The Ultimate Guide to

Filters and Long Exposures



Dean Cooper
LANDSCAPE PHOTOGRAPHER

Your guide to using filters to create Long Exposures
by Australian Landscape Photographer Dean Cooper

How to use:
Neutral Density Filters
Graduated ND Filters-Polarizers
Filter Systems available
Mastering Long Exposures

NiSi



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A Guide to Long Exposure Photography and using Filters by Dean Cooper

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Nisi 3 stop Medium Grad, 10 Stop ND, Polarizer
f16 - 100 ISO- 20 sec

Why we use Filters

As Landscape photographers we are constantly having to deal with light issues that Mother Nature throws at us. If the light is flat then life is pretty easy, we can capture our scene without a problem, all our tones fall within our histogram and we can tweak our image in post, adding some contrast to bring some life to the scene. But what do we do when there is vast contrast and our cameras can't capture all the detail. Now I know some of you will opt for taking 3 different exposures and then blend the images in post, or you could drop it into a HDR program for a surreal look. Personally I don't like spending more than a couple of minutes editing my images and I find much more joy being out in the field seeing and capturing images rather than having huge amounts of post production work. So I prefer to use filters to create amazing well exposed images in camera, there is also a certain joy in looking at the back of your camera and saying WOW rather than, "thats awful but when I combine those 3 images it should look good"





I shoot a lot of Seascapes and one of the biggest issues I have is the sky is too bright and the foreground is too dark. And it can work the other way too where we may have a dark stormy sky and very bright sand in the foreground. The filter I use to control this is an ND Graduated. ND stands for Neutral Density and it is basically a dark filter that allows less light to hit our sensor or film. A Graduated ND is one that fades from dark to clear, they will graduate in the center of the filter so these are used to slide into a holder and you then simply slide it up or down to place the dark part of the filter into the brighter area of your scene.



One of the best times to shoot Seascapes is first and last light, not only because the light is at its best but also as it means we can shoot with slow shutter speeds, this creates movement in the water and in turn creates "Mood". Of course it gets frustrating when the sun rises, the light increases and now we can't get our shutter slow enough to create this effect. This is where the ND filter comes into play. An ND or Full ND as I like to call them to lessen confusion with the Graduated style is simply a very dark filter, designed to cut the amount of light that hits the sensor over the entire scene, they come in various strength's, personally I use a 3 stop, 6 stop and a 10 stop, and I love them all.

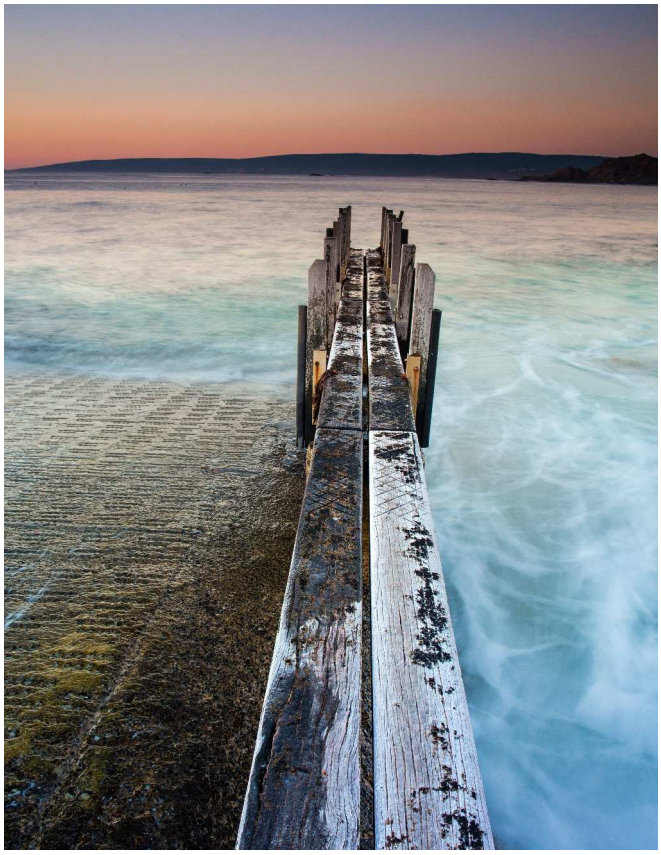
ND's are not only used for Seascapes, I love my 3 stop ND for waterfalls, it allows me to shoot long exposures at f11 instead of f22, our lens is much shaper at this aperture and I always avoid f22. I have also used ND's when shooting street scenes where we don't want people to be recognized, portrait photographers also use them in bright sunny conditions to allow them to shoot wide open creating that very short depth of field look, funnily enough this is where ND's originated, they were made for the movie industry to allow them to shoot very short depth of field in sunny conditions, later on they were adopted by still photographers.

The other filter I use is a Polarizer, these will remove reflection, and glare to a degree, these filters effect colour, where they will increase saturation in blues and greens.

Filters Explained

We use a variety of filters for Landscape work, the main filters we use are:

UV or Skylight
Polariser
Neutral Density (ND)
Graduated Neutral Density (ND Grads)



UV or Skylight

These are purely for protection, better to damage a filter rather than the front element of your lens. UV filters claim to enhance the light but in truth I have never been able to see any difference. I tend not to use UV filters mainly as I am always using the Nisi Filter system on the front.

Polariser

A polariser can make a huge difference to an image as it does a couple of different things. Primarily it removes reflection and will deepen blues and greens. You can use this filter in the middle of the day when shooting Seascapes, it will darken a blue sky and bring definition to clouds making them appear to pop off the page. They are also used to enhance green foliage and are great for waterfall shots. Use your Polariser when shooting waterfalls after rain, wet leaves reflect a huge amount of light, it will also take reflections off of streams allowing us to see rocks etc under the water. They will cut the light by about 2 stops so will slow our shutter speed. If you don't have NDs and want to slow down your shutter speed then these will do the trick. As they do cost 2 stops of light don't leave this filter on, only use it when you need it. Another caution is using them on a blue sky with a wide angle, 24-28 mm is the limit, anything wider will result in dark and light patches in the sky, not a good look and hard to fix in Photoshop.
You will need Circular Polarisers for Auto focus lenses, these come in screw on form or also available in the Drop in Filter System. Look thru the lens and rotate the front element until the effect is achieved. Some of the newer ones have a dot or mark that you rotate to where the sun is. Once it is set it is right unless you rotate the camera to a different view. For instance if you change from landscape to portrait you will need to reset the polarizer.
Another thing to know is that they work best 90 degrees from the sun and are most effective at midday when the sun is high in the sky.

