DIGITAL IMAGING GUIDELINES

Digital camera guidelines for NMR depositors

QUICK START GUIDE

For Users of Digital Cameras

1. Choose a camera of 4 megapixels or more.
2. Read the manual.
3. Use a memory card large enough for your days shooting, at least 256mb, but the bigger the better.
4. Make sure the battery is charged and if possible carry a spare.
5. Set the camera for largest image size with least compression (power users may wish to shoot RAW, see full guidelines for more info).
6. When back in the office download to your PC, edit out unwanted shots, re-number, caption & burn to CD.
7. For detailed info read the following document.

Digital Camera Guidelines - General Users.

In order to submit digital images for inclusion in the NMR Photograph collection, certain standards must be adhered to.

Throughout this guide I will refer to products available from certain manufacturers as these products are where my experience lies, however, products from other manufacturers may be of equal suitability and this should be taken as read. All software references are for PC.

Cameras

To achieve sufficient image quality the minimum camera resolution should be at least 4mp. This can be achieved with the entry level camera in the ICT hardware catalogue, although for best quality 5/6/7mp options should be considered. For maximum flexibility digital Single Lens Reflex (SLR) cameras offer the best solution for power users, in this case 6mp should be considered a minimum requirement and at the time of writing an 8mp camera with lens is available for around £700.

When photographing with digital SLR cameras it should be remembered that there is often a magnifying effect due to smaller sensor sizes i.e. Canon EOS 20D has a magnifying factor of 1.6. This can mean using wide angle lenses is a more expensive option, however most manufacturers can now offer reasonably priced wide angle zooms.

Most users will be happy to photograph using the JPEG setting on the camera, however the JPEG format discards information in order to reduce file size, so please remember that if you wish to manipulate the image, you will lose information (the image quality will degrade) each time you save the file as a JPEG. If you do use JPEG ensure that the camera is set to maximum file size and minimum compression.

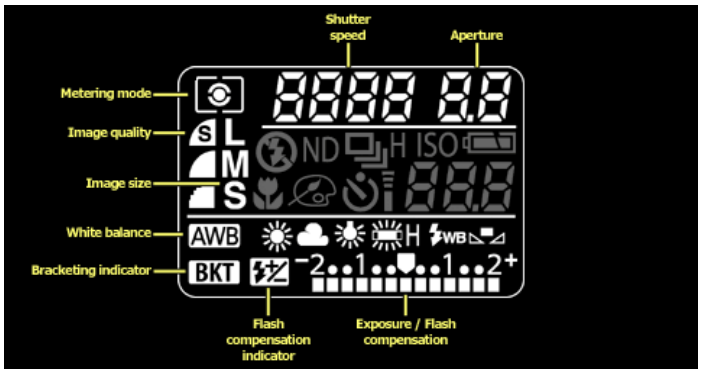

Figure 1: Best quality is obtained with an L image size and S Image quality, other camera makers will use similar settings.

For maximum quality we would strongly recommend that the cameras RAW setting be used as this will allow all the information that the camera is capable of producing to be saved. When a JPEG (Joint Photographic Experts Group)

image is created a certain amount of data is discarded as a matter of course, the amount varying dependent on the compression setting on the camera.

Another major advantage of RAW is that because all the camera data is preserved, post processing can include such things as colour temperature, contrast and exposure compensation adjustments at the time of conversion to tiff, thereby retaining maximum photographic quality.

Some photographers have commented that quick sequential photographs are difficult to make in RAW due to the large amount of data being moved to the memory card. Whilst this may be true in some cameras, others do not have this problem. The Canon EOS 20D is capable of continuous RAW shooting at 5 FPS (frames per second) for 6 frames and a buffer full rate of 2 FPS. These rates are quoted from a 1gb CF card. The rates are likely to be slower with MicroDrives. 2gb 40x cards are available for around £75 from http://www.blankdiscshop.co.uk so this has become much less of an issue lately.

OK, so you have a series of RAW images on a memory card, what now? The NMR requires “finished” digital images, ready to be archived. This means that the photographer has to post process images to the agreed standard. Here I will describe my digital workflow to give you an idea of how we arrive at the “finished” image.

