

Picture Queensland Image Digitisation Manual 2007

Introduction	5
Scope	5
Objectives	5
Digitisation	5
Digitisation project planning	6
Why should you digitise your images?	6
Access benefits	6
Preservation benefits	6
Institutional benefits	6
Project planning	6
1. Project scope	7
2. Project group	7
3. Goals	7
4. Budget	7
5. Duration	7
6. Action plan	7
7. Implement project	8
8. Complete and evaluate project	8
Digitisation planning resource	8
Hardware requirements	8
Computers	8
• Memory	8
• Processing power	8
• Storage	8
• Interface	8
• CD/DVD burner	8
Monitors	9
Calibration	9
Scanners	9
How scanners work	10
Scanner types	10
Resolution	11
Colour depth	11
Noise	11
Dynamic range	12
Scanning speed	12
Software	13
Scanning software	13
Image editing software	13
Selecting images to digitise	14
Which images to digitise?	14
Selection criteria	14
1. Digitisation status	14
2. Copyright	14
3. Public demand	14
4. Physical condition	15
5. Background information	15
6. Cost	15
7. Significance	15
8. Administrative requirements	15
Copyright	16
Key points on copyright	16
Copyright and photographs	16
Copyright licensing	16

Copyright duration	16
Copyright and selection	17
Moral rights	17
Indigenous protocols	17
State Library of Queensland commitments	18
Community consultation	18
Disclaimers	18
Receiving photographic donations	19
Image capture and optimisation	20
General image capture principles	20
Picture Queensland image capture standards	20
Black-and-white photographs	21
Colour photographs	21
Resolution	21
Image file formats	22
TIFF	22
JPEG	22
GIF	23
PDF	23
Scanner care and maintenance	24
Scanning workflow	24
Example workflow	24
Picture Queensland image capture	24
Scanning	25
Black-and-white images	26
Colour images	26
Image editing	27
Open Elements	27
Crop image	27
Adjust levels	28
Dodge and burn	30
Resize image	31
Add noise	31
Save image	32
File names	32
Picture Queensland file names	33
Preservation	34
Preserving photographic collections	34
• Choose and maintain a stable storage environment	34
• Create protective layers	34
• Choose suitable storage enclosures	34
Digital preservation issues	35
• Selection for digitisation	35
• Storage media	35
• Technological obsolescence	35
• Increases in image quality	35
• Open vs proprietary file formats	35
• Lossy compression	35
Digital preservation recommendations	36
Indexing digital images	37
PictureAustralia	37
Picture Queensland	37
Searching digital image collections	37
Basic searching	38
Advanced searching	39

Metadata	39
Dublin Core	40
Picture Queensland indexing	41
Field label	41
Requirement	41
Description	41
Example	41
Indexing considerations	44
Subject headings	44
Picture Queensland web form	46
Example of a Picture Queensland image and record	47
Resources	49
Digital image collections	49
Online digitisation courses	49
Copyright	49
Image capture resources	50
Digitisation projects	50
Indexing tools	50
Digitisation standards and policies	51
Preservation supplies	51

Introduction

Scope

This manual is intended to be used as a guide by Picture Queensland partners to ensure consistency with the State Library of Queensland's digitisation standards. In addition, cultural organisations conducting their own digitisation projects may find the manual a useful introduction to the issues involved with image digitisation. The manual provides information on the key aspects of planning and conducting a digitisation project. The procedures listed in the manual are based upon State Library's digitisation standards and guidelines, which conform to established industry best practice.

Objectives

After reading this manual, you will hopefully have a better idea of how to:

- Plan a digitisation project
- Select and prepare images for digitisation
- Scan and edit digital images
- Catalogue digital images for effective resource discovery
- Preserve and manage photographic collections

Digitisation

Digitisation is the process of turning original, analogue items into digital format. Examples of digitisation include converting vinyl records into mp3 files or converting 8mm film footage into DVD format. Information users are increasingly demanding quick, online access to digital content. Libraries, archives, galleries and museums are meeting the demand for online digital content by rapidly digitising items from their collection and making them publicly available. There is an abundance of digitisation projects taking place in the cultural sector, but before an organisation begins to digitise their collection, there are several important questions that must be addressed.

