

GYPROCK®

Everything else is just plasterboard

Glancing Light

Minimising the effects of critical lighting on plasterboard walls and ceilings



Introduction

Today's buildings benefit from many innovations that have increased the speed of construction and allow almost unlimited design freedom.

The use of lightweight framing and plasterboard wall and ceiling linings has been a major component in achieving this. Thanks to these, we now enjoy more open plan spaces and larger window areas that encourage natural light into homes and work environments, enhancing the sense of wellbeing.

Builders, plasterers and painters work hard to achieve the appearance of a flat surface when installing walls and ceilings. However some surface variation is inevitable due to the following factors:

- Natural variations in the framing
- The hand-finished nature of a plasterboard wall or ceiling
- Subtle differences between the textures of plasterboard and the jointing compounds

Under the majority of lighting conditions a plasterboard surface finished to a Level 4 standard, as defined in AS/NZS 2589:2007 'Gypsum Linings - Application and finishing', will appear flat. In critical lighting conditions, an effect referred to as 'glancing light', will highlight any surface variations.

This guide will help to assist in minimising glancing light issues and enhance the occupant's enjoyment of their premises.

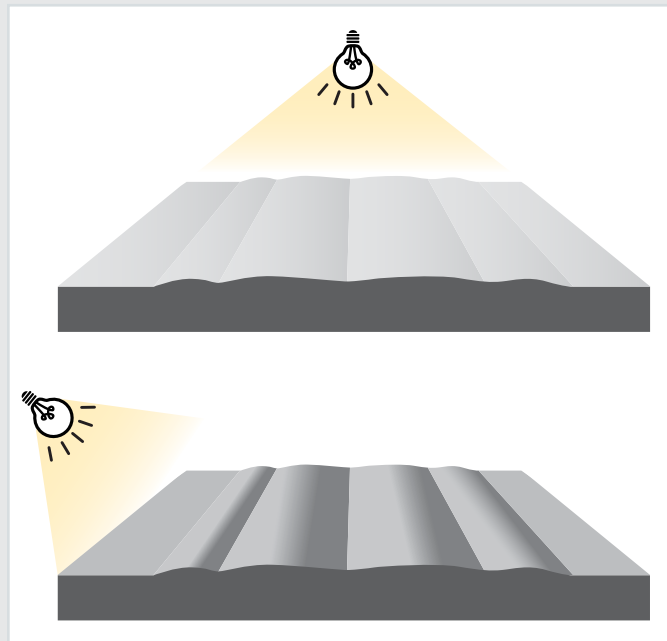


What is Glancing Light?

Glancing light is a condition which exists when light hits the plasterboard surface at an acute angle and casts shadows that highlight any surface irregularities. On plasterboard walls and ceilings this can make the surface look uneven and highlight the appearance of joints.

This is most commonly found in situations where there are:

- Floor to ceiling windows
- Windows directly adjacent to walls
- Unshaded batten holder ceiling lights
- Ceiling mounted fluorescent lights
- Wall lights and downlights close to walls
- Windows at the end of long corridors
- Brightly lit rooms
- Lights installed just below skillion/ raked ceilings
- Reflections of light from water features





Designing a new building or renovation: considerations to minimise glancing light

The best time to consider potential glancing light issues is during the design phase, which allows choices to be made that can greatly reduce the impact of glancing light.

Large window areas are a popular feature of modern design and the preference for open plan living and working often results in ceilings and walls that extend through a number of different spaces. These features can lead to challenging lighting conditions for wall and ceilings surfaces.

When designing a project it is important to consider the effect of both natural and artificial light and how it will fall on the walls and ceilings across the whole day.

In particular, attention should be given to light entering the building in mornings and evenings when the sun is lower in the sky and casts elongated shadows that can highlight any surface variations in walls and ceilings.

Window placement and orientation

Ideally windows should not abut walls or ceilings and should be oriented away from the east and west. External reflective surfaces, such as pools or neighbouring buildings, can reflect light into the space, should also be considered as they can exacerbate the problem.



Shading

For windows that are positioned where glancing light can be an issue, the use of external shading or vertical louvres may help to mitigate any problems. Curtains or interior blinds are also helpful in this situation.

