent area. This will have a layer of 18mm Marine Ply fixed to a standoff frame. This will then be lined with two layers of 15mm acoustic plasterboard with a layer of Tecsound SY 50 (technical details below) .

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Acoustic Plasterboard (Half) Product Data

Description:	Acoustic Plasterboard 15mm (Tapered Edge) is used in conjunction with either our MuteClip® system or with our Tecsound range on walls or ceilings to produce effective soundproofing. This particular type of plasterboard has a high mass which helps reduce airborne noise.
Dimensions:	15mm x 1200mm x 1200mm
Mass:	12.5 kg/m2
Thermal Conductivity:	0.24 W/mK
Features and Benefits:	Pale blue face paper for direct skim. Tapered edge. Can be used on walls and ceilings.

Tecsound SY50 Product Data

Description:	Tecsound SY 50 is a self-adhesive visco-elastic membrane used to attenuate airborne noise in a wide array of applications such as; floor, wall and ceiling as well as applying directly to metal work to reduce structural vibration.
Dimensions:	1.22m x 6.05m x 2.5mm (7.38m²)
Mass:	5 Kg/m²
Density:	2000 Kg/m³
Thermal Conductivity:	0.037 W/m°C
Temperature Stability:	-20°C to 60°C
Compressive Strength:	4.84 Kg/cm²
Tensile Strength:	30 N/cm²
Fire Rating:	Euroclass B, s2, d0
Features and Benefits:	Suitable for reducing both airborne and vibration on a large array of surfaces. Best used within MuteClip® System between two layers of high density acoustic plasterboard to dampen resonance between boards and to attenuate airborne noise. Very flexible and adaptable material. Self-Adhesive backing for easy installation. Mould moisture and fungus resistant. Easy to mould into tight spaces.
Performance:	Rw = 25.2dB Reduction hung as a curtain. Vibration Dampening

