Hann Tucker Associates
Consultants in Acoustics Noise & Vibration
Duke House 1-2 Duke Street Woking Surrey GU21 5BA
(t) +44 (0) 1483 770595
(e) enquiries@hanntucker.co.uk
(w) hanntucker.co.uk

Directors:
Stuart G Morgan CEng MIMechE MCIBSE FIOA (Chairman)
Simon R Hancock BEng(Hons) CEng MCIBSE FIOA (Managing)
John L Gibbs MIOA(D) MSEE CEnv
John R Ridpath BSc(Hons) MIOA
Andrew D Fermer BSc(Hons) MIOA
Andrew G Jameson BSc(Hons) MIOA
Lorraine M. Gregory (Company Secretary)

PROJECT TECHNICAL MEMORANDUM

JOB TITLE	:	330 Grays Inn Road
REF	:	HT: 26609/PTM2
DATE	:	23 March 2021
FROM	:	Luke Rendell
ISSUED TO	:	nmorris@groveworld.co.uk rjacobson@groveworld.co.uk aneal@geraldeve.com shardy@geraldeve.com mhart@ahmm.co.uk

RE: Noise/Vibration Transfer to/from UCL Ear Institute

We understand that Camden and the GLA have requested details of the 330 Grays Inn Road proposals with respect to the principal of 'agent of change' regarding the adjacent UCL Ear Institute. Our planning stage assessment with regards to this principal is as follows:-

1.0 Legislation & Guidance

1.1 NPPF

Paragraph 182 of the National Planning Policy Framework states:

"Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or 'agent of change') should be required to provide suitable mitigation before the development has been completed."

1.2 The London Plan 2021

Policy D13 (Agent of Change) in The London Plan 2021 (March 2021) states:

Policy D13 Agent of Change

A The Agent of Change principle places the responsibility for mitigating impacts from existing noise and other nuisance-generating activities or uses on the proposed new noise-sensitive development. Boroughs should ensure that Development Plans and planning decisions reflect the Agent of Change principle and take account of existing noise and other nuisance-generating uses in a sensitive manner when new development is proposed nearby.

B Development should be designed to ensure that established noise and other nuisance-generating uses remain viable and can continue or grow without unreasonable restrictions being placed on them.

C New noise and other nuisance-generating development proposed close to residential and other noise-sensitive uses should put in place measures to mitigate and manage any noise impacts for neighbouring residents and businesses.

D Development proposals should manage noise and other potential nuisances by:

1) ensuring good design mitigates and minimises existing and potential nuisances generated by existing uses and activities located in the area
2) exploring mitigation measures early in the design stage, with necessary and appropriate provisions including ongoing and future management of mitigation measures secured through planning obligations
3) separating new noise-sensitive development where possible from existing noise-generating businesses and uses through distance, screening, internal layout, sound-proofing, insulation and other acoustic design measures.

E Boroughs should not normally permit development proposals that have not clearly demonstrated how noise and other nuisances will be mitigated and managed.

3.13.1 For a long time, the responsibility for managing and **mitigating the impact of noise** and other nuisances on neighbouring residents and businesses has been placed on the business or activity making the noise or other nuisance, regardless of how long the business or activity has been operating in the area. In many cases, this has led to newly-arrived residents complaining about noise and other nuisances from existing businesses or activities, sometimes forcing the businesses or other activities to close.

3.13.2 The **Agent of Change principle** places the responsibility for mitigating the impact of noise and other nuisances firmly on the new development. This means that where new developments are proposed close to existing noise-generating uses, for example, applicants will need to design them in a more sensitive way to protect the new occupiers, such as residents, businesses, schools and religious institutions, from noise and other impacts. This could include paying for soundproofing for an existing use, such as a music venue. The Agent of Change principle works both ways. For example, if a new noise-generating use is proposed close to existing noise-sensitive uses, such as residential development or businesses, the onus is on the new use to ensure its building or activity is designed to protect existing users or residents from noise impacts.

