



MY Home and my health

Check how your home could be affecting your health



Building Biology and Ecology Institute of New Zealand
www.bbe.org.nz

Do you suspect your home is affecting your health?

Many people have chronic health issues that they struggle to overcome, or to even find the cause of. Sometimes the only way forward is to eliminate as many as possible potential stressors in the hope that things may improve. One such undermining of people's health can be in the indoor environments that they live and work in. Most people spend 90% or more of their time indoors, and it is here that they are exposed to many unnoticed and insidious irritants.

How a poor indoor environment can affect your health

The adverse effect of an indoor environment on your physical, physiological and psychological health can be gauged by looking at the following aspects:

- **Air quality** - the air you breathe may be filled with combustion gases, chemicals, fibres, dust, microbes and radioactive particles. There may not be enough fresh air.
- **Moisture** - mould generating damp may be present from internally generated moisture not being properly removed, or external moisture getting into the building;
- **Temperature** - the temperature may be too hot, too cold, or too constant.
- **Electro-climate** - the biological functioning and natural electrical balance of your body may be affected by electro-magnetic fields and radiation, static, magnetism and harmful earth energies.
- **Ergonomics** - poor design may encourage poor posture and movement.
- **Ambience** - lighting levels may be insufficient or too much, the spectrum colour may be inappropriate, and digital light bulbs may affect you at a physiological level. Poor colour choices may affect your mood. There may be irritating external noises and vibrations. There may be a lack of a healing connection to nature.

Check your house out now!

If you suspect your home is negatively affecting your health, the following checklist will take you through each aspect in detail to help you assess your house for potential health hazards. Once you have an idea of what may be wrong, professional testing may be required to confirm the hazard. These consultants will also be able to provide recommendations to remedy the situation. In this checklist we provide some general guidelines as to what is required to improve the conditions, but they are not intended to fully replace the need for professional advice.

Be aware as well that some health effects are more subtle than others, and worrying unduly about them can add to your stress levels and sometimes can affect your health more than the problem itself!

Air quality

Gas and chemical vapours

Potential Problem	Yes
The building is sited near a busy road, industrial areas, or agricultural industry:	
<ul style="list-style-type: none">• <i>If opening windows is not advisable, install a full heat recovery ventilation system with a fresh air intake and an air filter;</i>• <i>Plant trees outside to help reduce pollution levels.</i>	
The garage opens into the house:	
<ul style="list-style-type: none">• <i>Do not leave the engine running in the garage;</i>• <i>Leave the main garage door open until the air has cleared;</i>• <i>Use an alternative entrance;</i>• <i>Create a ventilated lobby between the garage and the house.</i>	
There is an open fireplace:	
<ul style="list-style-type: none">• <i>Ensure the chimney is drawing properly;</i>• <i>Replace with an enclosed wood or pellet burner.</i>	
There are CO ₂ emissions from gas heaters:	
<ul style="list-style-type: none">• <i>Do not use unflued gas heaters!</i>• <i>Check existing flues to ensure all joints are tight;.</i>• <i>Replace with electric radiators.</i>	
There is no extractor fan in the kitchen:	
<ul style="list-style-type: none">• <i>Minimise pan frying;</i>• <i>Install an extractor fan, preferably with a heat exchange system.</i>	
Structure and furnishings includes synthetic and chemically treated materials:	
<ul style="list-style-type: none">• <i>Ensure any new materials or furnishings are natural and untreated, or have low levels of volatile organic compounds. (Materials more than a year old will have very reduced offgassing levels;)</i>• <i>Have chemical absorbing pot plants in the house.</i>	
Occupants use chemically based aerosols, cleaners and body products:	
<ul style="list-style-type: none">• <i>Use natural products;</i>• <i>Assess how many products are really necessary.</i>	
Pesticides and other poisons are used:	
<ul style="list-style-type: none">• <i>Use natural products and natural pest control remedies.</i>	

For more on heat recovery ventilation go to:

<http://www.nrl.co.nz/products/heat-recovery-ventilation/>

Fibres and dust

Potential Problem	Yes
Furnishings release synthetic and allergenic fibres:	
<ul style="list-style-type: none"> • <i>Replace synthetic furnishings with natural fibre furnishings;</i> • <i>If you have an allergy to some natural fibres, avoid these and use other natural fibres;</i> • <i>Generally reduce the amount of soft furnishings and carpets.</i> 	
Asbestos, fibreglass, rockwool materials are part of the building.	
<ul style="list-style-type: none"> • <i>Remove insulation from open spaces such as ceiling spaces, thoroughly clean the area and replace with polyester insulation. Use appropriate masks, gloves and clothing, and bag material immediately before moving it;</i> • <i>Asbestos must be removed by a specialist company;</i> • <i>If you cannot remove asbestos roofing or wall cladding, paint it with NO preparation, i.e. no water blasting, sanding or scraping.</i> 	
There is/was lead paint used internally or externally:	
<ul style="list-style-type: none"> • <i>Test the gardens around your building for lead paint residue;</i> • <i>Remove soil if badly contaminated;</i> • <i>If only mildly contaminated, grow sunflowers or other lead removing plants and dispose of in a landfill at the end of the season;</i> • <i>Follow approved lead paint removal procedures when painting.</i> 	
There are high levels of household dust:	
<ul style="list-style-type: none"> • <i>Leave shoes at the front door;</i> • <i>Use mattress and pillow protectors and wash bed linen regularly;</i> • <i>Give pets their own bed, not yours;</i> • <i>Reduce clutter levels, particularly in the bedroom;</i> • <i>Reduce the number of horizontal surfaces e.g. shelves, tables, ledges, especially those hard to reach;</i> • <i>Dust with wet cloths regularly.</i> 	
There are high levels of external dust:	
<ul style="list-style-type: none"> • <i>If you have leaky old style windows, consider a positive pressure fan system such as DVS or HRV to prevent external dust coming in;</i> • <i>Install a full heat recovery ventilation system with a fresh air intake and an air filter;</i> • <i>Plant trees outside to help reduce dust levels.</i> 	

For more about lead removing plants go to:

<http://magicalchildhood.com/life/2017/07/17/seven-plants-weeds-and-flowers-that-naturally-remove-lead-from-your-property/>

Microbes

Potential Problem	Yes
The house is damp and cold:	
<ul style="list-style-type: none"> See <i>Moisture and Temperature</i> sections for remediation pointers. 	
The house is poorly ventilated:	
<ul style="list-style-type: none"> Open windows and doors on non-rainy days; Open windows on opposite sides of the house to encourage air flow.; Install high as well as low level windows to encourage air flow; Install a full heat recovery ventilation system with a fresh air intake and an air filter. 	
There is mould in the house:	
<ul style="list-style-type: none"> Keep furniture slightly away from uninsulated walls; Have a bed frame that is open underneath and do not store items under the bed; Leave wardrobe doors slightly ajar, or cut decorative ventilation holes in the doors; If you suspect toxic black mould, get professional testing and removal done; Replace other mould affected linings, carpets and fabrics after addressing sources of dampness; Redecorate using uncoated aromatic timbers, other natural materials and lime based paint finishes to inhibit mould growth. (Some people may be sensitive to aromatic timbers, so check them first.) 	
Carpets, fabrics and furnishings cannot be washed or aired:	
<ul style="list-style-type: none"> Replace fixed carpet with scatter rugs that can be shaken and aired; Use curtain fabrics that can be washed (pre-wash before fitting to pre-shrink), or use slat blinds; Ensure loose, chair and sofa cushion covers are removable and washable. 	
Air conditioning units are not maintained:	
<ul style="list-style-type: none"> Maintain components regularly! 	