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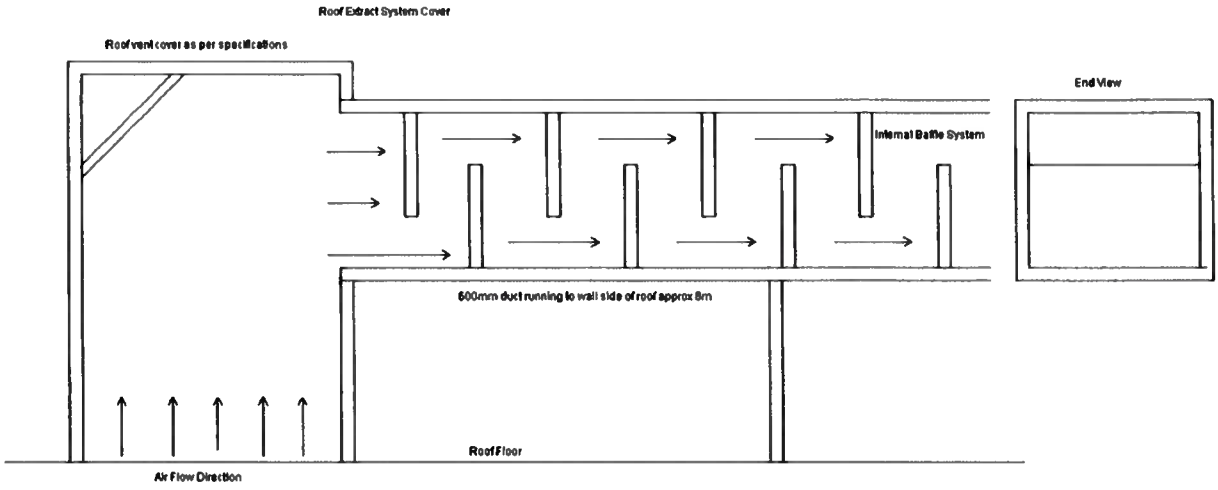
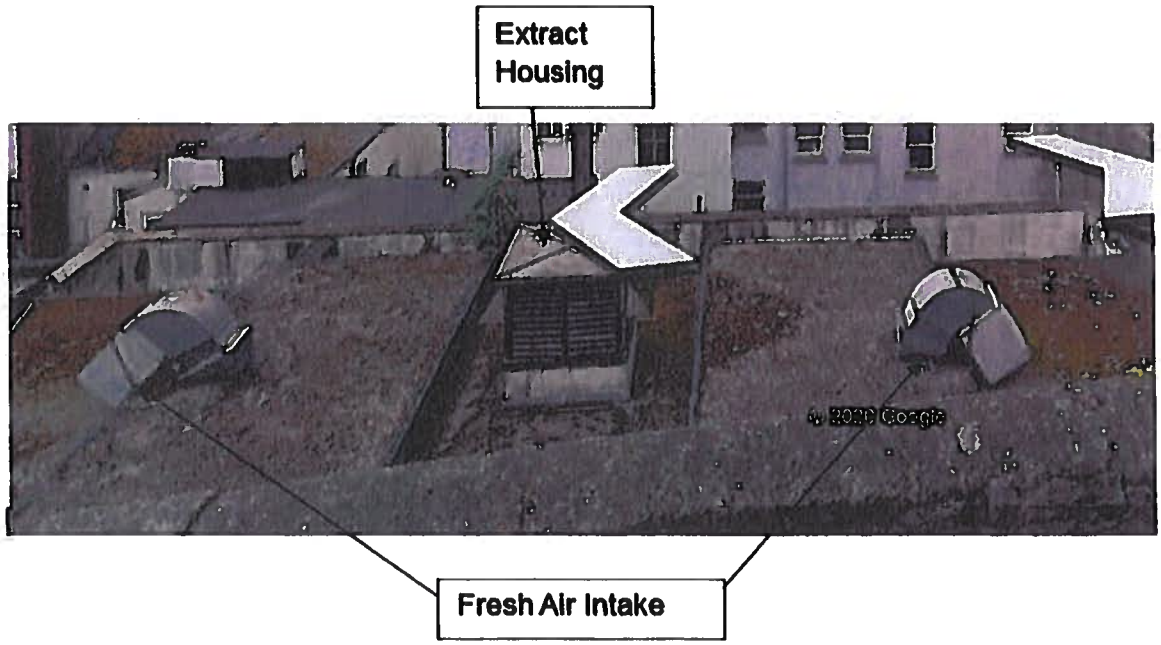
Built off the vent side facing the rear cliff a 600mm duct will be built with internal baffles as shown below with internal antenuation with muteboard fitted.





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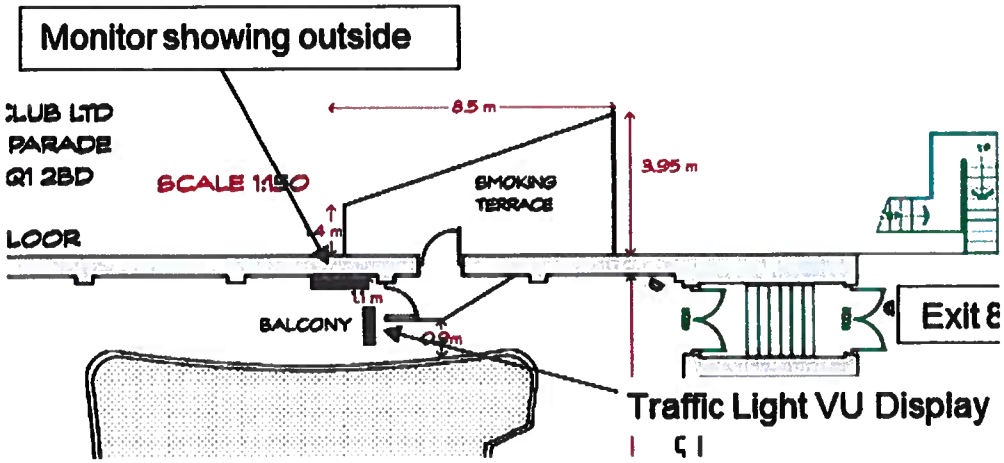
Intake Fans

These are currently disconnected. The aim is to re use them supplying two areas in the club. Unit one will run via ducting into the first floor balcony level exiting at high level. The second unit will run via flexi and ridged ducting down an existing lift shaft to the bar area on the main floor. It is not expected to increase levels escaping from the club with the units running but a full assessment will be made once the work is carried out.