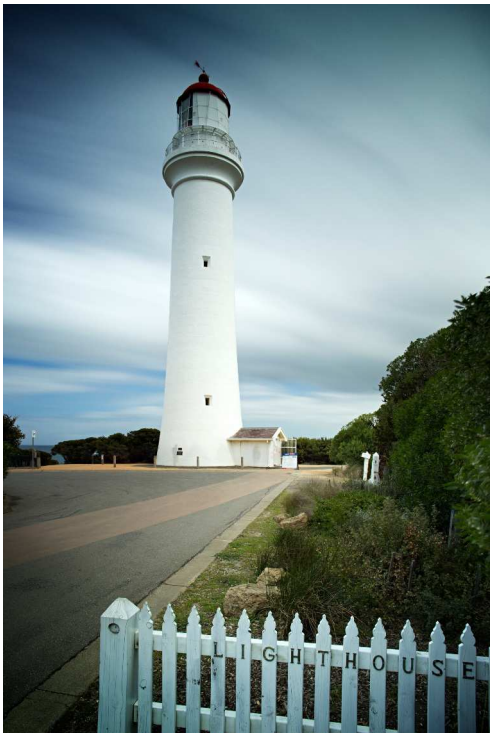


Nisi V6 with built in polariser



Nisi 3 stop Hard Grad, 10 Stop ND, Polarizer
f11 - 100 ISO- 30 sec

Neutral Density



Neutral Density or ND’s are mainly used to slow down our shutter speed. They were first developed for the film industry but were soon adopted by still photographers.
They come in different strengths from 1 stop thru to 20 stops, and are available as a screw on filter or a drop in filter.
I find the 3 stop very handy for seascape images at sunrise. As the sun rises it gets brighter and we can no longer get a 1 second exposure to create that blur and motion in the sea. So this is a situation where a 3 stop ND can be used.
They are also great for waterfalls allowing slow shutter speeds without having to resort to f22.
Some entry level DSLR’s ISO has a lowest setting of 200 ISO, so here a 3 stop ND brings it back to effectively 25 ISO.
The most common ND filters used for landscapes are the 6 and 10 stop. The 6 stop ND is a great filter to use during the day, it allows me to slow the speed down to a few seconds, if I'm looking for a longer speed of 10-30 seconds then the 10 stop Nd is fantastic.



Nisi Neutral Density Filter



Nisi 10 stop ND used during the day to create a 30 sec exposure

Calculating a New Exposure when using ND Filters

When we use ND filters they will slow down our shutter speed. Our meters can only compute a shutter speed up to 30 seconds so we may need to work out our exposure manually when using strong ND filters.
Take an exposure reading WITHOUT the filter in place then use this chart to work out your new exposure with the ND filter in place. And remember to then check your histogram as not all ND filters are truly accurate.

When using shutter speeds in excess of 30 seconds you will need to set your camera to BULB, set the aperture manually and use a timer release to set the long exposure time.

Phone Apps

Nisi have a great app for calculating a new exposure when using ND filters. It is very easy to use just dial in your normal shutter speed without the filter, select the ND filter you wish to use and it will tell you the new exposure.
Search Nisi Filters Australia in the App Store

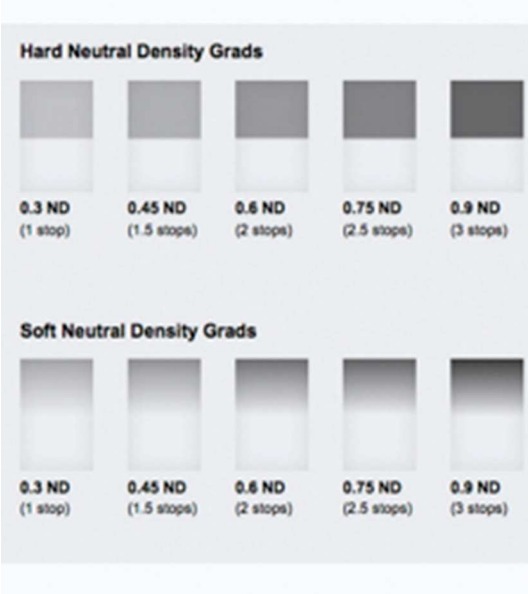
Base Exposure W/O Filter	New Shutter Speed with Filter		
	3 Stop ND	6 Stop ND	10 Stop ND
1/500	1/60	1/8	2 sec
1/250	1/30	1/4	4 sec
1/125	1/15	1/2	8 sec
1/60	1/8	1 sec	16 sec
1/30	1/4	2 sec	32 sec
1/15	1/2	4 sec	1 min
1/8	1 sec	8 sec	2 mins
1/4	2 sec	16 sec	4 mins
1/2	4 sec	1 min	8 mins
1 sec	8 sec	2 mins	16 mins
2 sec	16 sec	4 mins	32 mins
4 sec	32 sec	8 mins	64 mins
8 sec	1 min	16 mins	128 mins
16 sec	2 mins	32 mins	256 mins

Graduated Neutral Density



These are a drop in style filter and are used to control the difference in light values mainly between our sky and foreground. This seems to always be a problem for the Landscape photographer and these filters are an absolute necessity. Again they come in different strengths from 1 stop to 4 stops and have a Hard, Medium or Soft graduation.

Hard Grads are good for when we have a definite transition between sky and foreground, such as a seascape with a clean horizon. The Soft grads are used when we need a gradual change, they will gently balance exposure across the image. Nisi recently released Medium grads which I love, they lay between the hard and soft, they are quite forgiving and a very useful grad to have. The grads are placed into the holder and slide down to where we need them. The more you use these the more you will love them.