This manual deals with the important issues involved with digitising your image collection to give you a better idea of how you may approach the highly complex world of digitisation. The instructions in this manual are consistent with Picture Queensland standards for image capture and description. By following these instructions, you will be ensure that your digitisation project follows industry best practice.

Digitisation project planning

Why should you digitise your images?

Access benefits

- Minimise restrictions on use of collections
- Reach remote users
- Resources available 24x7
- Create alternative formats for the same resource
- Deliver collections to users without staff intervention
- Renew the usability of fragile or difficult formats
- Enhance traditional services
- Share resources

Preservation benefits

- Prevent or minimise handling of the original
- Reduce damage from handling
- Reduce decay from exposure to light
- Reduce chances of loss or theft
- Reduce damage from pests
- Reduce impact of disaster
- Opportunity to include cleaning and repackaging tasks where possible

Institutional benefits

- Publicity
- Fundraising
- Public expectations
- Prestige
- Publishing
- Dissemination of research
- Increase experience for staff
- Develop infrastructure
- Extend workplace partnerships

Project planning

There is a widespread enthusiasm to start digitisation projects, but without adequate planning they can often lead to disappointment. Before embarking on a digitisation project you must ensure that there is need for the digitisation and that it can be completed within a specified timeframe and budget. It is best to specify your reasons for digitising your collection and be absolutely clear on what you aim to get out of the project. The following steps will give you an idea of how you can approach the planning process.

1. Project scope

Why is this project taking place? Who is your intended audience? What do you want to get out of the project? Examples could include: to make pictures more accessible; to increase pictures' longevity by digitising fragile items; to create a greater pictorial record of the area; or to produce an online image gallery for educational purposes.

2. Project group

Identify exactly who will be involved with the project. Determine how many people are going to be involved – is it just one person doing everything; one person scanning, one indexing; a group of three doing a bit of everything? Decide who is going to be involved and determine their workflows, roles and responsibilities before the project begins.

3. Goals

Your project goals will reflect the scope of your project. If one of your objectives is to make your images more accessible to your local community, your goal could be to scan 100 images and make them available on a PC in your organisation. This is an example of a quantitative outcome – a goal that can be measured. Other outcomes may not be measurable; these are known as qualitative outcomes. An example of a qualitative outcome would be to improve the knowledge of staff regarding the selection, scanning, editing and indexing of digital images.

Ensure your project goals are “SMART”

S – Specific

M – Measurable

A – Achievable

R – Relevant

T – Time bound

4. Budget

How much do you have to spend? What funding opportunities are available? This will influence the scope of the project. There is no point, for example, in trying to digitise 1,000 photographs if all you have is \$500. Be clear on how much money you have and set out exactly what you need for the project to meet its objectives.

5. Duration

How long will the project run for? Six weeks, a year, five years? Knowing this will help you devise your plan of action. Also consider the future sustainability of your image collection beyond the life the project.

6. Action plan

Write out a schedule of how the project will eventuate. Break it down week-by-week or month-by-month. Estimate an allocated time for each workflow. What do you hope to achieve by the end of the month? What do you need to have done by such a date to meet the project deadline? Is there a step that needs to be completed before

anything else can take place? For example, you may need clear copyright on the images before you begin scanning.

7. Implement project

Go and carry out what you have set down in your action plan. Monitor the progress of the project. Estimates of workflows may be different to what you actually experience. For example, it may take longer than expected to get copyright permissions. Evaluate your progress and make any necessary adjustments as you go.

8. Complete and evaluate project

Finish up the project and prepare an evaluation of the project. How did things go? If some aspects worked well, what were they and how can they be implemented in the future? If some aspects didn't work out as hoped, what improvements can be made in the future?

Digitisation planning resource

The following website, http://www.tasi.ac.uk/advice/overview_materials.html, produced by the Technical Advisory Service for Images, gives an excellent overview of topics that need to be explored before initiating a digitisation project.

Hardware requirements

You've got your pictures, you've dedicated staff time to scanning them, but what equipment do you need? The following items are essential for successfully digitising your images.