Post photography processing workflow for JPEG images:

1. Download images
2. Edit out unwanted shots & rotate
3. Batch Re-number
4. Batch caption
5. (As the files are already JPEG there is no need for conversion).
6. Edit in Photoshop
7. Save ready to burn to CD
8. Burn to CD
9. Dispatch

Post photography processing workflow for RAW images:

1. Download images
2. Edit out unwanted shots & rotate
3. Batch Re-number
4. Batch caption
5. Batch convert to Tiff
6. Edit in Photoshop
7. Save ready to burn to CD
8. Burn to CD
9. Dispatch

1. Download images.

When downloading many large images it is worth considering attaching a card reader to your PC. Many cameras are USB 1 (12Mbit/s) which is significantly slower than USB 2 (480Mbit/s), effectively 40x faster than the older standard. Using a card reader will also save wear & tear on your cameras connector.

ICT recommend software from Breeze Systems (http://www.breezesys.com) Breeze Downloader pro, which allows great control of where the images are to be stored on your hard disk and allows you to delete files from the card at the click of a mouse.

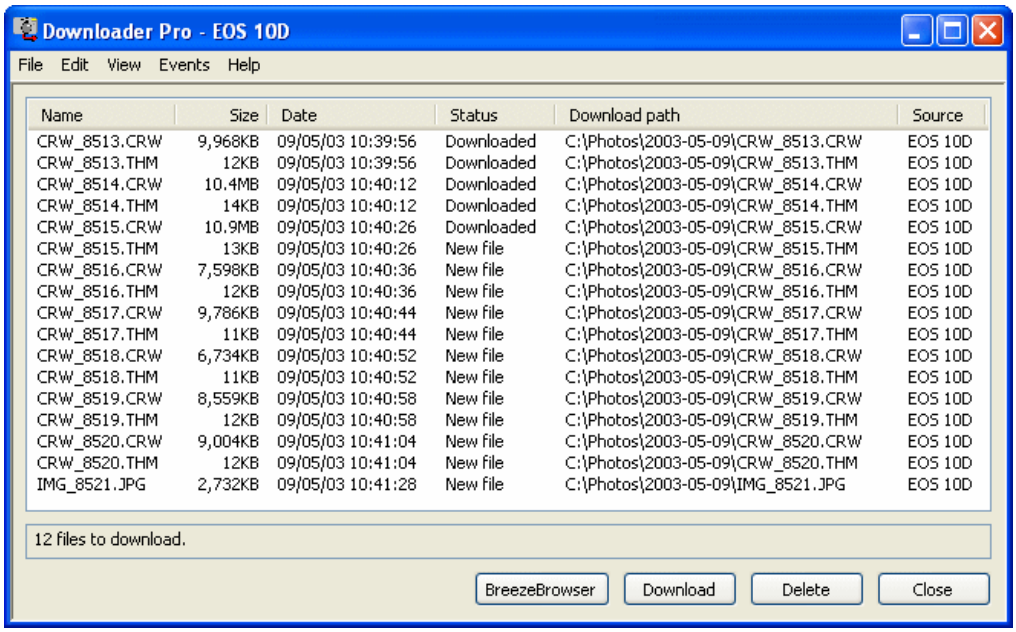

Figure 2: Breeze Downloader Pro main screen

2. Edit out unwanted shots & rotate

For all the post processing tasks I find BreezeBrowser Pro to be the ideal software. Browse to the directory where your images are stored and the initial “contact sheet” view quickly shows your images. It is possible to view images as a contact sheet or as individual images with a histogram. There is also a strip film view, which I find less useful. It is possible to adjust the size of the thumbnails, view EXIF data etc, very customisable. If your camera does not have an orientation sensor you will have to rotate any upright shots at this stage, Breeze browser allows you to do this quickly either on individual images or as a batch.