Full ND



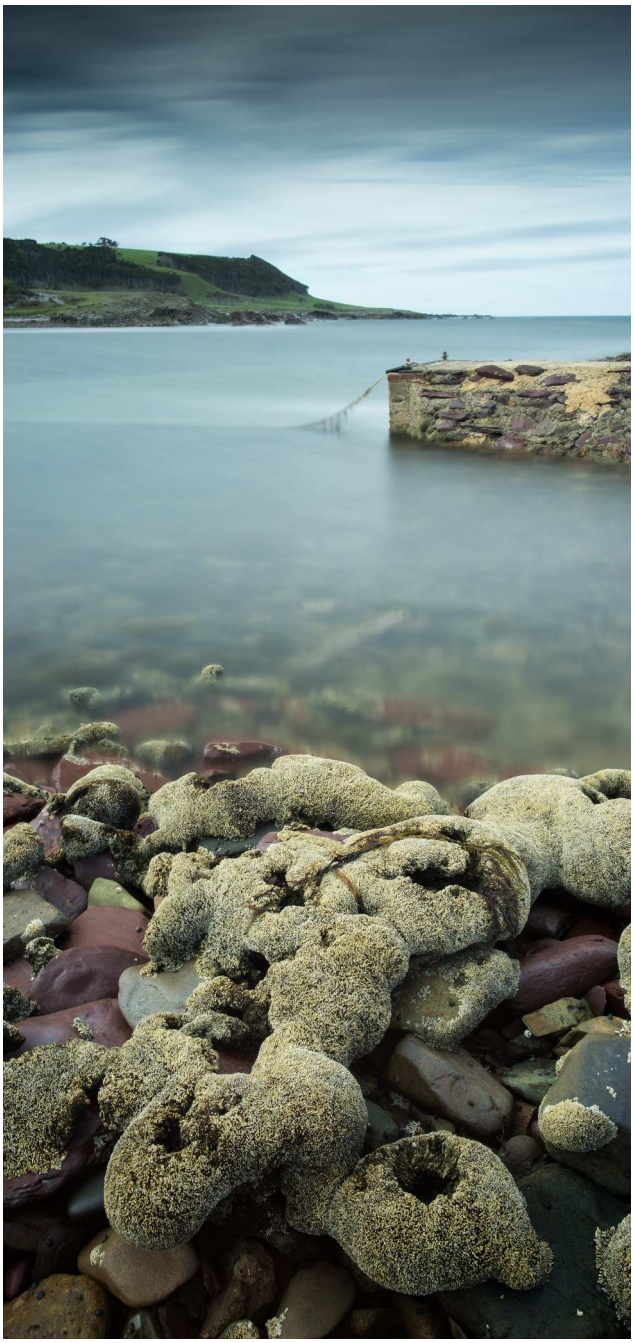
ND Grad



Nisi Filters - 3 Stop Soft Grad, 10 stop ND, Polarizer
f16 - 100 ISO- 120 sec



Nisi Filters - 3 Stop Soft Grad, 6 stop ND, Polarizer
f11 - 100 ISO- 2.5 sec



Nisi Filters - 3 Stop Soft Grad, 2 stop Hard Grad,10 Stop ND,Polarizer
f16 - 100 ISO- 120 sec

Filter Systems

There are two different systems open to us, screw on filters or square/rectangle filters that drop into a holder.

Screw on Filters
ND's are available as a screw on filter, they come in different strengths and you screw them onto the front of your lens. Of course they need to match your filter thread size of your lens, so if you have lenses with different filter sizes you need one for each. So if you had 3 lenses with different thread sizes and wanted ND's in 3 strengths then you would end up with 9 filters [explain that to the finance manager] There is such a thing as an ND fader which is a single filter that is variable in strength, they rotate like a polarizer and most go from 2 -8 stops, sounds fantastic but I have tried many and am yet to find one that works across the full range, they are ok to half way and then after that you get a multitude of problems from banding to excessive vignetting on the sides of the image to a horrid cross hatch at full strength. My advice is don't bother with them.
You can actually buy an ND grad that screws on, the graduation is smack bang in the middle so a little limited in its use, i.e we might not want the graduation there.

Drop in Filter System
The ultimate set up is the drop in system, yes its more of an investment but the flexibility is well worth it. Nisi,Lee, Hitech and Cokin are the main players here, and there are lots of different filters available to us. Make sure you buy the 100mm wide system if you are using a DSLR, Nisi and Lee make a smaller system for micro 4thirds cameras, but be careful here as these are suited to smaller lenses, some of these smaller cameras have larger Pro lenses, the general rule is if the filter thread on the lens is 67mm or larger then you need to move up to the 100mm system

The system consists of three components:
1. An adapter ring that screws onto your Lens [take all other filters off first]
2. A holder, std config is 3 slots
3. Filters to slide into the holder



Nisi V6, holder, main ring and Polariser



Nisi main 82mm ring



Nisi Polariser



The NISI System

Nisi make four different versions of their filter system, a 70mm system for smaller cameras, The popular V5PRO which is a 100mm system and also a 150mm and 180mm system for ultra wide lenses. Here I will refer to the 100mm system as it is the most popular and is suited to DSLR and also the 4thirds cameras that have the slightly larger pro lenses.
The unique part of this system is that the polariser is built into the main adapter ring and the holder sits in front of this. The holder takes 3 filters so effectively you can run 3 filters plus a polariser. This may sound extreme but it's not, a lot of my images I use 2 grad filters to control highlights, an ND to slow down the speed plus a polariser. And the good news is you can do this on a 16mm lens, full frame without vignetting, unheard of on many of the other brands.
The main ring is 82mm and you use step rings to make this fit other size lenses, this saves on having to buy an adapter ring for each lens.

The holder comes in a kit form consisting of:
3 slot holder
Main 82mm ring
step rings, 67mm,72mm,77mm
circular polariser
Hard Case to store it all

To use the polariser on this system you screw the polariser into the main ring, once in place you use two scroll wheels on the main ring that rotate the polariser to your desired position. The polariser can be easily removed when not needed.

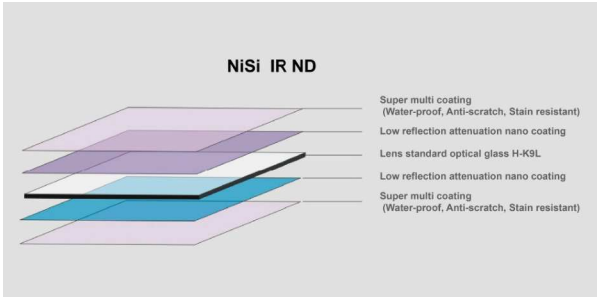
ND filters available are 3,6,10,15 and 20 stop.

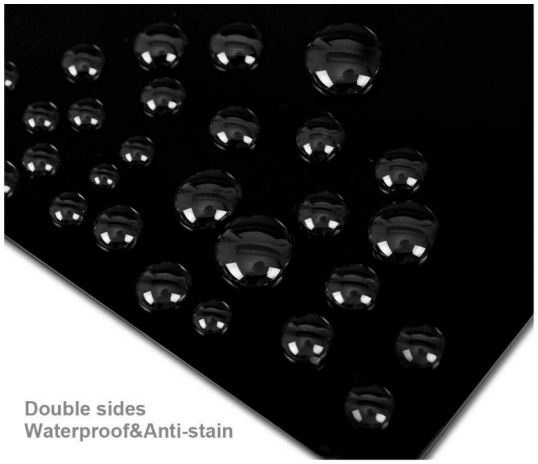
ND Grads come in 2, 3 and 4 stop strength in soft, medium and hard graduations. They also do a reverse grad and a horizon grad.