Computers

Issues you will need to consider include:

- **Memory** – this is signified by the RAM (Random Access Memory) of your desktop. A higher RAM will ensure applications run faster – a big consideration when you are using software to work with large image files. 512 Mb of RAM is recommended, though the higher the better.
- **Processing power** – a clock speed of at least 2 GHz will also help with the speed of your applications.
- **Storage** – the more room you have on your computer, the more high resolution scans you can save. It is recommended that you have a hard drive of at least 60 GB, but some desktops can go upwards of 300 GB. A hard drive with a high RPM (at least 7200 RPM) makes a big difference in the speed of processing large image files.
- **Interface** – USB (Universal Serial Bus) is the most common connection between hardware and your computer. Most scanners and digital cameras are USB compatible and will plug into the USB port on your computer. Firewire is another type of interface often used with Macs and high end scanners. The speed differences between USB 2.0 and Firewire are negligible.
- **CD/DVD burner** – CDs and DVDs are convenient ways of distributing your images. Having a CD/DVD burner is an invaluable tool. Recordable CDs (CD-Rs) can hold up to 700 MB, while DVD-Rs can hold 4.7 GB of data.

Monitors

High resolution images are often captured at a level that is beyond the display capabilities of many monitors. It is essential to get an accurate representation of your images. Choosing the right monitor will help you achieve this.

- LCD (liquid clear display) monitors are becoming increasingly popular. They generally provide sharper and brighter displays than CRT (cathode ray tube) monitors. LCDs also take up less space, generate less heat and consume less power
- LCD monitors are generally more expensive (but becoming less so) and their colour reproduction is generally not as good as CRT monitors.
- Technology is improving so much that the advantages of CRT over LCD monitors is becoming harder to distinguish.
- Go for the largest possible size of monitor capable of displaying in 24-bit colour. It is recommended that you use at least a 17" monitor, although a 19" or 21" monitor is highly desirable.

Calibration

Calibration is particularly important in digitisation projects. It can be frustrating to scan a batch of images and alter them so that they display correctly on your screen, only to find out that on every other computer the images look entirely different. Calibration ensures that your equipment is performing to an established standard or benchmark. By regularly calibrating your monitor, you will be able to accurately assess your images' colour and tone.

There is a range of colour calibration programs available. Adobe Gamma is one of the most commonly used. It is included with Photoshop or Photoshop Elements. To open Adobe Gamma in Windows, go to "Control Panel" and double-click on the "Adobe Gamma" icon. A wizard will run you through the steps to calibrate your monitor. It is recommended that you conduct this basic calibration every two to three weeks.

There are more sophisticated programs available, including: GretagMabeth - <http://www.gretagmacbeth.com>

A very in-depth exploration of colour management is available at: <http://www.tasi.ac.uk/advice/creating/colour2.html>.

Scanners

Scanners are the most popular device for digitally capturing images. They can be used to digitise images in a range of formats including prints, posters, pages, slides and negatives. In the past scanners were expensive and designed for image specialists, but over the past decade scanner prices have come down dramatically, making them easily accessible for professionals and non-professionals alike. There is a now large range of scanners on the market, each with different specifications, making it especially confusing for the consumer. Do you want a film or flatbed scanner? What optical resolution do you need? The following information will hopefully allow you to make an informed decision on the best scanner for your digitisation needs.

How scanners work

The Cornell University's *Digital Imaging Tutorial* provides the following explanation:

Scanners operate by shining light at the object or document being digitized and directing the reflected light (usually through a series of mirrors and lenses) onto a photosensitive element. In most scanners, the sensing medium is an electronic, light-sensing integrated circuit known as a charged coupled device (CCD). Light-sensitive photosites arrayed along the CCD convert levels of brightness into electronic signals that are then processed into a digital image.