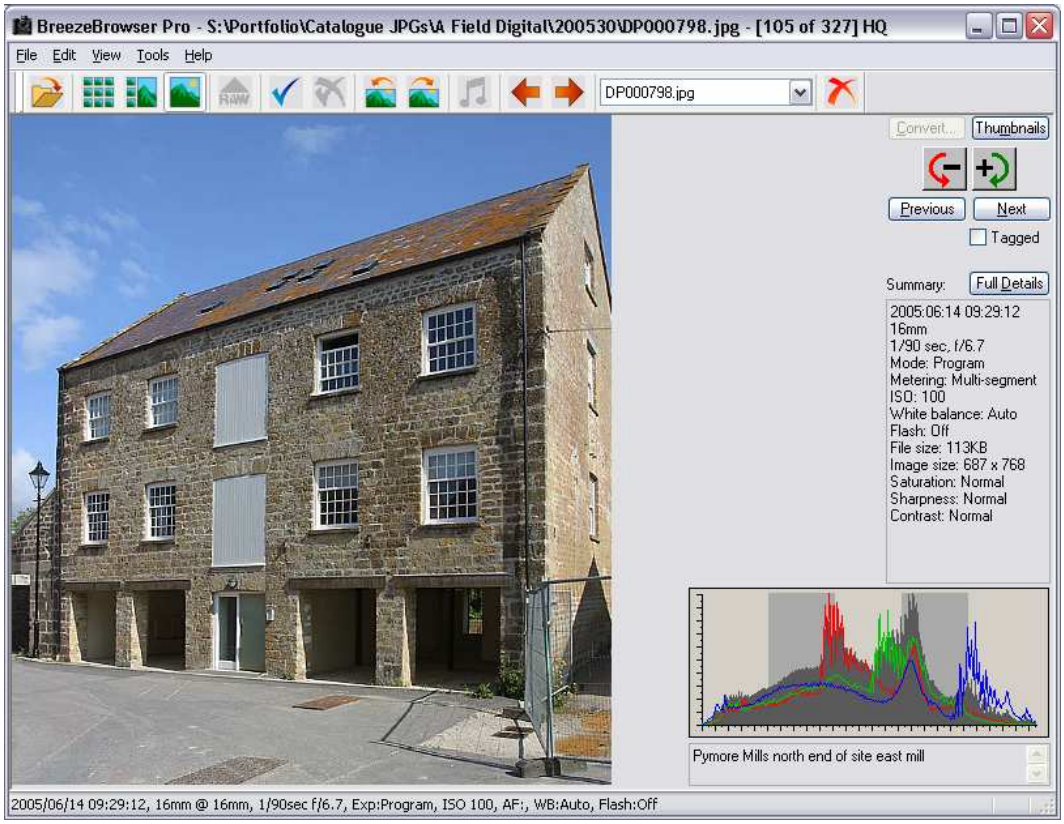

Figure 3: Breeze Browser Pro Main Screen

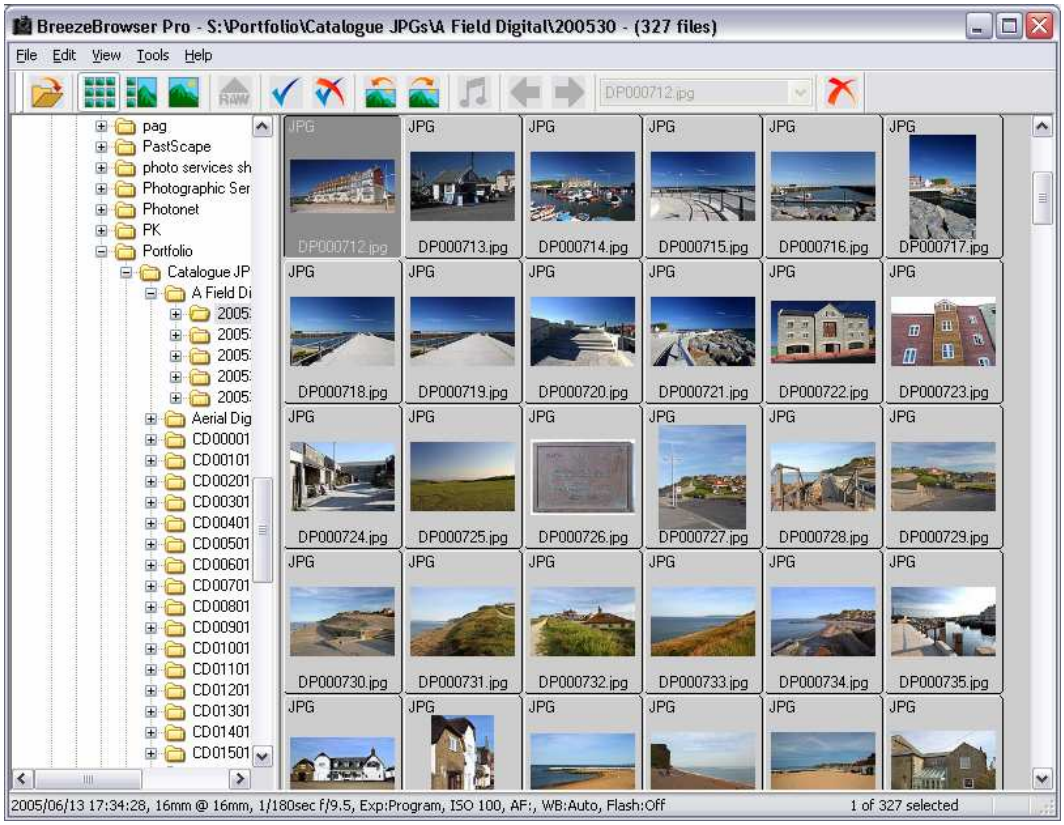

Figure 4: Breeze Browser Pro Thumbnail view

3. Batch Re-number

Images which are destined for the Archive are to be numbered in accordance with the English Heritages standard system. Number runs can be obtained from : XXXXXXXXXX and should be applied in sequence. This is a very quick and easy task in BreezeBrowser, literally taking only a few seconds even for large numbers of images.