There is also a Nisi Natural Night filter, this is used for night shots to remove light pollution from artificial lights.

Nisi Coatings

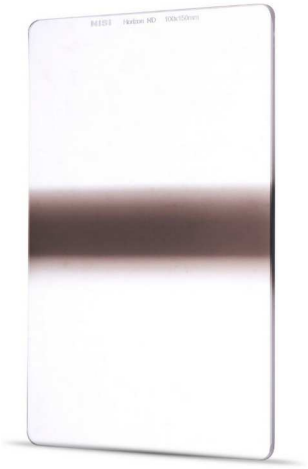
One of the things I love about Nisi filters are their coatings. Nisi have developed what they call their Nano coating, it includes an IR coating that reduces IR (infrared) light which causes a colour shift in long exposures, this means you can shoot long exposures and not get a colour shift like the Lee 10 stopper, fantastic. There is also a waterproof coating which keeps your filters very clean, before Nisi I was using Lee filters and salt spray on these was a nightmare, they would need a full clean with a solution. Not with the Nisi filters, they have a very clever cleaning pad that you wipe over the filter, this makes it very easy to keep your filters clean while out shooting.







Nisi Night Filter



Nisi Horizon Filter



Nisi V6 Holder Kit

Which is best - Screw on filters or the Drop in System.

The screw on system is great if you want to have a play with ND's, for minimal outlay you can buy one filter and away you go. Doesn't take up much room in your camera bag and fairly quick to put it on. Of course it is very restrictive in its usage, and there isn't a good option to use a graduated filter.
The drop in system is by far the superior choice, once the holder is in place it is very quick to use and the options open to us are wide and varied, we can very quickly change filters [slide them in and out, compared to screwing one off to put another on] Also we can combine filters, I use a combination of three filters on a lot of my images. Because I use these filters regularly I leave the adapter rings on the lenses, this saves me a lot of time when I am shooting, Nisi do a neat protection cap that clips onto the adapter ring and acts as a lens cap for when your lenses are in your camera bag. Getting great images can sometimes mean being organized and making life easy for yourself. The drop in system can be a bit of an outlay but you will have it for life and the filters will fit all your lenses so you don't need to buy new filters when you upgrade lenses, last check in my cupboard I have 8 circular polarizers of different sizes that I don't use anymore. And finally a word of warning, you get what you pay for, the cheaper filters can throw magenta colour casts and some of the holders that students have had on my workshops are poorly made and painful to use, so my advice is invest wisely and you will have a system that is a joy to use and won't let you down when you are about to capture that once in a lifetime image.

When & How to use ND's, ND grads and Polarisers

Lets start with **ND or Neutral Density** filters. The Full ND is basically a dark filter that covers the entire front of the lens, so it effects the whole image. They come in varying strengths, personally I use a 3,6 and 10 stop. We mainly use an ND to allow us to have a longer shutter speed, but they can also be used in bright sunlight to allow us to open the aperture up for a short depth of field. Lets start with the 3 stop ND, I use this one after sunrise or before sunset, so the light is low but the 3 stop gives me that extended shutter speed. I always work backwards, as in I will look at a scene and decide what shutter speed I want to create the effect I am thinking of. I then choose the ND strength to achieve that. I also love the 3 stop ND when shooting waterfalls and streams, 3 stops is all I need to slow down the speed to around 1-2 seconds and shoot at f16 or f11, this aperture is preferred over f22 as our lens is sharper in that range.
The 6 and 10 Stop Nd's are a different beast altogether, remember each stop of light doubles so there is a massive difference between the 3 and the 10. If we had a 1 second exposure with the 3 stop then with the 10 stop it would be 128 seconds. I love both of these filters and use each quite a lot. The 6 gives me speeds of around 2-4 seconds quite easily during the middle of the day. I will use the 10 stop when I want a long exposure of around 30 seconds to 2 minutes. This is a great effect to make water milky or to get some movement in clouds, the 10 stopper really can turn an average day scene into something quite spectacular. I will cover the steps in using the 10 stopper in another chapter as it is quite a process, the 6 stopper on the other hand is quite easy. Most cameras nowadays will shoot a 30 second exposure so if we are using the 6 stopper then our meter will work everything out for us when the filters are in place, most cameras also work



OK in Live View with this filter in, but in saying that I have seen some that don't so you may have to turn LV off.

White Balance

If you are using Nisi filters then you won't have a colour shift so you can use cloudy, sunny or even Auto white balance to get great natural colour. When using the Lee 6 and 10 stopper I recommend that you change your WB to 8000K (Kelvin) for the 6 stopper and K10,000 for the 10. This corrects some of the colour cast that is caused. In use I find the 6 stopper is great and I get really good punchy colour, with the 10 stopper , even at 10,000K the colour will always be a little bit, shall we say different, if you don't change it to 10,000K it will be VERY BLUE. If you are shooting Raw then you can change this in Post.

We use **Graduated ND** filters for a very different reason. These are used to control a bright part of a scene. As you have seen the Grad is a longer filter and half is dark and half is clear. There are a few styles, Soft, medium or Hard, and this refers to how it graduates, a soft has a soft graduation and a Hard has a harder more definite graduation, medium sits in the middle of these two. With experience you will learn what to use where but here is a guide to get you going.
HARDS are used where there is a definite clean line between the dark and lighter part of the scene. A horizon over the ocean is a good example, the sky is bright and the water is much darker. Hards can be unforgiving so you need to place them carefully. Place the filter into the holder and pull it down to the desired spot, you can do this in Live View or through the View finder.
SOFTS are more forgiving and are used where the transition of light is not so obvious or also where something protrudes into the bright area, like a Lighthouse or a tree.

MEDIUMS are quite forgiving and can be used where a hard is needed and to some extent where a soft is used, sometimes a soft is too soft and a hard is too hard so this is where the Medium shines.

REVERSE Grad
A reverse grad is darker in the middle and then graduates up to the top of the filter. Lets say you have a Seascape with dark clouds above but the horizon line is too bright. If we place a normal grad into this scene then the clouds get even darker, here we use a Reverse grad which will be darkest in the center and then graduate out to the top, hence not effecting our all ready dark clouds.

HORIZON filter
Nisi make a Horizon filter which is a strip in the center of the filter, this is used where the light is a bright strip such as on sunrise and sunset.



No Filters



3 Stop Hard Grad in Sky



Soft Grad



Hard Grad

TIP

A 3 Stop hard grad can be used as a 3 Stop Full ND by pulling the Grad down over the entire image. It's a great trick and saves you buying the ND if you are on a budget !!