Radioactivity

Potential Problem	Yes
The house has radioactive materials:	
<ul style="list-style-type: none"> Replace granite, slate, and imported gypsum products that test positive for radioactivity. (NZ Gib Board is OK.) 	
The house is in a radon area (not common in New Zealand):	
<ul style="list-style-type: none"> Ensure sub-floor area is well ventilated; Ensure the basement is separately ventilated. 	

Moisture

Internal moisture

Potential Problem	Yes
The building does not get much sunshine:	
<ul style="list-style-type: none"> • Trim back vegetation that blocks winter sunshine from entering the house; • Increase the window area on the north (southern hemisphere) or south (northern hemisphere) side; • Install a high level window or skylight to increase morning sunshine; • Install PV panels on the roof to generate power for extra heating inside. 	
The house is poorly heated:	
<ul style="list-style-type: none"> • Heat the house regularly in winter. 	
The house is poorly ventilated:	
<ul style="list-style-type: none"> • Open windows and doors on non-rainy days; • Open windows on opposite sides of the house to encourage air flow; • Install high as well as low level windows to encourage air flow; • Install a full heat recovery ventilation system with a fresh air intake and an air filter. 	
There is no extractor fan in the kitchen or bathroom:	
<ul style="list-style-type: none"> • Install an extractor fan to both areas, if possible connect into a heat exchange system; • Open windows slightly to optimise fan function;: • Open windows and doors as well when possible. 	
There are water vapour emissions from gas heaters:	
<ul style="list-style-type: none"> • Do not use unflued gas heaters! • Check existing flues to ensure all joints are tight;. • Replace with electric radiators. 	
There is no dryer vent, or it vents into the ceiling cavity or under the house:	
<ul style="list-style-type: none"> • Vent the dryer directly to the outside. 	
Washing is hung inside:	
<ul style="list-style-type: none"> • Create a covered outside area to hang clothes on damp days; 	
Furnishings and finishes are mainly synthetic:	
<ul style="list-style-type: none"> • Replace with naturally hygroscopic materials (clay, timber, cellulose, wool, linen and hemp, and to a lesser extent gypsum plaster and fired clay) to help regulate indoor humidity. 	

External moisture

Potential Problem	Yes
The ground does not slope away from the house on all sides:	
<ul style="list-style-type: none"> • <i>Re-align ground slope and provide a drainage channel if space is tight;</i> • <i>Concrete at least 1m from the house foundation, sloping away from the building at 1:25.</i> 	
The building is close to a steep bank and/or vegetation:	
<ul style="list-style-type: none"> • <i>Cut back vegetation to at least 1m from the house (discourages rats as well);</i> • <i>Create a drainage channel at the base of the bank to direct ground water away from the building;</i> • <i>Concrete near the building, sloping away from the foundations slightly at 1:25;</i> • <i>Keep the area clear of fallen debris.</i> 	
The timber floor is too close to the ground:	
<ul style="list-style-type: none"> • <i>Direct surface water away from the foundations;.</i> • <i>Increase sub floor ventilation as much as possible, particularly cross ventilation;</i> • <i>If one whole side of the building has no vents, install a flue from under the floor to the roof (through a cupboard) and vent with a wind or solar driven fan;.</i> • <i>Lay a moisture proof layer on the ground under the floor wherever you can get access;</i> • <i>Investigate repiling and raising the floor or converting to a concrete floor.</i> 	
The concrete floor has no damp proof course:	
<ul style="list-style-type: none"> • <i>Direct surface water away from the foundations;</i> • <i>Seal slab edges below ground level, or concrete around the building at least 1m, sloping away from the building at 1:25.</i> • <i>Coat the upper surface of the slab with a hydrostatic pressure resisting compound.</i> 	
The walls are not sheltered from wind driven rain:	
<ul style="list-style-type: none"> • <i>Seal and paint cracks and gaps;</i> • <i>Replace cracked window putty;</i> • <i>If re-cladding, install building wrap and fully flash all corners, windows and doors;</i> • <i>If possible reclad with a double cavity system.</i> 	
The roof has insufficient slope, valley gutters, and/or no overhangs:	
<ul style="list-style-type: none"> • <i>If the slope is less than 5°, replace roofing iron with a low slope profile or sheet material;</i> • <i>Keep valley gutters free of debris, or reconfigure roof to widen or eliminate gutter;</i> • <i>Remove parapets and replace with eave overhangs;</i> • <i>Add eave overhangs or verandahs.</i> 	