(<http://www.library.cornell.edu/preservation/tutorial/technical/technicalB-02.html>)

Scanner types

Scanner type	Strengths	Weaknesses
Flatbed scanner	<ul style="list-style-type: none"> • Relatively inexpensive (range from \$75 to over \$20,000) • Simple to use • Can be used for most 2-dimensional objects (paper, photographs, books) • Some capability to handle slides and negatives (ie. transparent items) • Minimal damage caused to items during scanning 	<ul style="list-style-type: none"> • Frequent handling required • Scanning images larger than A4 requires more expensive models • Cannot be used on 3-dimensional objects
Drum scanner	<ul style="list-style-type: none"> • Very high image quality (high resolution, low noise, high dynamic range and good tone) • Very flexible software drivers 	<ul style="list-style-type: none"> • Very expensive (can cost hundreds of thousands of dollars) • Requires highly skilled operators • Handling damages original items (must be mounted on drum) • Low level of productivity
Film scanner	<ul style="list-style-type: none"> • Similar price to mid-range flatbed scanners • Scans film at very high quality • High level of productivity – able to scan using automatic feeders 	<ul style="list-style-type: none"> • Cannot be used for reflective objects (eg. photographs) • Prone to dust and scratches
Digital camera	<ul style="list-style-type: none"> • Can capture 2 and 3-dimensional objects • Large field size • Rapid image capture 	<ul style="list-style-type: none"> • Lower output resolution than scanners • Moderate skill level required

Resolution

Resolution is one of the most important specifications to consider when choosing a scanner. Resolution specifications can be extremely confusing for those starting out on digitisation projects, so it is crucial to understand the underlying concepts so that you can compare scanner's specifications like-for-like.

Resolution is a measure of a scanner's ability to capture detail within an image. A higher resolution means a scanner can capture a larger amount of detail from an original image. Manufacturers often give two figures to reflect scanner's *optical* and *interpolated* resolution. The optical resolution is a true reflection of a scanner's capabilities, so always use this figure when assessing different models. A scanner's specifications may say "1200 x 2400 dpi". The lower of the two numbers (1200) is the optical resolution and the one you should take into account. Figures given for interpolated resolution are based on the software "guessing" the values between pixels, which does not accurately reflect its scanning capabilities.

According to Picture Queensland standards, scanned black-and-white images must have a resolution of 600 pixels per inch and have a longest side of 6000 pixels. If you are scanning an image that is three inches wide, you will need a scanning resolution around 2400 dpi. Because you may need to scan a variety of image sizes, it is recommended that your scanning be capable of scanning to 2400 dpi at the very least.

Colour depth

A scanner's "colour depth" or "bit depth" reflects the range of colours it is able to capture. It determines the number of colours that can be accurately captured by the scanner. The Picture Queensland standard for bit depth is 24-bit for RGB colour images and 8-bit for greyscale images. An 8-bit grey scale image can be made up of a maximum of 256 shades. A 24-bit RGB colour image can contain over 16 million distinct colours.

Some scanners will say they have a bit-depth of 36 or 42-bit, but usually the images are exported to standard 24-bit RGB. That is, they sample at a higher bit-rate and then reduce it down to 24-bit. Some models are listed as having 8-bit/channel. This equates to the same thing as 24-bit for RGB as there are three colour channels.

The colour depth of a scanner, by itself, does not provide a useful indication scanner's quality. It is more of a guide to how capable it might be if it can use all of the colour data it captures. To know a scanner's true image capture quality, you also need to know the scanner's level of "noise".

Noise

Noise is unwanted energy within a piece of equipment's signal that can cause inaccuracies in images. It can be caused by faults in scanner design and the use of cheaper components. Noise is visible in digital images as a grainy roughness within areas of very low signal (shadows). This will often become apparent if an image is lightened or its contrast is increased. The signal to noise ratio defines the power of the noise interfering with the signal. It is very difficult to get signal to noise figures as manufacturers will often not disclose them, for fear that they will reveal their

scanners' inadequacies. If you can find the figures, the signal to noise ratio of your scanner should not exceed 60dB for each 8-bit colour channel. The best way of assessing a scanner's noise is to look at a test scan for any rough, grainy areas in the dark parts of the image.