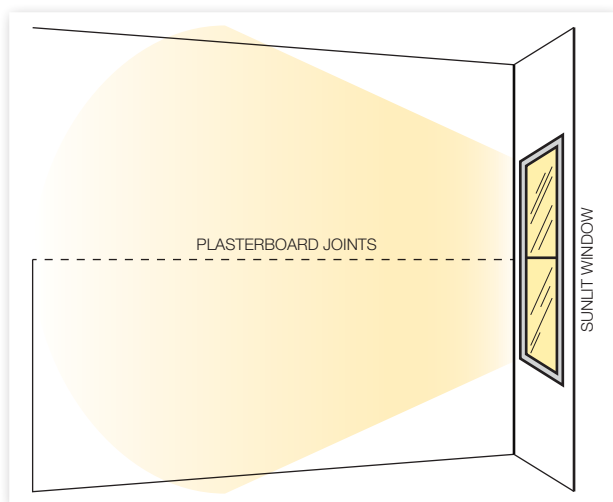


Plasterboard installation and finishing

The installation of plasterboard walls and ceilings should also be considered as there are a number of design and installation choices which can significantly impact the appearance of the surface.

Orientation

Running the plasterboard so that the long joints are parallel to the direction of the light will help reduce the effects of glancing light. The use of longer sheets to reduce the number of butt joints is also beneficial.



Choosing the best level of finish

The Australian Standard AS/NZS 2589:2007 'Gypsum linings- Application and finishing' defines three levels of finish for plasterboard walls and ceilings and provides minimum specifications for the installation process, from framing preparation to finishing, to achieve each of the finishes.

Level 3

For use in areas that do not require a finish, such as above ceilings and inside service shafts and other inaccessible spaces. All joints are to be taped with two applications of compound and all fastener heads are to be covered. Compound is to be finished smooth, such as by scraping ridges with a trowel.

Level 4

Level 4 is the generally accepted level of finish for domestic construction. Joints are to follow a three coat system, consisting of; a tape coat, plus two subsequent coats are to be applied over the tape coat and fastener heads. All joint compounds should be sanded to a smooth finish free of tool marks and ridges. A low sheen, light coloured paint finish is recommended.

Level 5

This level of finish should be used wherever:

- Critical light conditions occur such as from windows, skylights, or silhouette and spot lighting
- Gloss or semi-gloss paints are to be used
- Where mid or dark coloured paint is to be used

A Level 5 finish requires a lower level of frame alignment deviation to ensure a smoother surface. A three coat jointing system is required as for Level 4. All joint compound should be sanded to a smooth finish free of tool marks and ridges. This should be followed by the application of a skim coat over the entire area to remove differential surface textures and porosity.

Skim coating is a term used to describe a thin finish coat, rolled, trowelled or airless sprayed and then lightly sanded, to achieve a smooth and even finish. It is normally less than 1mm in thickness and is applied over the entire plasterboard surface to conceal imperfections in the joint work, smooth the paper texture and provide a uniform surface for decorating.