For more information go to the BRANZ Weathertight site: <https://www.weathertight.org.nz/> and <http://www.buildmagazine.org.nz/assets/PDF/Build-71-14-Build-Right-Ground-Clearances-For-Masonry-Construction.pdf>

For serious moisture issues, professional advice is recommended.

Temperature

Comfortable temperature

Potential Problem	Yes
The building temperature drops below 16°C:	
<ul style="list-style-type: none">• Increase the amount of sunshine entering the house by trimming trees or increasing window area;• Install insulation and double glazed windows;• Install PV panels on the roof to generate power for extra heating inside;• Heat the building with a gentle radiant warmth.	
The building temperature rises above 26°C:	
<ul style="list-style-type: none">• Create cross ventilation by opening windows on opposite sides of the room or low and high ones;• Add larger eaves and permanent or adjustable shading devices, especially to the western side;• Replace roof with a white roof when the time comes;• Pools and fountains cool and humidify the air, trees cool the outside air.	
There is no stimulating temperature variation:	
<ul style="list-style-type: none">• Keep living rooms warmer than other areas: 18°C minimum;• Keep bedrooms and service rooms slightly cooler: 16°C minimum;• Keep temperatures within the comfort zone of 16 - 26°C but let it be towards the hotter end of the scale in summer and during the day and the cooler end of the scale in winter and at night.	
There is a temperature differential of more than 2°C between floor and ceiling:	
<ul style="list-style-type: none">• Use a fan to re-distribute heat collecting in high areas;• Use underfloor heating in bathrooms and hallways, not areas where you spend a lot of time;• Use wall radiators.	

Why is radiant heat the healthiest form of heat?	
More efficient	<ul style="list-style-type: none"> ● Radiant heat is absorbed by a person or surface, not the air in between. ● People can feel comfortable at a lower temperature. ● Opening the door does not mean an instant drop in room temperature. ● Thermal mass will store excess radiant heat and re-radiate it when the temperature drops, evening out temperature swings.
Heating surfaces	<ul style="list-style-type: none"> ● Warm surfaces means materials are drier, making it easier to heat the room. ● Warm and dry surfaces discourage mould growth. ● The air in contact with surfaces does warm up.
Not heating the air	<ul style="list-style-type: none"> ● Heated air makes you feel drowsy, dries out your eyes, nose and throat, increases the number of positive ions, and circulates dust, bacteria and viruses. ● Cooler air helps you breathe more deeply and concentrate better.
Temperature zones	<ul style="list-style-type: none"> ● You can pick your favourite spot or change position if you get too hot or too cold.
Sources	<ul style="list-style-type: none"> ● Sunshine, fire, animals and people. ● Electric radiators filled with water or oil. ● Electric bar heaters.

Heating and Cooling

Potential Problem	Yes
The heating system uses convected heat (heats the air):	
<ul style="list-style-type: none"> ● <i>Install radiant heaters as they are healthier, see the chart below;</i> ● <i>Use a heat pump or convection heater for quickly heating a space if you are in and out.</i> 	
The surface temperature of the heater is above 70°C:	
<ul style="list-style-type: none"> ● <i>Keep heater free of dust as it can scorch;</i> ● <i>Protect heater from young children;</i> ● <i>Install a thermal mass heater for the ultimate in gentle, radiant heating.</i> 	
The house is air conditioned:	
<ul style="list-style-type: none"> ● <i>Do not sit in cold draughts and keep hydrated;</i> ● <i>Ensure the unit is well maintained.</i> 	