New Smoking Terrace

The original smoking terrace has now been decommissioned and a new area built as displayed on the updated plans on the first floor balcony level.



The terrace has a two door lobby system which will be monitored by a member of staff as directed by the noise management plan. The operative for this area will have a dedicated camera supplying real time images from outside on a monitor above the terrace doorway. They will also have a noise monitoring system installed with a traffic light VU display showing internally and externally.

This system will monitor levels on the terrace via a dedicated microphone and display levels as agreed with EHO. If the levels increase into the amber section then staff will have a visual display to warn customers of the problem and reduce the noise back to green. If the levels increase to the high red levels then the area will be closed for a time frame as agreed in the noise management plan.

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Main Toilets

The ground floor main toilets have shown high noise leakage. Originally this was thought to be the result of a single flat roof structure. After investigation this has now been found to be a false reading. The rear of all the toilet cubicles have windows that were opened with vents running into the club. These windows have now been blocked off and the vents removed. This is why it is so important to re-introduce the fresh intake system.

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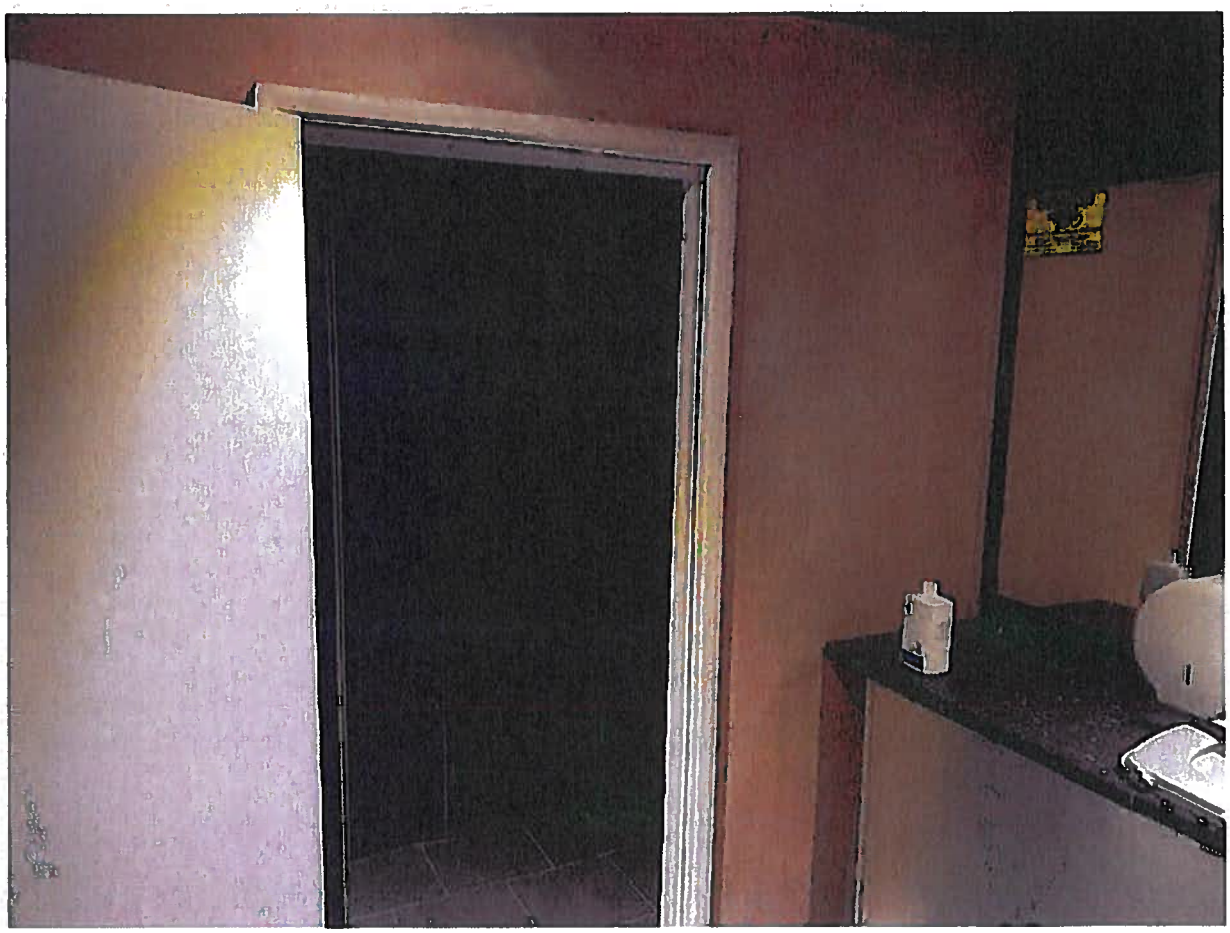
There is now a third lobby for both toilet blocks with all doors on closers which will reduce the level of noise entering the toilets.