3.13.3 The Agent of Change principle is included in the National Planning Policy Framework, and **Planning Practice Guidance** provides further information on how to mitigate the adverse impacts of noise and other impacts such as air and light pollution.[36]

3.13.4 The Agent of Change principle predominantly concerns the impacts of noise-generating uses and activities but **other nuisances** should be considered under this policy. Other nuisances include dust, odour, light and vibrations (see Policy SI 1 Improving air quality and Policy T7 Deliveries, servicing and construction). This is particularly important for development proposed for co-location with industrial uses and the intensification of industrial estates (see Part D4 of Policy E7 Industrial intensification, co-location and substitution). When considering co-location and intensification of industrial areas, boroughs should ensure that existing businesses and uses do not have unreasonable restrictions placed on them because of the new development.

3.13.5 Noise-generating **cultural venues** such as theatres, concert halls, pubs, night-clubs and other venues that host live or electronic music should be protected (see Policy HC5 Supporting London's culture and creative industries). This requires a sensitive approach to managing change in the surrounding area. Adjacent development and land uses should be brought forward and designed in ways which ensure established cultural venues remain viable and can continue in their present form without the prospect of licensing restrictions or the threat of closure due to noise complaints from neighbours.

3.13.6 As well as cultural venues, the **Agent of Change principle should be applied to all noise-generating uses and activities** including schools, places of worship, sporting venues, offices, shops, industrial sites, waste sites, safeguarded wharves, rail and other transport infrastructure.

3.13.7 Housing and other **noise-sensitive development** proposed near to an existing noise-generating use should include necessary acoustic design measures, for example, site layout, building orientation, uses and materials. This will ensure new development has effective measures in place to mitigate and minimise potential noise impacts or neighbour amenity issues. Mitigation measures should be explored at an early stage in the design process, with necessary and appropriate provisions secured through planning obligations.

3.13.8 Ongoing and longer-term management of mitigation measures should be considered, for example through a **noise management plan**. Policy T7 Deliveries, servicing and construction provides guidance on managing the impacts of freight, servicing and deliveries.

3.13.9 Some **permitted development**, including change of use from office to residential, requires noise impacts to be taken into consideration by the Local Planning Authority as part of the prior approval process. Boroughs must take account of national planning policy and guidance on noise, and therefore the Agent of Change principle would apply to these applications.

3.13.10 **Noise and other impact assessments** accompanying planning applications should be carefully tailored to local circumstances and be fit for purpose. That way, the particular characteristics of existing uses can be properly captured and assessed. For example, some businesses and activities can have peaks of noise at different times of the day and night and on different days of the week, and boroughs should require a noise impact assessment to take this into consideration. Boroughs should pay close attention to the assumptions made and methods used in impact assessments to ensure a full and accurate assessment.

3.13.11 Reference should be made to Policy D14 Noise which considers the impacts of noise-generating activities on a wider scale and Policy SI 1 Improving air quality which considers the impacts of existing air pollution. **Further guidance** on managing and mitigating noise in development is also provided in the Mayor's London Environment Strategy.

2.0 Assessment & Discussion

2.1 Noise/Vibration Transfer from The Ear Institute

The Ear Institute is not considered to be a use of significant noise or vibration generation and therefore is extremely unlikely to have an adverse effect on the proposed hotel. The noise/vibration sensitive activities undertaken at The Ear Institute generally preclude the generation of noise and vibration levels high enough to be of concern even within their own building, let alone in adjacent buildings. Hann Tucker Associates have previously visited The Ear Institute to measure levels of background noise/vibration and we can confirm that the measured levels were generally low, and unlikely to be of concern to neighbouring properties.

The only potential sources of noise generation we are aware of are the external plant associated with The Ear Institute. We understand this comprises 2No. items of cooling plant to the rear, and laboratory extract flues which are currently mounted to the west facade of 330 Grays Inn Road.

The 330 Grays Inn Road proposals have mitigated against potential noise from the chillers by avoiding windows on the closest areas of façade to the cooling plant as shown on the image below.