Polariser Filters

Polarisers are amazing filters and can be a great one to have in the kit. A Polariser will cut reflection on wet or shiny surfaces and they will also deepen blues, greens and can make clouds POP. You may of heard of two types, circular and linear. Modern cameras need circular polarizers and these need to be rotated to take effect. Polarised light can vary a huge amount, it is effected by many things, height of the sun, direction in relation to the sun, subject that you are shooting. My advice for using a polarizer is to grab it out, look at your scene through it, rotate the front element and see what effect it has. It is quick, easy and you will probably be amazed at what it does. It can be subtle though so you need to pin point parts of the image and see what effect it has.

Most of my seascapes will be taken with a polariser, they are a great addition to a long exposure because it will cut glare on the ocean and allow this to be recorded as a stronger colour, quite often a nice aqua green colour.

If you are shooting a scene with wet rocks then take note of what the polariser does, it will take reflection off the rocks, sometimes this looks good but sometimes it removes detail and can kill the image.

Waterfalls, streams and rainforest are great places to use a polariser, again it will take reflections off the water and also wet foliage, this intensifies the greens and can really change a picture quite dramatically.

Make those Clouds Pop

A polariser can make a huge change to a scene with blue sky and white clouds, It will darken the blue and increase contrast making those white clouds really stand out.



Nisi polariser for the V6 system



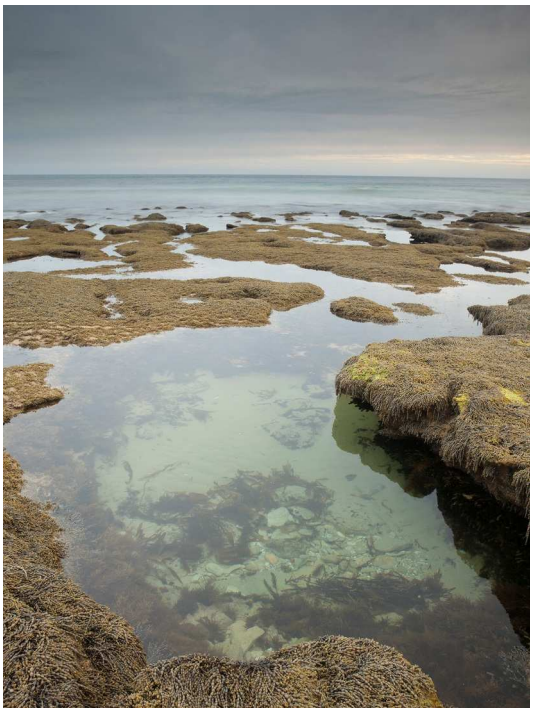
Nisi polariser mounted onto the main ring

Polarizers and Wide Angle lenses

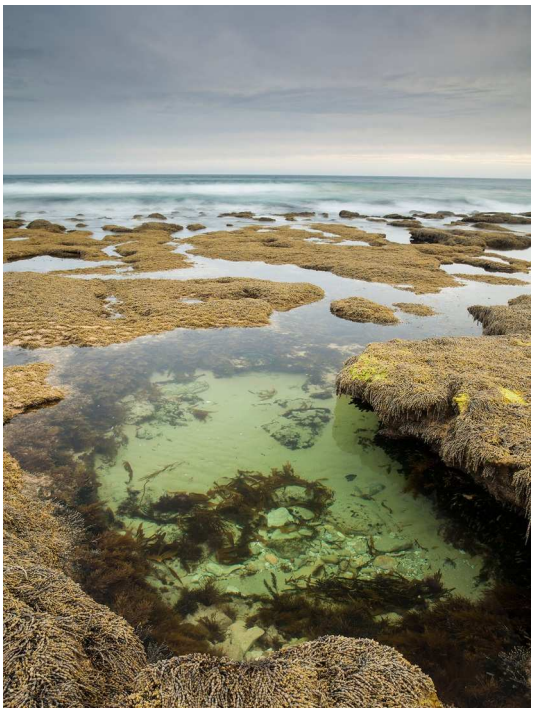
If you are shooting a blue sky with a Polarizer and a wide angle lens then you can run into some problems. The issue is that the polarised light will vary across the scene and you get dark patches that look awe full. This can happen with lenses wider than 25-28mm. There is no workaround for this so be aware of it, it will be worse when shooting horizontally over vertically. I have also found it hard to correct in Post so I generally avoid it if I can.

TIP

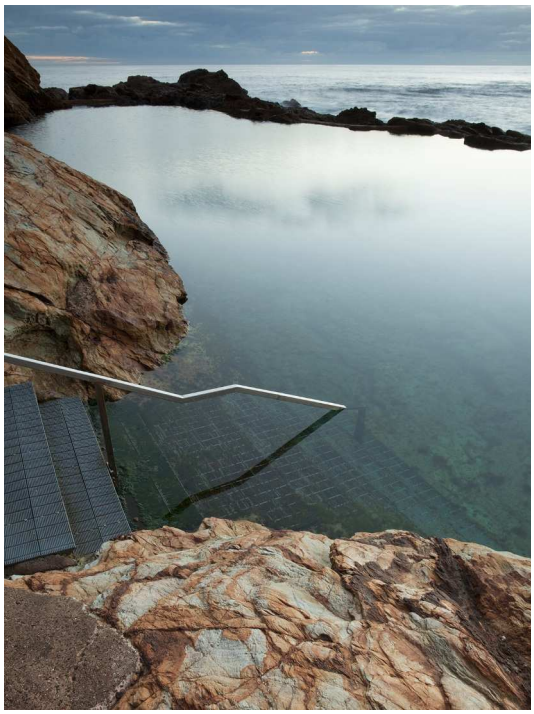
Polarizers work best when shooting 90 degrees to an overhead mid day sun.