Electro-climate

Internal electro-pollution

Potential Problem	Yes
Bedrooms and spaces where you spend a lot of time have too many appliances:	
<p><i>In the work and living rooms:</i></p> <ul style="list-style-type: none"> ● <i>Keep appliances at least 1m from where you are sitting, and power cords at least 0.5m away;</i> ● <i>Stand back from electric stoves when cooking, especially those with induction coils;</i> ● <i>Stand at least 1m and preferably further from a microwave oven when in operation;</i> ● <i>Turn off appliances not in use;</i> ● <i>Replace dimmer switches with regular ones;</i> ● <i>Turn the Wi-Fi router off when not using it, particularly at night.</i> <p><i>In the bedrooms:</i></p> <ul style="list-style-type: none"> ● <i>Do not run power cords under the bed;</i> ● <i>Ban all transmitting and screen devices (e.g. mobile phone, television, cordless phone, laptop, tablet);</i> ● <i>Use a battery alarm clock by the bed;</i> ● <i>Turn off and unplug electric blankets when in bed (there are still electric fields when turned off if still plugged in);</i> ● <i>Move bed 100mm from wall if there are plugs or wiring in the wall, or turn off bedroom circuits at night;</i> ● <i>Install a demand switch to the lighting and power circuits that are not required while you are sleeping.</i> <p><i>Baby sleeping areas:</i></p> <ul style="list-style-type: none"> ● <i>Keep cot away from walls with appliances and wiring on the other side;</i> ● <i>If using a cot monitor, ensure it is at least 2m away from the cot.</i> 	
The fuse/switch board, smart meter and Wi-Fi router are too close to spaces where you spend a lot of time:	
<ul style="list-style-type: none"> ● <i>Ensure your sleeping or work spaces are at least 2m from the fuse/switchboard and at least 5m from the smart meter and Wi-Fi router.</i> ● <i>Have your electrical retailer remove the transmitting modem from your smart meter. If they won't then shop around for a retailer that will.</i> ● <i>Install data cable points connected to the modem router to plug in your computer and television. Make sure that you turn off Wi-Fi and bluetooth at both the modem router and the appliance or computers.</i> ● <i>If you can't hardwire then turn Wi-Fi off at night, or turn on only when you are using it.</i> 	
There are large amounts of metal in the structure and the furnishings:	
<ul style="list-style-type: none"> ● <i>Use a bed with no metal in the frame or mattress;</i> ● <i>Ensure large metal beams and the roof are connected to the earth rod;</i> ● <i>Install an outside tap near the earth rod to help keep the area a bit damper.</i> 	

External electro-pollution

Potential Problem	Yes
The building has aluminium windows that concentrate electro-magnetic radiation:	
<ul style="list-style-type: none"> • <i>Move beds and work areas at least 1m away from window frames;</i> • <i>Replace with timber windows.</i> 	
There is a street transformer or overhead power wiring within 20m of the house;	
<ul style="list-style-type: none"> • <i>Use rooms further away for sleeping and work spaces.</i> 	
There are high voltage power lines within 100m of the house:	
<ul style="list-style-type: none"> • <i>If your house is closer than 100m, get it tested for electro-magnetic field levels;</i> • <i>Consider moving if you are sensitive or the levels are above 3 or 4 mG.</i> 	
There are cell phone towers within 400m of the house that you can see clearly from out a window or from outside the house:	
<ul style="list-style-type: none"> • <i>It is virtually impossible to get away from cellphone radiation, but if one is uncomfortably close, get your house tested for electro-magnetic radiation levels;</i> • <i>Use a shielding paint on any bedroom wall or ceiling facing the tower base station and cover with a decoration colour;</i> • <i>Use shielded fabric curtains or window films on bedroom windows facing a tower base station.</i> 	

For tips on making your home safe from 5-G and EMF radiation go to:

<https://www.5gexposed.com/wp-content/uploads/2019/08/7-Essential-Ways-to-Make-Your-Home-Safe-FINAL.pdf>