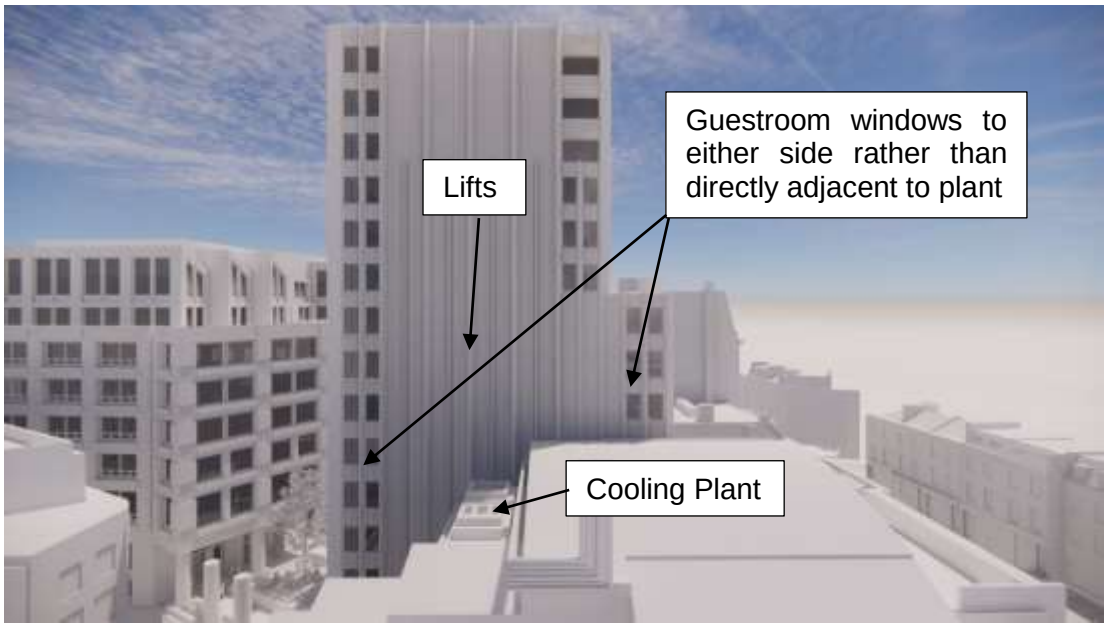


Image Courtesy of AHMM

This has been achieved by locating the guestrooms such that the internal areas behind the closest piece of façade to the chillers are lifts rather than guestrooms.

In addition, the majority of guestroom windows are located on alternative facades, and mitigation is provided in the form of mechanical ventilation, rather than relying on open windows or trickle vents for ventilation. During the design phase noise levels from the chillers will be checked to ensure that the façade design provides adequate mitigation.

Noise levels from the flues are likely to be low and are unlikely to be of concern given that as shown on the Exhaust Dispersion Design Review ref 2003680 by RWDI they are proposed to be relocated a further 15m away from the proposed hotel guestrooms for air quality reasons. In addition the design has provided mitigation in the form of mechanical ventilation, rather than relying on open windows or trickle vents for ventilation. During the design phase noise levels from the flues will be checked to ensure that the façade design provides adequate mitigation.

To summarise, the general operation of The Ear Institute should not cause adverse impact to the proposed hotel, and any impact associated with plant noise emissions should be suitably mitigated by the current design proposals. Plant noise levels will be checked during the design phase to ensure that the façade design provides adequate mitigation.

2.2 Future Noise/Vibration Transfer into The Ear Institute

The proposed use is that of a hotel, which is not a use type associated with significant generation of noise/vibration. In terms of the general operation of the hotel, it is unlikely to be

significantly different to the previous use as a hospital in terms of the noise/vibration output. General movement of people is likely to be similar and therefore unlikely to be a concern, and in addition, external plant noise emissions from the hotel will be designed to comply with the Local Authority Requirements or any planning conditions they may impose.

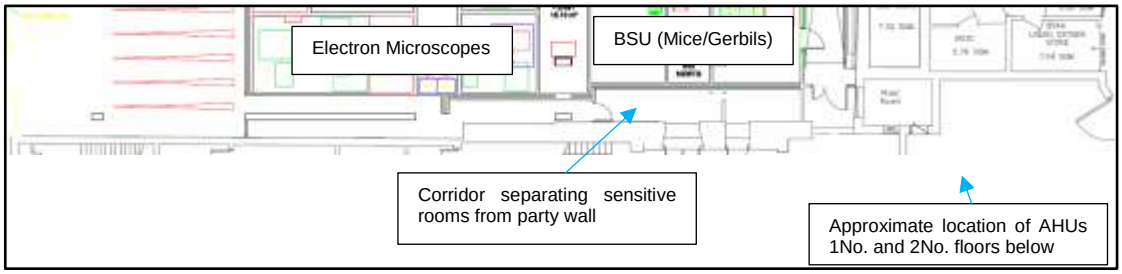
Our assessment has therefore focused on the specific areas or plant items which are proposed to be located adjacent to the party wall with The Ear Institute as follows:

2.2.1 Basement Plant

We understand the basement of the Ear Institute is the floor below Grays Inn Road ground level. The proposed 330 Grays Inn Road Basement 1 and Basement 2 are therefore to be 1No. and 2No. floors below the Ear Institute respectively. The only plant proposed to be located in rooms directly against the party wall line with The Ear Institute are AHU H1 (Basement 2), and AHU H3 (Basement 1) shown in the plans below.

Left: Basement 2, Right: Basement 1 (XCO_2)

The approximate horizontal location of these with respect to the basement of the Ear Institute (1No. and 2No. floors above respectively) are indicated on the plan below.



Plan showing AHU location relative to Noise Sensitive rooms (UCL Estates)

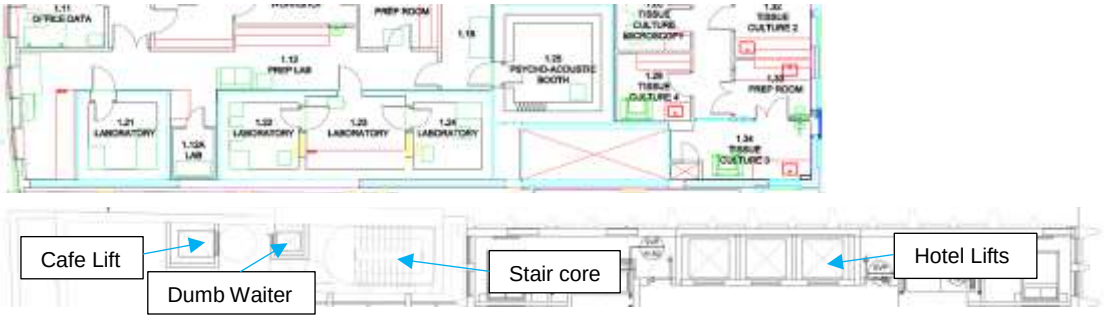
The AHUs will be fully ducted and therefore the only noise in the rooms should be breakout noise through the casing of the units. Given the vast amount of solid structure and several air

cavities between the noise/vibration sensitive rooms within The Ear Institute and the plantrooms (which are to be located 1No. and 2No. floors vertically below the sensitive rooms, and also at least two rooms away horizontally including the party wall), airborne noise transfer is unlikely to be a concern.

In order to control structureborne noise transfer from the units they should be installed with anti-vibration mounts that provide a minimum of 98% isolation efficiency when in situ.

2.2.2 Lifts & Dumbwaiters

The proposed location of the lifts and the dumbwaiter is shown on the plan below, which is lined up approximately with the plan showing the closest sensitive Laboratory rooms within The Ear Institute.



Top: Ear Institute Level 1 Layout (UCL Estates), Bottom: Typical layout on party wall line (XC02)

Lifts can be sources of noise and vibration transfer to nearby areas and therefore as mitigation the lift contractors will be made contractually responsible for complying with the attached Acoustic Specification for Lift/Dumbwaiter installations with respect to all lift and dumbwaiter installations in the Hotel.

2.2.3 Footfall

Footfall noise/vibration within the hotel is likely to be similar to that within the previous hospital, or indeed that within the Ear Institute itself. The closest location of likely footfall to sensitive Ear Institute rooms is likely to be the stair core shown above. However mitigating factors include the thickness of the party wall, the likely low levels of foot traffic on the stairs, and that the closest laboratory rooms are isolated box-in-box constructions designed to deal with the footfall noise/vibration from the adjacent corridor within the Ear Institute itself, which is closer than the proposed staircore.