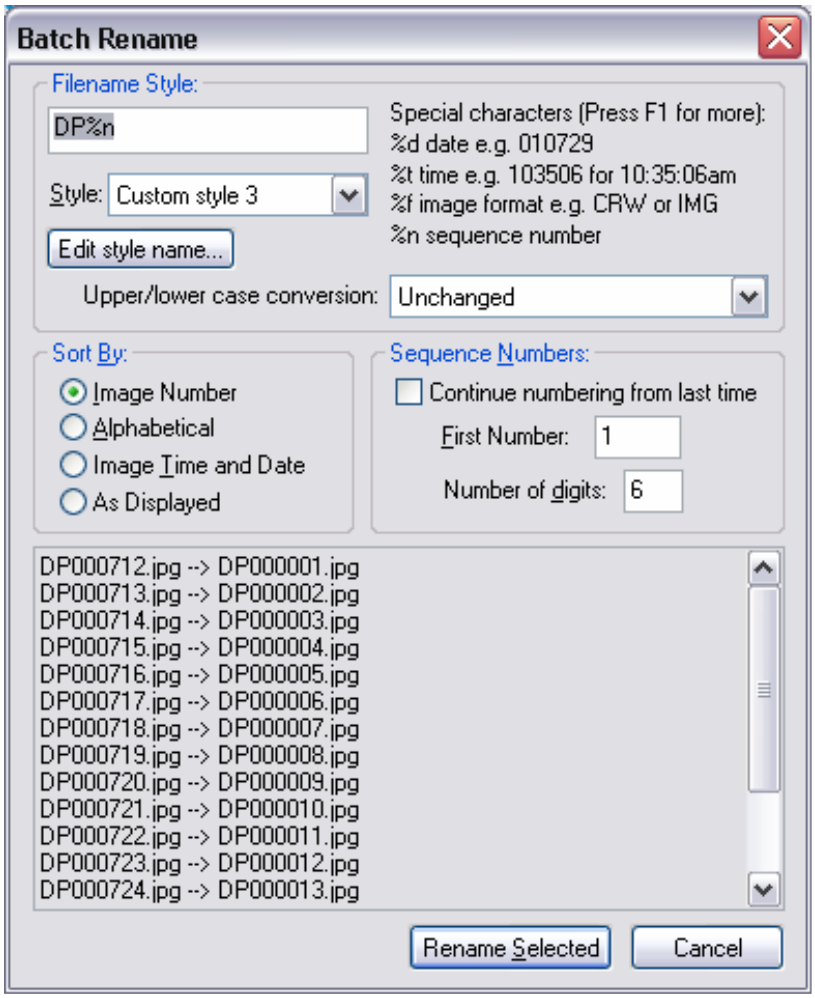

Figure 5: Breeze Browser Pro batch renaming screen

4. Batch caption

In order to find images at a future date we require that captions and other information is embedded in the picture file. In BreezeBrowser it is possible to set up a template containing frequently repeated information such as job number, Photographers name, © info, etc. Date and time of individual shots can be appended from the EXIF data. Should unique captions be required it is easy to add at this stage also.