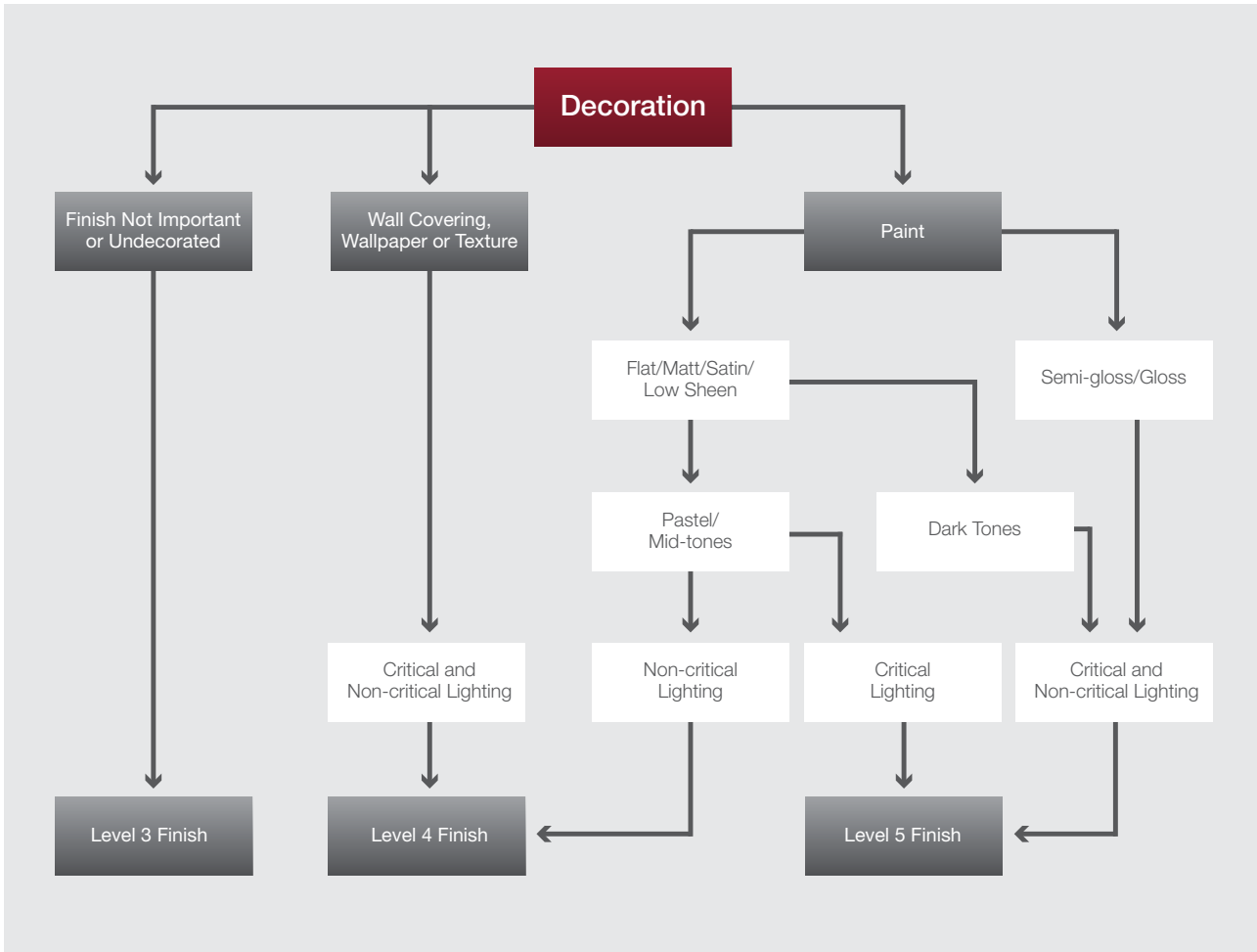
For more information on achieving a Level 5 finish on plasterboard surfaces, please visit www.gyprock.com.au or call us on 1300 306 556.



Selecting a level of finish

It is important to specify the level of finish required in each area of the home during the design phase to avoid disappointment in the final result. The flow diagram below has been developed to assist in selecting the most appropriate finish for each area.

For areas which may be subject to glancing light, a level 5 finish is strongly recommended to reduce critical lighting effects, but it cannot be expected to totally alleviate any glancing light issues.

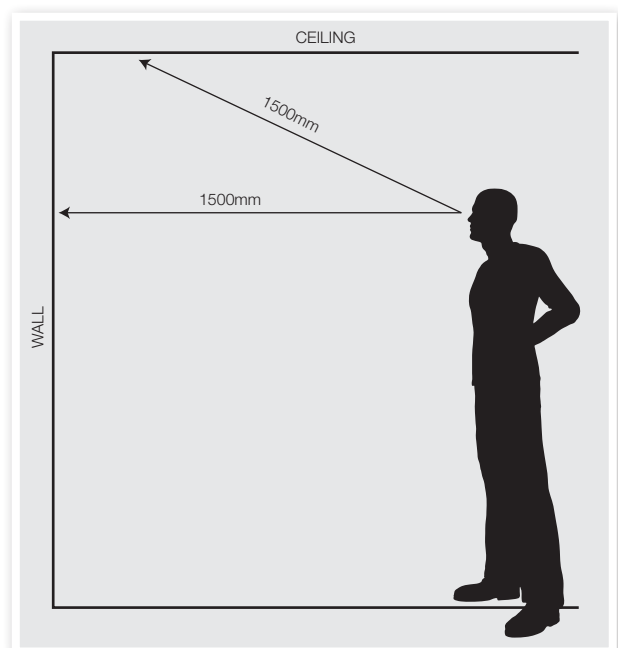


Inspection of plasterboard

The Guide to Standards and Tolerances (Victorian Building Commission 2007) outlines the following standard for inspection of vertical and horizontal surfaces.