Natural Electro-climate

Potential Problem	Yes
The building and furnishings have static increasing synthetic materials:	
<ul style="list-style-type: none"> • <i>Replace where possible with natural materials, particularly where movement or rubbing occurs;</i> • <i>Ensure children's beds are static free with natural fibre bedding and no synthetic toys.</i> 	
The rooms are low in negative ions:	
<ul style="list-style-type: none"> • <i>Increase plants in and around the house;</i> • <i>Install a water feature with flowing water;</i> • <i>Reduce the number of electrical appliances, or turn off completely when not in use.</i> 	
Concrete floors block the natural earth field;	
<ul style="list-style-type: none"> • <i>If possible have bedroom spaces on timber floors;</i> • <i>Build a sanctuary space studio in the garden with a timber floor;</i> • <i>Ensure children play daily in areas with trees and grass;</i> • <i>Take time to go camping.</i> 	
The building is sited on harmful terrestrial radiation:.	
<ul style="list-style-type: none"> • <i>This can be ascertained by a dowser, who will recommend changing bed positions if necessary.</i> 	

Ergonomics

Potential Problem	Yes
High cupboards and shelves require too much stretching:	
<ul style="list-style-type: none"> • <i>Store infrequently used and light items in high cupboards;</i> • <i>Have a sturdy stool for access to high spaces.</i> 	
Low cupboards and shelves require too much bending:	
<ul style="list-style-type: none"> • <i>Do not put heavy items down low;</i> • <i>Squat down rather than bending over;</i> • <i>Have a low stool near a large bookcase for sitting on as well as standing on;</i> • <i>Replace cupboards with deep, pull-out drawers.</i> • <i>Replace dishwasher with a dishdrawer.</i> 	
Dining chairs are heavy:	
<ul style="list-style-type: none"> • <i>Put soft pads under the legs so that they can be slid rather than lifted;</i> • <i>Replace with lighter ones.</i> 	
Furniture is often moved:	
<ul style="list-style-type: none"> • <i>Empty drawers, shelves and chests completely before moving them. Extra weight puts strain on the furniture as well as you!</i> • <i>Slide large items on the carpet or loose rugs.</i> 	
Kitchen benches are too high or too low;	
<ul style="list-style-type: none"> • <i>Incorporate working surfaces of different heights for different people and activities;</i> • <i>Use deep cutting boards to raise the working surface.</i> 	
Taps are not easy to turn on and off:	
<ul style="list-style-type: none"> • <i>Replace washers;</i> • <i>Replace taps with washerless types.</i> 	
Working at home requires a lot of sitting in one position:	
<ul style="list-style-type: none"> • <i>Ensure office furniture encourages good posture, and refrain from working on a sofa;</i> • <i>Incorporate a standing desk as well as a sitting one;</i> • <i>Take frequent, short breaks to tackle other office or home tasks that require different movements.</i> 	

Make sure your house is safe as well!

Stairs:	<ul style="list-style-type: none"> ● Install an easily gripped handrail; ● Ensure the steps are non-slip; ● Install safety glass in stairwell windows; ● Reconfigure steep and windy stairs if possible.
Decks and mezzanines:	<ul style="list-style-type: none"> ● Upgrade non complying handrails to the NZ Building Code standard to prevent accidental falling.
Level changes:	<ul style="list-style-type: none"> ● Accentuate level changes with material changes or contrasting colour; ● Highlight, smooth out, or correct any small level or step differences; ● Light difficult areas adequately; ● Make sure surfaces are non-slip and water blast outdoor areas regularly.
Bathroom:	<ul style="list-style-type: none"> ● Install safety glass in bathroom windows; ● Make sure surfaces are non-slip when wet; ● A separate shower is safer; ● Install grab rails or securely fastened towel rails; ● Hot water is no hotter than 55°C.
Wiring:	<ul style="list-style-type: none"> ● Move power outlets that are too close to baths, basins and sinks; ● Upgrade wiring and fuse board to incorporate a whole house RCD trip switch; ● Do not overload plugs or overcharge batteries.
General precautions:	<ul style="list-style-type: none"> ● Install safety glass in large and low level doors and windows. Highlight with transfer designs; ● Store hazardous substances out of children's reach; ● Chain ovens and restrain tall furniture; ● Install smoke detectors and fire extinguishers; ● Level areas around the building for ladders and scaffolds.
Driveway:	<ul style="list-style-type: none"> ● Always take care reversing; ● If no on-site turning, fence drive away from children, and reverse into it; ● Fence any on-site turning area so children cannot access it.
Pools:	<ul style="list-style-type: none"> ● Put a solid lockable cover over a spa; ● Ensure ornamental pools are less than 400mm deep and/or install a safety grid; ● Fence all deeper pools according to the NZ Building Code.