Existing Stair Well Fans

There were two existing fans mounted in the stairwells leading to the first floor balcony. These extracted straight out onto the roof via covers and were found to be a high leakage area. They have now been removed and will be filled in removing any noise emitting from them.

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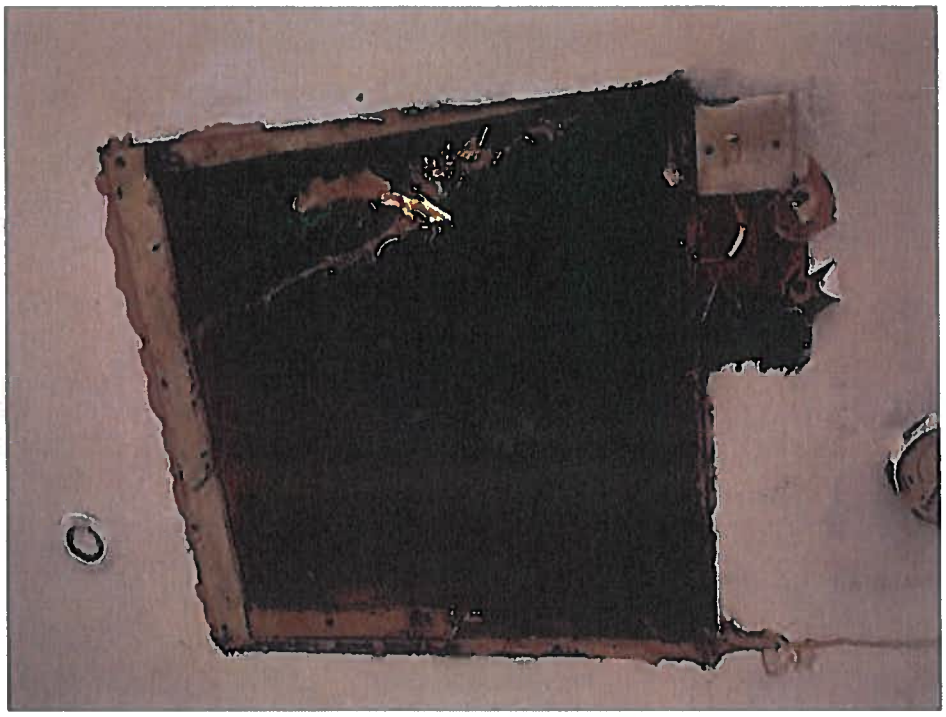