‘Generally, variations in the surface colour, texture and finish of walls, ceilings, floors and roofs, and variations in glass and similar transparent materials are to be viewed where possible from a normal viewing position. A normal viewing position is looking at a distance of 1.5m or greater (600 mm for appliances and fixtures) with the surface or material being illuminated by “non-critical light”. “Non-critical light” means the light that strikes the surface is diffused and is not glancing or parallel to that surface.

Slight variations in the colour and finish of materials do not always constitute a defect’.





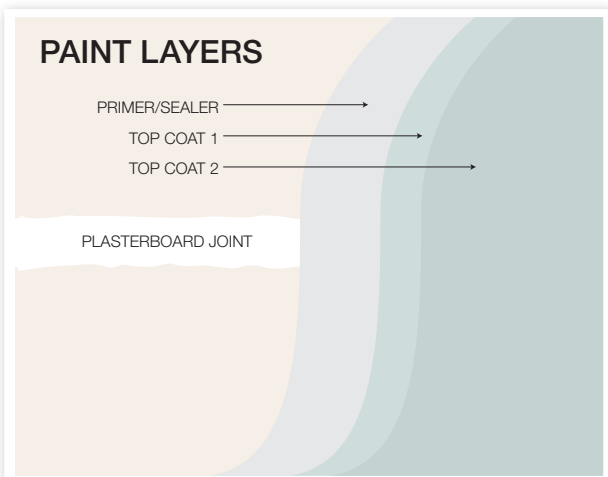
Painting

The paint surface on walls and ceilings plays a very important role in determining the effects of glancing light.

A Level 4 finish presents the painter with a surface comprised of two different materials, namely the plasterboard paper surface and the jointing compound, which have different textures and porosity.

In order to achieve a consistent finish across these materials it is vital that a plasterboard primer sealer is applied.

AS2311, 'Guide to the painting of buildings', requires that a sealer plus two coats of water based paint must be applied as a minimum. Such a system will provide a surface with minimal difference in texture and porosity.



Roller application for all coats is strongly recommended as it imparts a light texture to the surface and minimises visible differences. If spray application is used, each paint coat should be back rolled while still wet, to create a lightly textured finish, and allowed to dry completely before applying the next coat.

A similar paint system is recommended for a level 5 finish to ensure the best possible result.

Paint finishes

The choice of gloss level can also have a significant impact on the perceived quality of the surface in glancing light conditions.

A matt paint finish provides the highest level of light diffusion and helps to disguise any surface irregularities. It is recommended that a matt finish be used in areas where a higher gloss is not required for functional reasons, such as ceilings.

Higher gloss levels, such as satin, semi gloss and gloss, can accentuate any minor variations in the surface and are recommended only for use over a level 5 finish.

Colour

Light colours diffuse light more effectively than dark shades and reduce the effects of glancing light.

In rooms where a dark colour is to be used a level 5 finish is recommended.

Lighting

The choice and positioning of lighting plays an extremely important role in providing the optimal perception of evenness of the wall and ceiling surface.

The worst result is achieved by an unshaded light source located directly on a ceiling or wall where the light shines parallel to the surface. Cases where this situation may exist include:

- unshaded batten holder light fittings
- fluorescent lights mounted on the ceiling
- wall mounted up lights and downlights