Ambience

Light

Potential Problem	Yes
There is insufficient natural light or sunshine entering the building:	
<ul style="list-style-type: none"> • <i>Add regular windows to the east side of the building or full height windows/french doors to the north side of the building. (East and south in the northern hemisphere.);</i> • <i>Install a skylight that gets only morning sunshine or just light;</i> • <i>Put in solar tubes to illuminate dark areas.</i> 	
Light comes from only one side of the room:	
<ul style="list-style-type: none"> • <i>Add a window to another wall if possible;</i> • <i>Borrow light from another room with a high, internal window or connecting glass doors.</i> 	
There is too much, too little or inappropriate light contrast:	
<ul style="list-style-type: none"> • <i>Graduate light contrast in rooms where you spend a lot of time doing things or working. The ratio of task lighting to close surroundings to wider surroundings should be 9:3:1;</i> • <i>Add clear roofing panels to verandahs;</i> • <i>Avoid glare with indirect lighting, shaded or adjustable lamps, non reflective surfaces, net curtains or pale window reveals;</i> • <i>Add skylights, bottle walls, feature windows, reflected light from water, lattices or very small openings in less frequented spaces for dramatic effect.</i> 	
Harmful energy saving light bulbs are used:	
<ul style="list-style-type: none"> • <i>Use only warm white LED bulbs in less frequented spaces;</i> • <i>Use low level incandescent bulbs, candles or fireplace light in relaxing spaces;</i> • <i>Ideally convert to a 12V halogen bulb lighting system that uses no individual transformers;</i> • <i>Use the blue blocker setting on your phone or computer from dusk (you can install an app if there isn't a setting);</i> • <i>Stop screen use at least 1 hour before bed.</i> 	

Colour

Potential Problem	Yes
Colour use is overstimulating, patterns are too busy:	
<ul style="list-style-type: none"> • Check the psychological effect of colours and their placement with the chart below; • Tone down bright coloured or patterned spaces with plain curtains, rugs and soft furnishings; • Reduce strong colour and pattern to just a feature piece or wall; • Redecorate with a more natural palette with floor = earth, walls = garden, ceiling = sky, with just a few bright accents. 	
There is too much black, white and grey;	
<ul style="list-style-type: none"> • Choose warmer whites and brown or blue greys. • Introduce natural textures and colours to provide warmth, with a few bright accents; • Plaster and paint poor quality concrete walls with lime wash or silicate paint. 	

Psychological effect of colours and their placement

Colour	On the Floor	On the Walls	On the Ceiling
red	uplifting	close, loud	heavy, interfering, disturbing
orange	stimulating	warm	stimulating, degrading, shining
yellow	up-lifting, hasty	exciting	stimulating, illuminating
green	soft, holding	enclosing	protecting, covering
blue	lifting	cold, distant	uplifting, enhancing, dreamy
brown	earthy	rigid	pressing
ochre	sandy	light, animating	covering
violet	disturbing	depressing	depressing
black	deepening	reversing	weighing, burying
pink	delicate, untouchable	insubstantial, delicate	diaphanous
white	strange to touch	neutral, sensual	empty