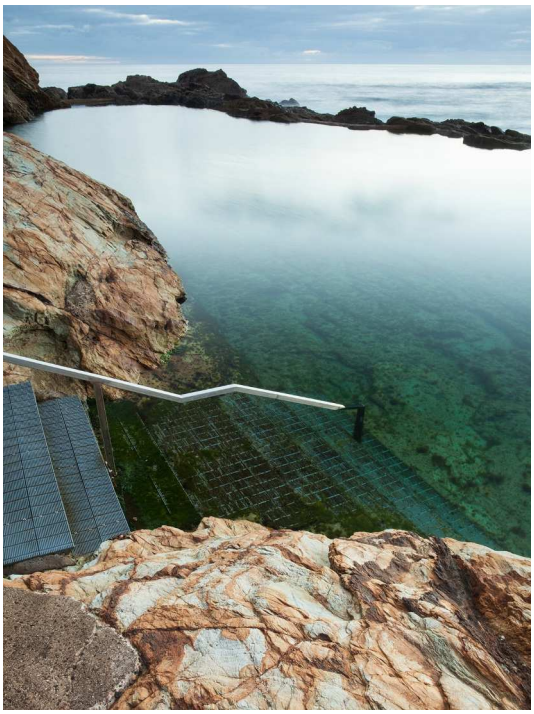
No Polariser



With Polariser



No Polariser

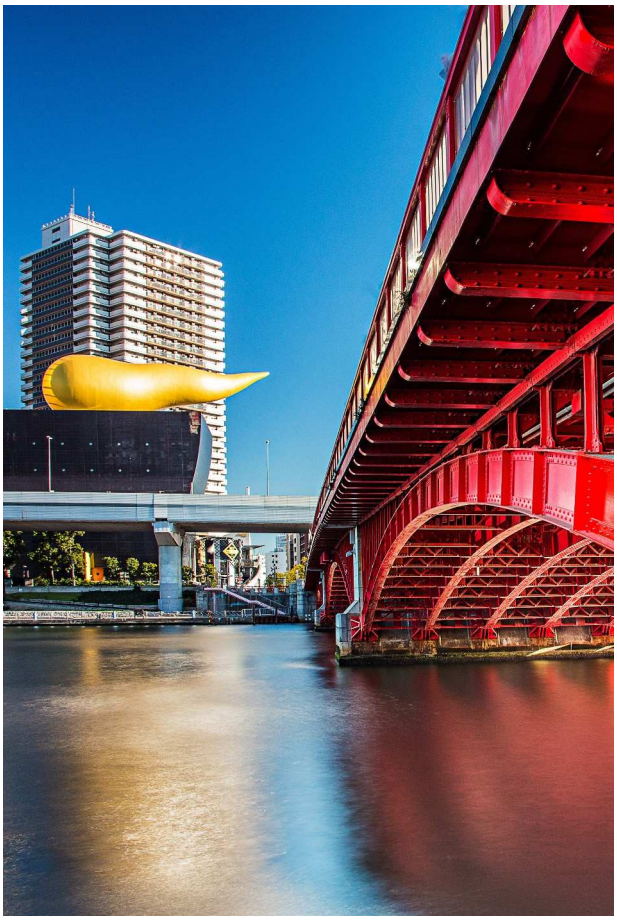


With Polariser

NB: all images straight out of camera

Combining Filters

The joy of the drop in system is that we can combine filters and we can do that very easily. We can combine filters in lots of ways, we can stack full ND's, we can stack ND Grads or we can use a mix.
Two soft grads can be used to create a vignette effect, place one in the top as usual and then one upside down from the bottom. This is a great trick for drawing the viewer into the center of the image.
A vast majority of my images use three filters, an ND to slow down the speed, an ND Grad to control the brighter part and a Polariser. When you combine filters things can get a little tricky so here is my workflow. First compose your image with no filters, as we add filters things can go dark through the view finder so get the composition right first. Next have an idea how many filters you will use, if you are using a polariser then fit it to the holder and set the polariser to the scene. The Grad is next and is the one that is critical where it is placed and you will see its effect more without an ND in place. It does matter which guides the filters go in so make sure you follow these rules. An ND will always go in the first guide close to the lens, then the Grads. Good quality ND filters have felt on one side to help seal the light off, these must always go in the first guide in the holder and the felt side goes to the rear to seal against the holder, when using Nisi ND's make sure the writing on the filter goes to the top when sliding the filter in. You will notice on the Nisi ND filters two sides of the felt are thick and two sides are thinner, an easy way



Nisi Filters - 2 stop Hard Grad, 3 stop Medium Grad, 10 Stop ND, Polariser
f11, 320 ISO, 30 sec



Nisi Filters - 3 stop Medium Grad, 10 Stop ND, Polariser
f16, 100 ISO, 30 sec

to remember which way it goes is "writing to the top or bottom". So back to our workflow, place the Grad in the second guide if using an ND as well or else it can go in the first guide. (closest to the lens) Once the Grad is in place you can put the ND in. Providing your shutter speed is within the camera's range the camera will read the exposure through the filters so no need to make any adjustments, just read off your histogram as you normally do. I will cover the long exposures in the next chapter where we are outside of the cameras range !!

Long Exposures with the 10 Stopper

Most cameras will shoot a slow speed of up to 30 seconds, beyond that we need to go to Bulb setting and hold the shutter open manually. This is the case most times that we use the 10 Stopper. Here is a step by step guide.

Set up the shot and add all your filters EXCEPT the 10 stopper, remember this will go into the first guide closest to the lens so leave that one empty.

Take a shot and read that your histogram is OK, once it is OK take a note of the ISO, f stop and shutter speed.

Turn off auto focus as it will be too dark with the 10 stopper and the camera will try and refocus.

" LEE BIG STOPPER ONLY" Change WB to 10,000 K, in the WB settings there should be a Kelvin scale, select it and dial up 10,000 or close to it. For Nisi 10 stop Nd leave WB at your desired setting

Change Mode to BULB setting and select f stop that you used. Don't change the ISO
Close or cover eye piece on the back of the camera

Read off your chart that came with the 10 Stopper or use an App to calculate before and after speeds. It may not have the exact shutter speed so choose the one closest to it.

Lets say the App said 2 mins. Set your Intervalometer for 2 mins or use a cable release in the hold position

Place the 10 Stopper into the Holder, I find it easier to remove the holder first, then you can make sure the felt is sealing off the light properly

Take the shot and review the histogram. Make adjustments if it is under or over exposed.

NB Some cameras have a Long Exposure Noise Reduction function, you may want to turn this off as it slows things down. It works by taking another "BLACK" shot at the same length of time and then deletes the noisy pixels. So if your exposure is 2 minutes it will take 4 minutes before you see an image come up on the back of your camera. I find this annoying, so I turn it off and deal with the noisy pixels in post. They are random coloured pixels that stand out and I just use the clone tool, quite quick and easy.