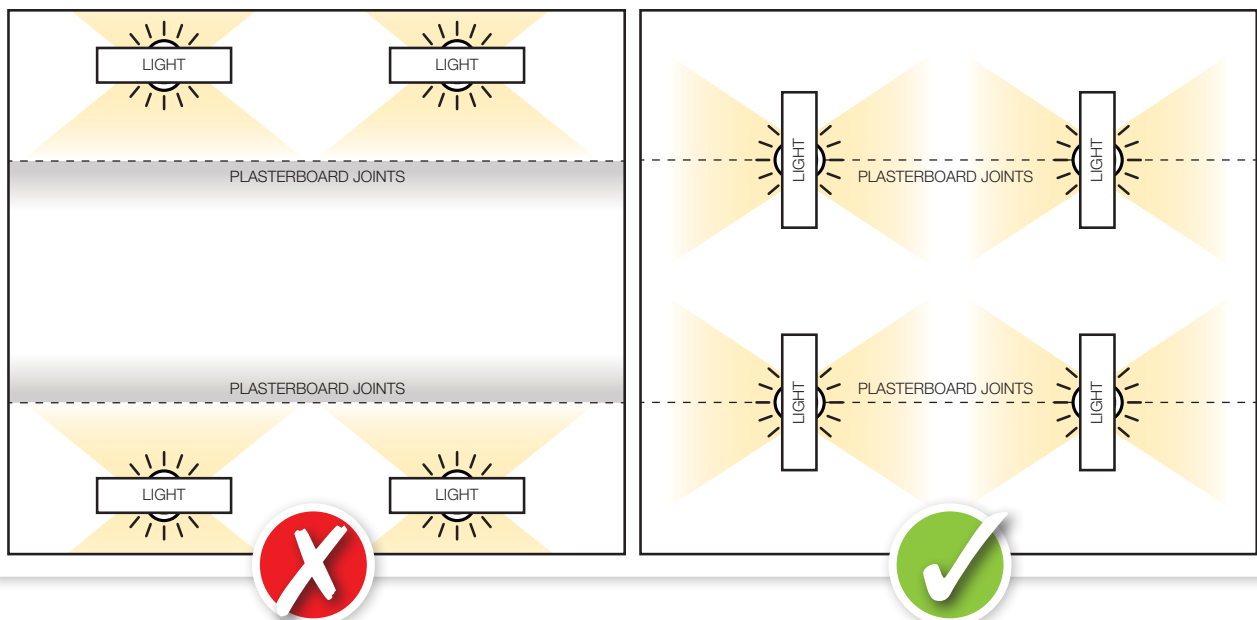
Recommended lighting

The following lighting solutions will provide diffused light and reduce the appearance of surface variations:

- shaded batten holder light fittings
- ceiling mounted pendant lights
- recessed ceiling lights such as downlights and recessed fluorescents
- considering the use of more lights of lower intensity ensuring lit areas overlap, will improve ambiance and reduce the visible effects of glancing light

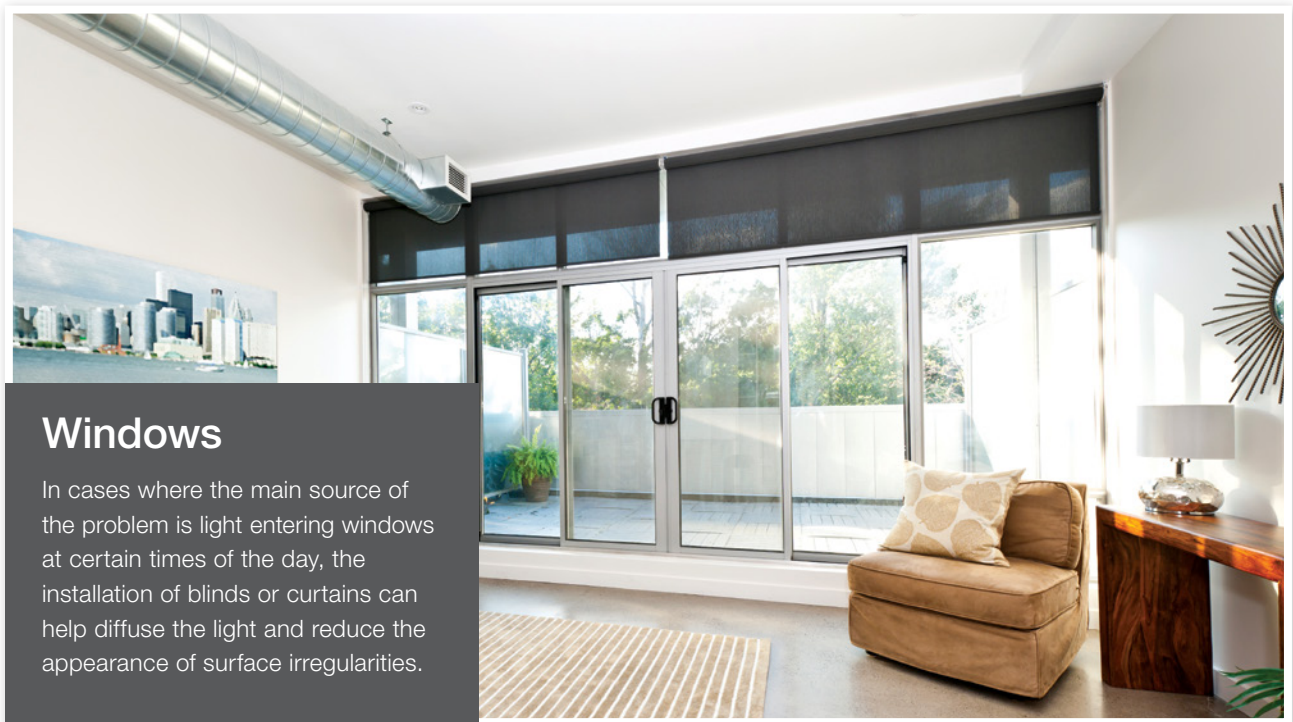


Helpful Hint When installing ceiling mounted fluorescent lights it is recommended to position the light fittings over the long edge joints. (see diagram)