Dynamic range

Dynamic range measures a scanner's ability to capture detail from the darkest shadow to the brightest highlight. The darkest part of an image is called the dMax, the lightest the dMin. The difference between these is the dynamic range. The highest possible dMax (the darkest possible shadow) has a value of 4.0. A perfect white will have a value of 0.0. The greatest dynamic range, therefore is 4.0. In reality, no scanner can have a dynamic range of exactly 4.0. Extremely high quality drum scanners can have a maximum dynamic range between 3.4 – 3.8. Luckily for us, the majority of source materials do not have a great dynamic range. As shown in the tables below (taken from <http://www.tasi.ac.uk/advice/creating/scanners.html>) most photographic prints have dynamic range of 1.6 – 2.0, which can be handled by standard flat-bed scanners. Transparent originals, including negatives and slides, however, have a higher dynamic range which will need to be reflected in the equipment.

Dynamic range of source materials	
Source	Dynamic range
Newsprint	0.09
Printed material	1.5
Coated stock	1.5 – 1.9
Standard (C-type) photographic prints	1.6 – 2.0
High contrast photographic prints (R-type cibachrome)	2.0 – 2.3
Negative film	2.8
35mm slides	2.8 – 3.0
Transparencies	3.0 – 4.0

Dynamic range of scanning equipment	
Equipment	Dynamic range
24-bit colour flatbed scanner	2.2 – 2.6
30-bit colour flatbed scanner	2.8 – 3.2
36-bit colour flatbed scanner	3.3 – 3.6
Desktop drum scanner	3.3 – 3.7
High end drum scanner	3.4 – 3.8
Film/transparency scanner	2.2 – 4.0

Scanning speed

An important factor to consider when choosing a scanner is the time that it will take to capture your images. Fast scanning speeds mean you are able to process the images quicker, but also result in your sensitive images being exposed to light. Most manufacturers list the scanning speeds of their products.

It is recommended that scanners are capable of high speed data transfer. USB 2.0 or Fire Wire are two interfaces that will allow speedy transfer. Ensure your scanner has either USB 2.0 or Fire Wire connectivity.

Software

Scanning software

Scanners are usually bundled with specific scanning software. For example, Hewlett Packard scanners use a program called HP Scanjet and Canon scanners come with CanoScan. These programs control the scanners, capturing images and bringing them to the next stage of your workflow. This software also offers some image editing functions (eg. colour balance, brightness, contrast). It is possible to use the scanning software to manipulate your images, however, they do not offer sophisticated features present in specific image editing software. The software you use will depend upon your workflow, though it is generally recommended to only use scanning software for basic image capture and manipulate your images with software specifically designed for editing images.

Image editing software

Programs such as Adobe Photoshop can be used to edit digital images and to host the operations of the scanning software. Photoshop is the industry standard for digital image editing and is highly recommended for anybody involved in digital imaging. The full version of Photoshop retails for approximately \$1,000. Adobe Photoshop Elements, the basic, pared-down version of Photoshop is entirely sufficient for most users, offering all the features you will need for editing your images. Elements generally costs around \$200.

There are many other software packages on the market. Important things to consider are the range of features, usability and file format support. GIMP is an open-source image manipulation program that is freely available. Its interface can be slightly confusing, but does offer some basic features to those starting out on digital imaging. A download of the program is available here: <http://www.gimp.org>.

Selecting images to digitise

Which images to digitise?

Before you begin digitising your collection, you need to decide which images to digitise. If you only have a small collection of one or two hundred photographs, you might decide to simply digitise the entire collection. But if you have a larger collection (State Library of Queensland has around 2 million images), you need to be more discerning about which images you put up. Several factors, such as copyright, cultural sensitivities, significance and physical condition may influence which images should be digitised.

Selection criteria

Given the expensive nature of conducting a digitisation project, it is extremely useful to follow a checklist when selecting images. A set of selection criteria, applied to your digitised images, will ensure you are using your resources effectively. By checking the digitisation status of your photographs, you may save yourself time and expense if you discover somebody has already digitised them. In addition, systematic selection will provide you with a collection of digital images fitting with your organisation's strategic goals.

The follow issues should be considered when selecting an image for digitisation.

1. Digitisation status

There is little point in using your resources to digitise an image that is already publicly available. Check other digital image databases to see if an image you are considering for digitisation has already been digitised. Picture Queensland and PictureAustralia are useful sites to search.