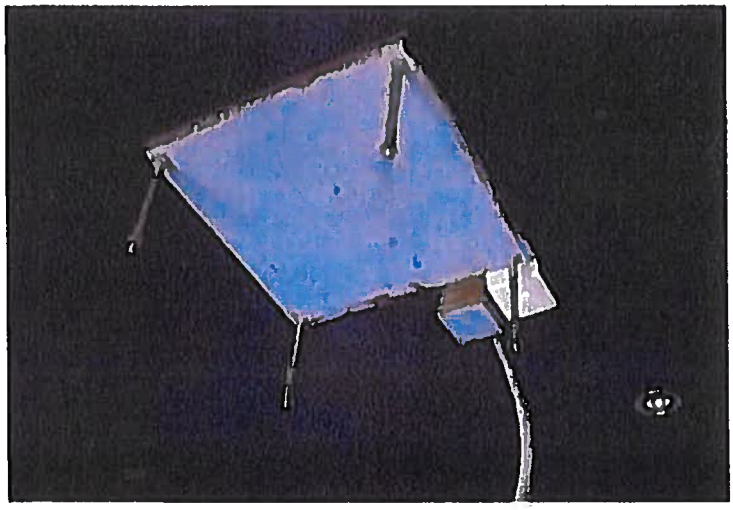

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Fire Exit 4

This was previously the main problem exit but now the old smoking terrace has been removed we feel it should no longer be an issue. There are three twin heavy fire doors with internal lobbies backed up by an external wall/sound reflector. The readings in this area were found to be more than acceptable with all the doors closed.

Fire Exit 6

This exit runs down from the main floor to the underground car park area and has many residential flats around the exit. It is important as it was previously used as an exit route for staff finishing their shifts and as a staff smoking area. This will now be installed on a magnetic lock system and only used when released via the fire alarm system.

Fire Exit 7

This exit is next to the CCTV office which previously was used as a control and main office. The door originally didn't have a secondary lobby but one was installed when the club traded as Play.

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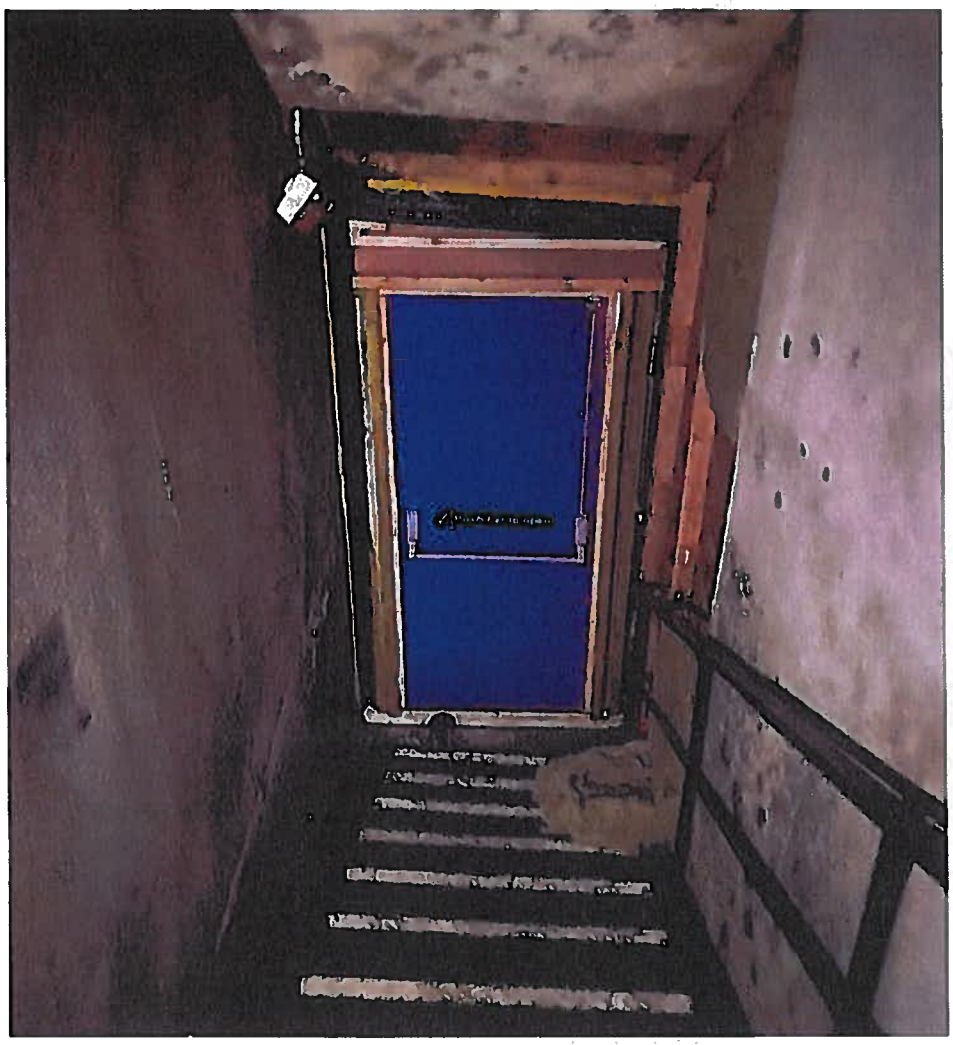

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This exit lobby is to be repaired and re-lined with acoustic plasterboard and Tecsound SY50. The cause of high leakage from this area is fairly obvious.