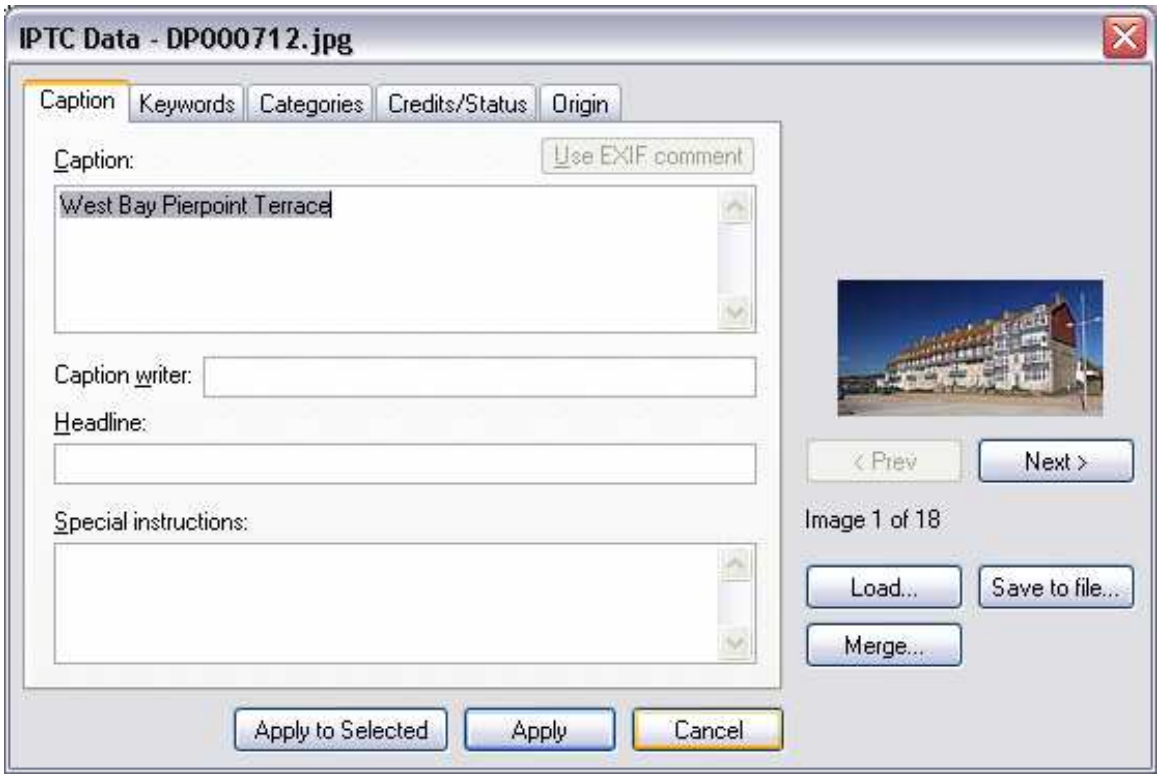

Figure 6: Breeze Browser Pro Batch Caption screen

5. Batch convert to Tiff

As you will have made your images using RAW now is the time to convert to TIFF. Should you wish to apply any white balance adjustments such as “Daylight”, “Shade” etc. or even a custom balance this can be done as part of the conversion process. Ensure that any sharpening settings are set to zero or none as we do not require sharpening. If you plan to do any tonal adjustments in Photoshop i.e. Levels or Curves, we recommend that you convert initially to a 16bit (per channel) TIFF as this will allow you to retain as much tone information as possible and thereby avoid a comb histogram. Byte order should be PC if given the choice.