TIP

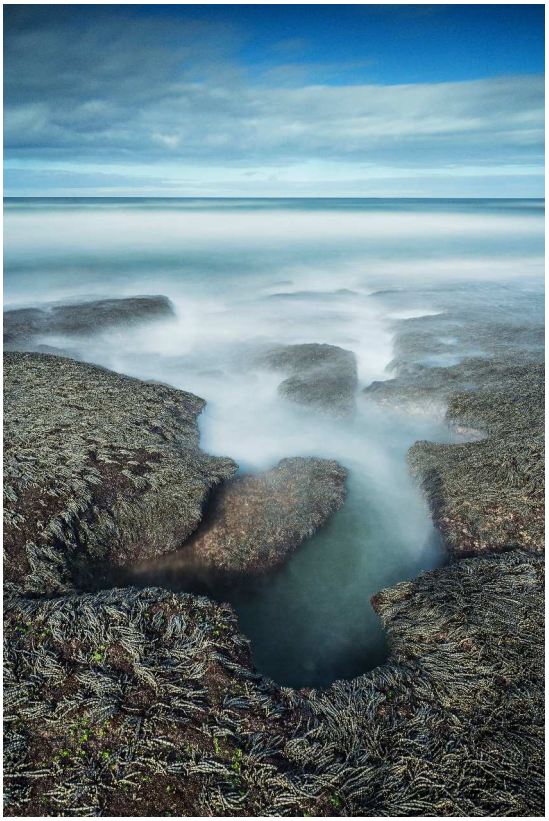
Buy yourself an Intervelometer, most have 4 functions and one is "Long Exposures". You will need one to suit your camera, the genuine ones are expensive but the cheap eBay ones work a treat.

Mastering the Long Exposure

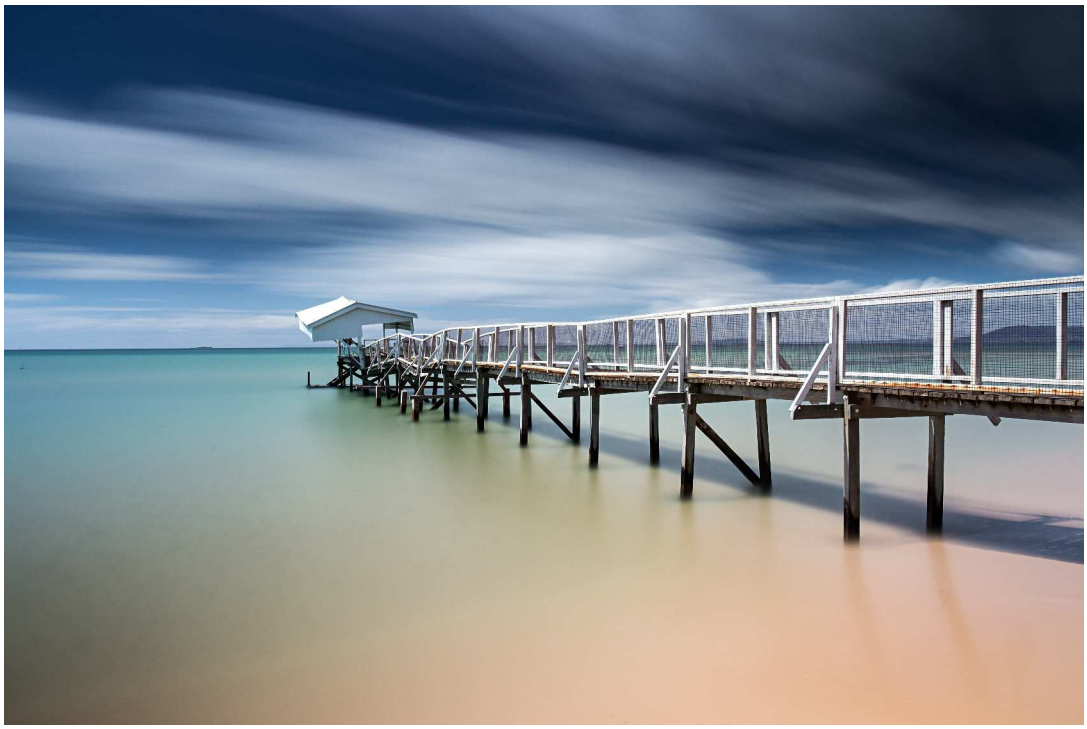
There is a lot to consider when taking long exposures, here is my workflow and some tips to help you master the technique.
First I evaluate the scene, I check to see what the light is doing, will I need a grad to even it out. I also check to see if I need the polariser, to do this I rotate the polariser into position and see how it changes the scene, most times with a seascape it will be an advantage to use it. The final thing I decide on is how long do I want my exposure. There is a big difference between a 1 sec, 10 sec and 2 min exposure. If I have some wave action then I know that a 2-4 sec exposure will retain some shape and form in the waves giving a sense of motion, this can look really nice in an image. To achieve this I would use a 6 stop ND and then adjust the aperture and ISO to achieve a 2-4 sec exposure. Remember that you need to keep some depth of field so I always keep my aperture between f11-f16.
If I want to smooth the water out then I need 10-15 seconds so a 10 stop ND would be a good choice. Obviously it depends on how bright the scene is to start with but these are pretty good starting points, remember I am also using a grad filter and a polariser.
I find I don't shoot many images longer than 2 mins, if you want smooth water then all you need is 45 sec to 1 min, it won't be smoother if you shoot an 8 min exposure. What will change with 8 mins is the clouds will be streaky, to achieve 8 mins during the day you will need a 15 or 20 stop ND. Some issues when shooting images this long is you can get light leaks onto the sensor from your camera doors and buttons, I wrap my camera with a scarf to eliminate this.
I like to compose with out the filters in (except the polariser) once I have that right I will add the filters and take a test shot, I always check the histogram, composition and positioning of the grad filter, is the Grad filter the correct one ? is it too strong or not strong enough? if I'm using a Hard Grad then I make sure it is sitting in the right spot. With grads when you have the strength, graduation and position correct then you shouldn't know that it has been used. If you have put a grad in the sky and now it is too dark compared to the foreground then you need to change it down a stop as it is too strong. If where the graduation sits is too severe then you need to use a softer grad. Using Grads is confusing when you start but with practice and some experience you will get better at choosing the correct grad to use.
Exposures longer than one minute can be tricky if the sun is coming and going because of clouds, you may base your exposure on the ambient light and then during exposure the sun may pop out from behind a cloud, if it stays out for a majority of the exposure then it may be wrong. Don't get this confused with your initial exposure, you just need to readjust your exposure accordingly.
I see a lot of people using the 10 stopper and just guessing an exposure and then making adjustments, this may take 3-4 shots to get it right, use the apps available and get it right first time, its not that hard.
Long exposures can also be used to eliminate people in the scene, you need a fairly long exposure for this, I would suggest one minute or longer, it also depends on how they are moving through the scene, if they stop in one spot they may appear ghosted, if they are moving through then there is a good chance that they won't record on the sensor.



Here I used a 2 sec exposure to retain some movement and shape of the wave



Here I used a 2 min exposure, notice how smooth the water is and now the wave has become a white line.