Reducing the effects of glancing light in existing properties

Existing properties may exhibit glancing light issues. While it is expensive to remove and replace the plasterboard lining to achieve a better finish, there are a number of economical actions that can be taken which can improve the appearance of walls and ceilings.



Windows

In cases where the main source of the problem is light entering windows at certain times of the day, the installation of blinds or curtains can help diffuse the light and reduce the appearance of surface irregularities.



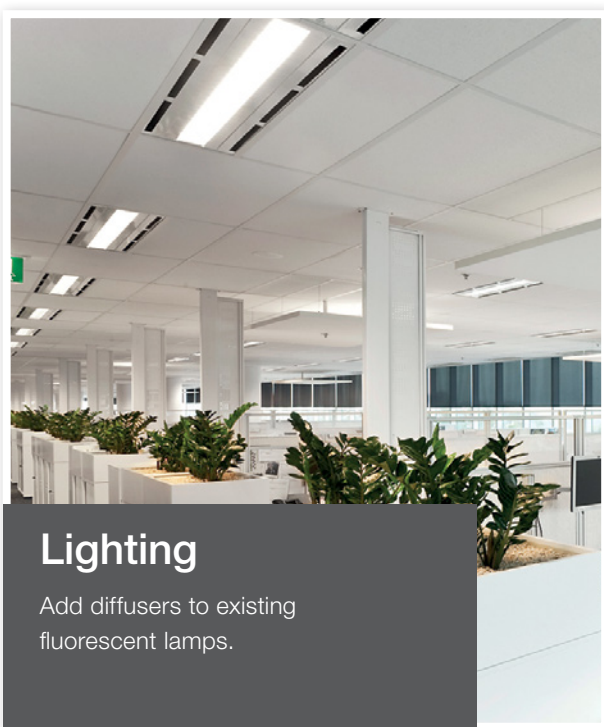
Paint

Repainting walls and ceilings with light coloured matt or low sheen paint can greatly enhance the appearance of the wall and ceiling surface, which may assist in reducing glancing light issues.



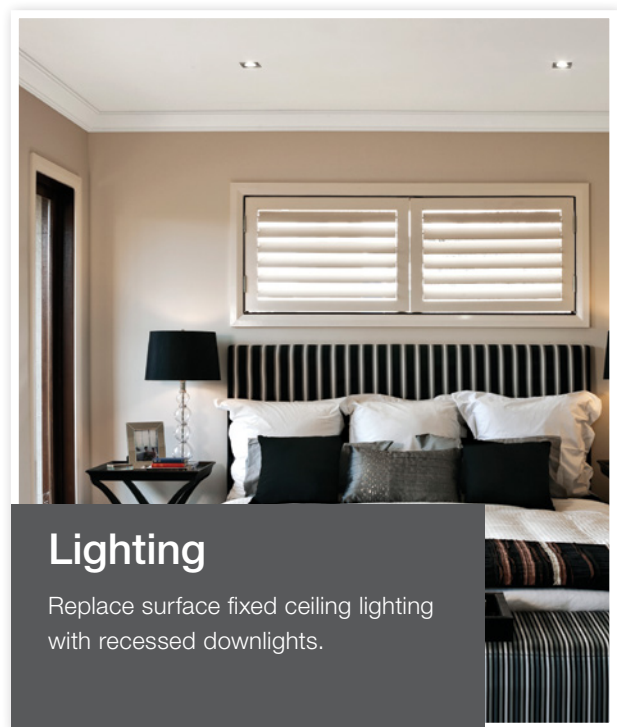
Lighting

Add opaque shades to existing batten holder light fittings or convert them to a pendant lamp fitting.



Lighting

Add diffusers to existing fluorescent lamps.



Lighting

Replace surface fixed ceiling lighting with recessed downlights.



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For more information on the Gyprock range of plasterboard, cornice and jointing compounds call 1300 306 556 or visit www.gyprock.com.au

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CSR Building Products ABN 55 008 631 356



REFERENCE

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