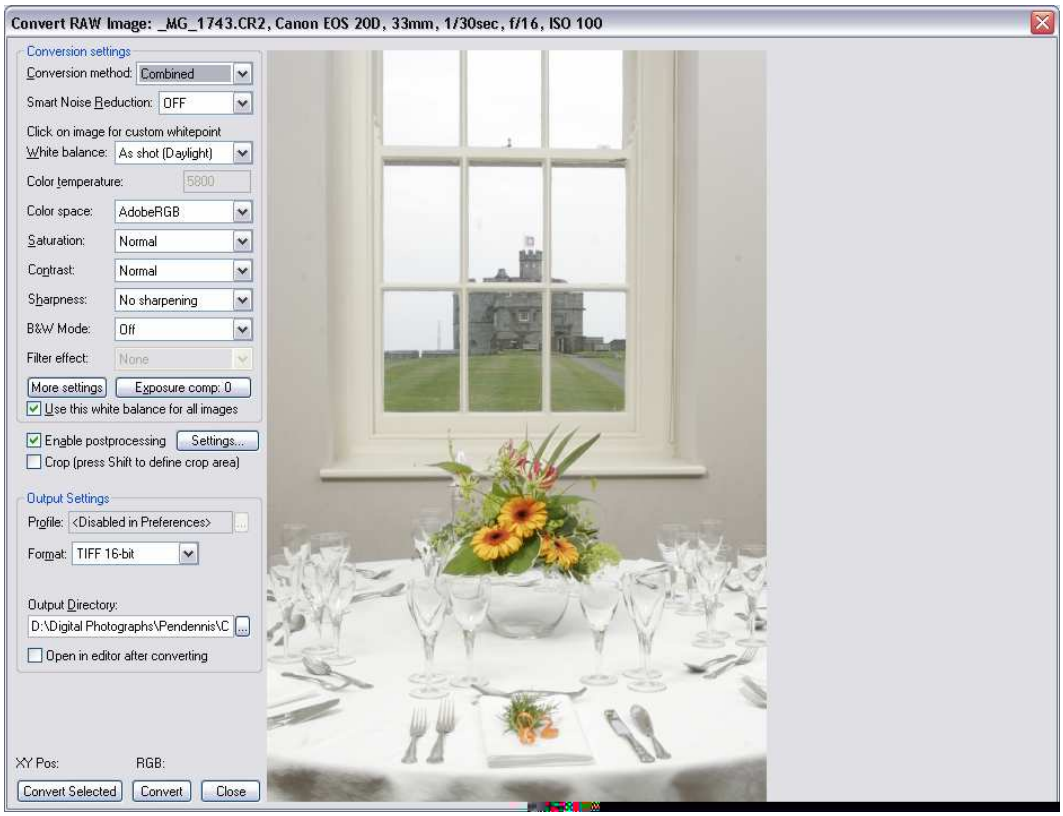

Figure 7: Breeze Browser Pro RAW conversion screen

6. Edit in Photoshop

If you are confident with manipulating images now is the time to make any tonal adjustments and check for sensor dust at 100% across the whole image remember we require “finished” images and will not be checking for dust etc.

7. Save ready for deposit

Convert to 8 bit per channel, save.

If you are shooting JPEG and have manipulated the image in any way you should now save the image as a TIFF in order to prevent further image degradation through JPEGing.

8. Burn to CD or transfer to network storage area

Currently the preferres method of deposit is via Gold CDs burned on your desktop PC. In the near future we hope to be able to offer a network delivery method.

If burning to CD you should use an archive quality disk such as MaM-E gold. Note that gold disks usually have a lower burn speed when compared to current consumer disks. MaM-E disks are available from www.cdteam.co.uk / jan.collins@cdteam.co.uk or http://www.theflashcentre.com/ Delkin also produce a Gold disk, however this is the MaM-E disk re-branded.

Disks should be written to the “Single Session ISO9660 – Joliet Extensions” standard and not UDF/Direct CD. This ensures maximum compatibility with current & future systems.

The “Volume Label” should be the CD number which the disk will be known as once deposited at the NMR, a 5 figure number preceded by the letters CD, i.e. CD01234.

Images should be placed in the root directory, i.e. not within a folder and only image files should be burned, so no text, no excel sheets, nothing but TIFFs or JPEGs.

Do not write or stick anything onto the surface of the disk. If you MUST write the CD number, then do so only on the clear part near the spindle hole.

Seek advice for the current network location if you wish to deposit directly.

9. Dispatch

Send disks to your usual contact at English Heritage along with supporting documentation, if sending over the network please advise when the upload is complete.

Ian Leonard
Digital Archive Officer
English Heritage

22 September 2005