This image is an 8 min exposure to create those clouds streaking across the sky

What should I buy

I have seen most brands of filters and it really is a case of you get what you pay for. In saying that I also advise people to buy within their budget and buy according to the amount of use the filters will get. The main issue with the cheaper (and some not so cheap) filters is that they throw a Magenta colour cast. When a grad filter does this it looks totally wrong and that filter now becomes a liability and not something that is useful in our kit. For this reason I recommend Nisi Filters, and I do so because I use them, they are well made and do the job beautifully,

Nisi make some great kits so have a look on-line and see what suits your budget, once you start using your filters you will get an idea of what other filters you may want to add.

Here is a list of my Nisi kit

V6 holder, includes rings, holder, main ring and polariser

ND Filters

3.6 and 10 stop

Grad filters

3 stop Soft and Hard

2 stop Hard

3 stop Medium

3 stop Reverse

3 stop horizon filter

What size Filters do I need

There are 4 size filter systems available, 100mm wide and 70mm wide and also 150mm and 180mm wide for ultra wide lenses

For DSLR cropped or Full Frame you need the 100mm system.

For smaller cameras you can use the 70mm system if your lenses use up to a 62mm filter on the front. If you have a smaller camera and your lenses take a 67mm filter or larger on the front then you need to go to the 100mm system to stop vignetting.

Lenses like the Nikon 12-24mm need the 150mm system.



Buy Filters



Nisi Starter Kit

Star Trails

These are a lot of fun and quite addictive if you are a night owl. There are two ways of doing them, one is a long exposure of at least 30-45 minutes and the other is to take lots of shots and use a software program to stitch then, this is the preferred way and a bit easier. This is a very different way of shooting and a bit of prep goes a long way, here are some of the things you need to know.

** A wide angle fast lens is good f2.8 is ideal*
** A prime manual focus lens is good as you can easily set infinity focus*
** If using a zoom AF lens, you need to set infinity focus during the day and mark the lens, this saves trying to focus in the dark and you can't wind the lens to the end as there is no infinity stop on an AF zoom lens*
**Turn off Long Exposure Noise Reduction if it is a feature on your camera*
** I turn off the back screen on the camera, saves battery life*
** Have an Intervelometer to tell the camera to take multiple shots. i.e you can set the camera for a 5 second delay and to take 300 shots. Makes life real easy*
** A head torch is great to have during these sessions*
** You need pitch black conditions and clear skies, any ambient light is not good, so get out of the city*
**Pick an interesting foreground*

The Nisi Natural Night Filter

Between mercury vapor, sodium, Low CRI streetlights, there are many undesirable wavelengths of light that pollute the night sky. The glow from these can keep your camera from seeing the sky properly and effect your night images. Because of this, NiSi has created the Natural Night Filter exclusively for Night Photography

Buy Nisi Night Filter



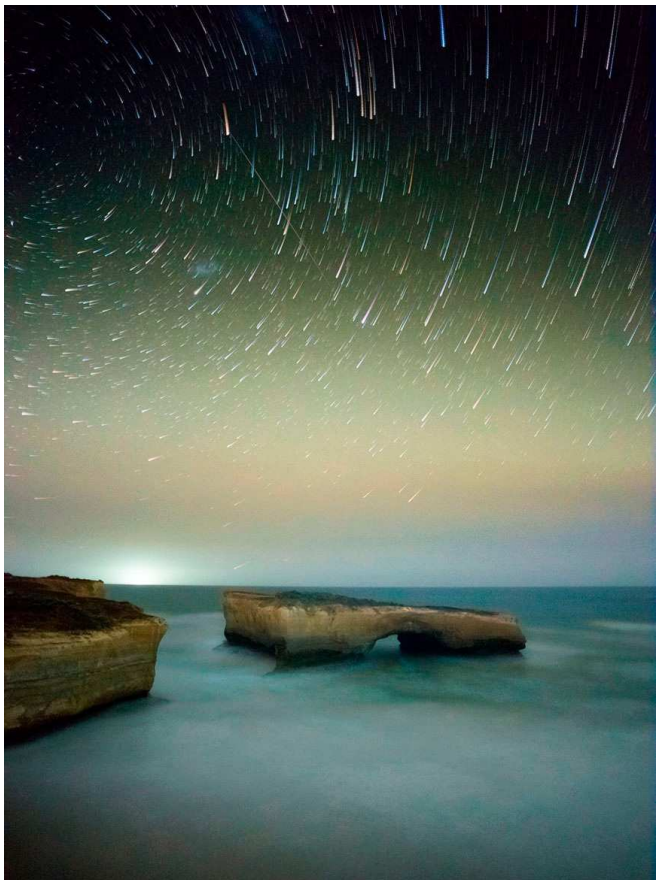


Image stack, 35 frames over 40 mins
20mm Lens - f3.5 - 60 sec - ISO 6400
Software used - Starstax

A Guide to camera settings

This is a rough guide and will depend on the conditions but it is a good starting point.

Stacking	**Single Shot**
6400 ISO	**400 ISO**
f4 or lower	**f5.6**
30-60 seconds	**45mins**

You need to get the exposure right and this can be hard as so much of the image will be dark, remember to take this into account when looking at the histogram. In the southern Hemisphere if we point south then we will get the circular effect of the stars. With each 30 second exposure there will be slight movement in the stars that your camera will record. You need to shoot over a time period of 30-40 minutes and then Software like Starstax will stack those images into a single frame. The software is really easy (and free) to use so don't be put off. Have a go, it is a lot of fun.

Profile

At a young age I fell in love with photography, spending hours in my dark room, playing with BW and also colour.
Today I am happy to say that I have been working full time as a Landscape photographer since 2000. I am extremely passionate about the craft, and it definitely consumes my life. What I love the most about photography and what keeps me going [other than the fear of a 9-5 job], is that it is an endless journey. I am forever learning and developing my style and skills.

After up and quitting my job back in 1999, I picked up my camera and didn't look back. I had sold prints at Markets, turned my home into a Gallery, and published a range of souvenirs. It was a series of little steps and a few struggles, which have allowed me to take the big leap. I had thought of teaching and then by fate I landed a teaching gig at a Workshop. I soon realized that this is where I was supposed to be. I loved teaching and it felt natural for me to help others. I think as photography has given me so much in life it is a good feeling to give back.

I love the ocean and can't imagine living inland so it is no surprise to me that Seascapes have become my specialty, the mountains and High Country are my second favorite location. Photography to me is so much more than just taking pictures, I find myself in extraordinary places, meeting great people. It's a chance to share my experiences, an outlet where I can express myself as I continue down this road called life. It has been a great journey so far. Teaching is one of the many things I see myself doing now and in the future and I know Photography will always be a major part of my life. .





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