Sound and vibration

Potential Problem	Yes
There is intrusive external noise from traffic, planes, trains, building work, industry, lawn mowing, recreation and animals:	
<ul style="list-style-type: none"> • <i>Install double glazing and increase the building's insulation;</i> • <i>Install a heat exchange ventilation system so that windows can be kept closed when needed;</i> • <i>Create soothing nearby sounds with a water feature, rustling leaves or attract birds into the garden.</i> 	
There is intrusive internal noise from audio/visual and household appliances, plumbing, slamming doors, conversation and activities:	
<ul style="list-style-type: none"> • <i>Designate a separate room for audio/visual activities;</i> • <i>Replace or repair hammering plumbing pipes;</i> • <i>When doing alterations, put in internal insulation or add an extra layer of gib board to walls;</i> • <i>Ensure everyone has their own private space to go to;</i> • <i>Create a well insulated sanctuary space with a soothing water feature;</i> • <i>Earth walls block all sound transmission.</i> 	
There is intrusive noise from neighbours and adjoining tenancies:	
<ul style="list-style-type: none"> • <i>Add further insulation between separate tenancies with appropriate sound proofing detail.</i> 	
There is vibration from road traffic and wind:	
<ul style="list-style-type: none"> • <i>Strengthen building foundation connections;</i> • <i>Strengthen or reduce structural items that stand out such as flues, chimneys, and pergolas.</i> 	
There are low frequency vibrations from nearby wind turbines up to 8 km away;	
<ul style="list-style-type: none"> • <i>If you are affected, move away from the area (less stressful than taking on the power company!)</i> 	

For more information on the detail of noise control systems go to:

<https://www.gib.co.nz/systems/gib-noise-control-systems/>

Psychological effect

Potential Problem	Yes
The building spaces are too big or tall:	
<ul style="list-style-type: none"> • <i>Create zones and cozy areas using large rugs, tall furniture and bookshelves, screens or bed canopies;</i> • <i>Build a mezzanine to create spaces for more intimate activities.</i> 	
The structure and decor does not include nature inspired forms and patterns:	
<ul style="list-style-type: none"> • <i>Introduce natural elements with pot plants, natural materials and nature inspired textiles;</i> • <i>Create curving shapes with benches, flooring areas, fireplaces, trim and plaster;</i> • <i>Display beachcombing treasures.</i> 	
There is no outlook to nature, or the apartment is above tree level:	
<ul style="list-style-type: none"> • <i>Add plants to an enclosed outdoor area;</i> • <i>Add pot plants inside or create an internal green wall.</i> 	
Neighbours are numerous and very close:	
<ul style="list-style-type: none"> • <i>Create privacy screens without being totally excluding;</i> • <i>Develop your own calm retreat space.</i> 	
There is long travel between life and work activities:	
<ul style="list-style-type: none"> • <i>Create a home office and work from home for some of the time;</i> • <i>Consider creating a building or suite for extended family members;</i> • <i>Develop community connections and engage in local activities;</i> • <i>Grow food and shop less often.</i> 	



The Building Biology and Ecology Institute of New Zealand (BBE) is a Charitable Trust run by a network of people passionate about the health of people and the environment from a built environment point of view. The Institute researches and promotes environmentally regenerative, healthy and harmonious building solutions, with the aim of making them accessible to everyone.

Do you want to learn more?

If you want to learn more about what makes a home a healthy, harmonious and ecologically regenerative place to live in, visit our website at www.bbe.org.nz. There we have loads more free eco information including:

- Our 30 Principles of Ecological Building and Design;
- Information sheets on various topics;
- The Waitakere City Council Sustainable Home Guidelines.

We have a newsletter that comes out 3-4 times per year, you can sign up on the website. And if you wish to study the subject in more detail, we have a 400 hour, fully online course, the BBE Certificate in Ecological Building and Design.