2.2.4 Kitchen

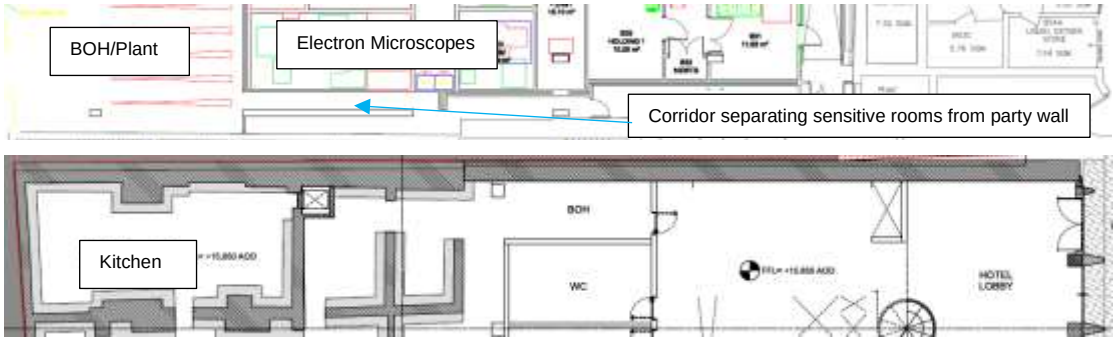
The proposed Kitchen, located on the Lower Ground floor (Ear Institute basement) as shown below could potentially be a source of impact noise e.g. from chopping/pots & pans etc. However mitigating factors include:

1) The proposed kitchen location is on the lowest floor of the building (on grade rather than on a suspended slab), and therefore not prone to vibration amplification.

2) It is separated from The Ear Institute by a thick party wall.

3) It is located such that the closest Ear Institute area is back of house space rather than noise/vibration sensitive.

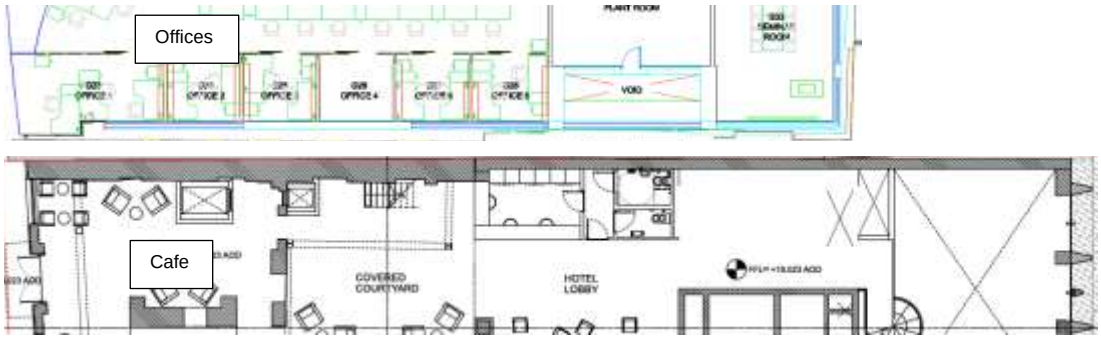
4) On the Ear Institute side there is a corridor separating the party wall from the sensitive uses, see plan below.



Top: Ear Institute Basement Layout (UCL Estates), Bottom: Lower Ground layout on party wall line (XC02)

2.2.5 Café

We understand the proposed café is adjacent to the ground floor offices within The Ear Institute as shown below. A typical masonry party wall is likely to be more than sufficient to appropriately control noise transfer between the two spaces.



Top: Ear Institute Ground floor Layout (UCL Estates), Bottom: Ground floor layout on party wall line (XC02)

In addition the WCs are located opposite The Ear Institute plantroom, and noise transfer between the two is unlikely to be cause for concern.

2.2.6 Hotel Café & Event Space

If events playing music are proposed it should be the responsibility of the hotel operator to ensure that in addition to the party wall build-up, the hotel fit-out provides any additional mitigation needed to control noise/vibration transfer from the proposed events, and that noise levels during the events are managed appropriately.

Ear Institute Level 2 Layout (UCL Estates)

3.0 Conclusions

The ‘agent of change’ principal has been set out and applied to the proposed hotel adjacent to The Ear Institute. To summarise, the general operation of The Ear Institute (which is not particularly noise/vibration generating in nature) should not cause adverse impact to the proposed hotel, and any impact associated with plant noise emissions should be suitably mitigated by the current design proposals. Plant noise levels will be checked during the design phase to ensure that the façade design provides adequate mitigation.