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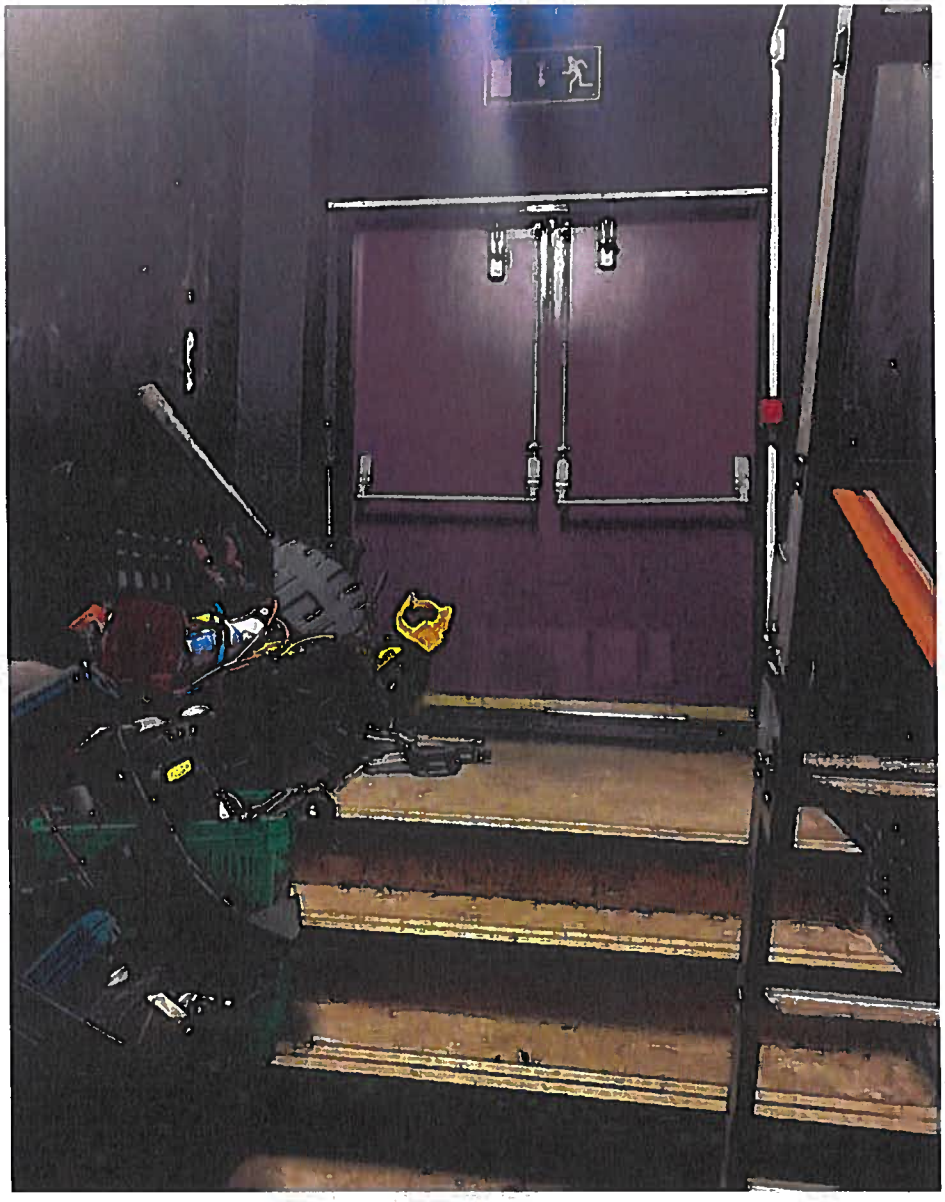
Fire Exit 8

This exit leads onto the roof area from the balcony. Most of the sound energy is directed away from here but there have been issues with noise emitting into this exit from the roof void via an entrance hatch. This hatch will now be fitted with a lock system and re-lined with a double acoustic door.