In terms of the noise/vibration impact of the future hotel on the ear institute, it is unlikely to be significantly different to the previous use as a hospital in terms of the noise/vibration output.

External plant noise emissions from the hotel will be designed to comply with the Local Authority Requirements or any planning conditions they may impose.

Specific areas or plant items which are proposed to be located adjacent to the party wall with The Ear Institute, and associated mitigation measures where necessary have been discussed herein.

Yours sincerely

Luke Rendell
for HANN TUCKER ASSOCIATES

330 Grays Inn Road Hotel

Acoustic Specification for Lift / Dumbwaiter Installations

Lift ride quality and performance characteristics shall not exceed the following levels:

Description	Criteria
Noise in lift car [1]	55 $L_{Amax(fast)}$
Acceleration [1]	1.0m/sec^2
Jerk [1]	1.2m/sec^3
Horizontal peak to peak vibration [1]	0.10m/sec^2 (10mg)
Vertical peak to peak vibration [1]	0.12m/sec^2 (12mg)
Vertical vibration in occupied areas [2]	0.01 m/sec^2 (1mg)
Noise in lift lobby [3, 4]	50 $L_{Amax(fast)}$
Noise from in car announcement and arrival gongs [3]	65 $L_{Amax(fast)}$
Noise into guestrooms [3, 4]	25 $L_{Amax(fast)}$
Noise into meeting/function rooms [3, 4]	30 $L_{Amax(fast)}$
Noise into café/bar/restaurant [3, 4]	35 $L_{Amax(fast)}$
Noise into lounges [3, 4]	30 $L_{Amax(fast)}$
Noise into offices [3, 4]	40 $L_{Amax(fast)}$

1 Lift ride quality and performance characteristics shall be measured and presented in accordance with BS ISO 18738-1:2012 ‘Measurement of ride quality Part 1: Lifts’. N.B. The measurement parameter for vibration is peak to peak, not peak.

2 Vibration levels shall be measured in terms of peak acceleration on the floor slabs in occupied areas based on the Wb weighting, as defined in Clause 3.3 of BS 6472-1:2008.

3 Lifts shall be operated as per Section 6.4 of BS ISO 18738-1:2012. Noise levels shall be measured at 1m from the Lift Door or Shaft Wall, as appropriate, in accordance with the Association of Noise Consultants Guideline document ANC-9701-1997 titled “Noise Measurements in Buildings”.

4 Noise levels are to be met by noise associated with any part of the lift cycle, including door operation.

For dumbwaiters and goods/vehicles/cycle lifts relaxation of the criteria for ride quality within the lift car may be acceptable, but shall be agreed by the developer or acoustic consultant in writing. No relaxation is normally acceptable within occupied office or residential areas.

No perceptible vibration or re-radiated noise shall be permitted in any building outside the Client's demise.

In order to meet the above criteria it is suggested that consideration be given to the following items.

a) All lift equipment (including the lift motor, starter electrical cabinet, car controllers, reactors and motors generators) should be suitably vibration isolated as appropriate. All connections, such as electrical grounding, shall be formed from flexible cable/conduit.

b) In the case of hydraulic lift installations, pipework shall be fitted with in-line silencers in order to effectively control noise transmission to areas outside the lift motor room via hydraulic fluid pipes.

c) All support steelwork for the installation is to be selected to avoid any resonances forced by the lift motor and the natural frequencies of steelwork should therefore fall between the dominant system frequencies. The steelwork, in particular beams supporting diverter sheaves and pulleys, should be as stiff as possible and suitably vibration isolated from the main structural building elements. The mounting arrangements for the beams should be carefully considered to ensure that the beams are not less stiff than the proposed method of isolation. To this end, long span beams should be avoided and beams should terminate as closely as possible to columns rather than other horizontal beams. The stiffness of the beam support member should be at least 3 time greater than the stiffness of the beam.

d) Rope hole penetrations shall be acoustically treated (if required) so as to ensure lift motor room noise breakout is controlled to ensure acceptable noise levels in the 'lift lobby' area as defined above.

e) The car and counterweight guides shall be so joined and fixed to their brackets that they do not deflect by more than 1.0mm under normal operating conditions, and for all panoramic passenger and goods lifts the fixings shall be at floor level only.