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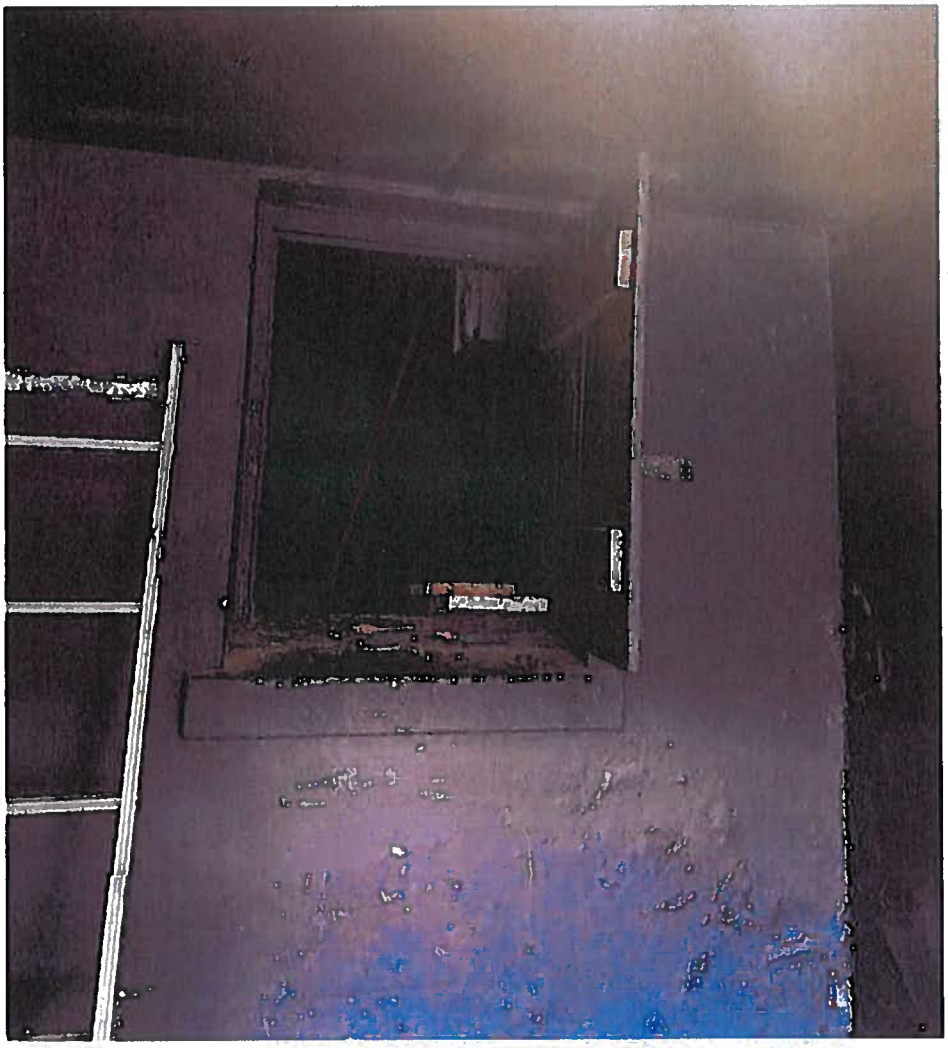

Fire Exit 9

This has been occasionally problematic but now it overlooks the new apartments to the rear of Cavern on the Quay it might prove a larger issue. We have suggested a second door/lobby on the top of the exit to stop any potential issues and deflect the sound upwards and out of line of sight to the new apartments. The door will also be fitted with a magnetic lock system connected to the fire alarm panel. This will only open/release in an emergency and will stop unwanted exits etc.

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Conclusion

To enable the club to operate at the desired levels of 110db full range then all of the above measures will need to be undertaken along with possible amendments to assist attenuation figures.

There may still be a need to then reduce the main system on certain bandwidths but until future testing and observations carried this cannot be specified.

Overall the system will need some fine tuning and working with the local EHO department to assure residents that there will be no issues moving forward.