2. Copyright

Confirm the copyright status of all images you are planning to digitise. Ascertain which of the following applies and follow a consistent strategy for managing copyright issues (see later section on copyright for more information):

- a. The item is out of copyright
- b. The item is in copyright – your organisation owns the copyright
- c. The item is in copyright – the copyright owner has given your organisation permission to use the image
- d. The item is in copyright – the copyright owner has not yet given your organisation permission to use the image

3. Public demand

It is important to ask if there is a high level of demand for the image. Do you think people will be interested in seeing this image? What possible uses will clients have for this image? It is important to select images for digitisation that meet the public's interests and needs. This may involve identifying your target audience for the digitised images.

4. Physical condition

The physical condition can have a significant bearing on whether to proceed with digitisation. Some objects may be too fragile or light-sensitive to withstand the handling involved in the digitisation process. On the other hand, some items that are physically deteriorating may be ideal digitisation candidates. Digitally capturing them would mean less handling of the original (given the availability of the digital surrogate) and would provide a copy of the item before it deteriorated any further.

5. Background information

The level of contextual information that accompanies an image is a large consideration when selecting for digitisation. A photograph with extensive background information will help you create a record that will be easily discoverable. You may be provided with the date or location of the photograph, and possibly the names of individuals. This information is extremely useful for users and, where available, makes an image an attractive candidate for digitisation. Publishing images on the web can be a method for gaining extra information about a photograph. Public feedback may provide you with extra details not previously available.

6. Cost

It is important to determine how much it will cost to digitise an item. Some large objects (for example posters or estate maps) require specialised image capture equipment. You will need to assess the benefits of digitisation against the cost of digitally capturing it.

7. Significance

Items with a high level of significance should be prioritised for digitisation. An item can be considered significant for many reasons, including its:

- a) Rarity
- b) Historical importance
- c) National or community importance
- d) Beauty or aesthetics
- e) As a typical example of its kind
- f) As an unusual example of its kind
- g) Connection with particular people, place or event

The Heritage Collections Council has produced a very useful guide to assessing the significance of cultural heritage objects and collections. It is available at:

http://sector.amol.org.au/data/page/61/significance_complete.pdf

8. Administrative requirements

Will digitising a particular item meet the administrative requirements of your organisation? You may have funding body requirements or institutional strategies that influence which items are selected.

Copyright

The laws governing copyright are complex and continuously changing to meet the challenges presented by new technology. This information is intended to be a general introduction to the copyright legislation and how it applies to digitising images in your collection. It is not an authoritative guide to copyright in Australia and does not constitute legal advice. For more information about copyright, the Australian Copyright Council has an excellent series of fact sheets, available at www.copyright.org.au. If you need to know how the law applies to you in a particular situation, please get advice from a lawyer.

Key points on copyright

- Copyright automatically applies as soon as material is created
- Copyright in Australia does not need to be registered to apply
- Copyright does not protect ideas, styles, names or titles
- Copyright protects a range of materials, including artistic works, written material, musical works and films

Copyright and photographs

In most cases, the copyright holder of a photograph is the photographer. Copyright holders are able to reproduce, publish and disseminate the photographs they have exclusive rights to. In the following instances, however, the photographer *may not* hold copyright:

- If the photographer was an employee of a magazine or newspaper;
- If the photographer was commissioned to take a photograph;
- If the photographs were taken for the government.

Copyright licensing

Copyright holders can transfer their rights to another person or organisation by assigning (i.e. selling) or licensing (i.e. given permission to use) them. This transfer of copyright can be subject to limitations such as conditions of use, duration or payment. Assignments and exclusive licenses must be in writing and be signed by or on behalf of the copyright holder. Copyright holders can also grant non-exclusive licenses for the use of their work. Generally, this means that your organisation has permission to publish and reproduce a photographer's work, but any third parties wishing to reproduce the image need the copyright holder's permission. This can be particularly useful if you want to digitise images whose copyright is still held by a commercial photographer.

An example of a form for assigning non-exclusive copyright is available here: http://pictureqld.slq.qld.gov.au/_data/assets/word_doc/33827/nonexclusive_copyright.doc

Copyright duration

The following general rules apply:

- For photographs where the identity of the photographer is known:
 - Taken before 1 January 1955 – out of copyright;

- Still in copyright on 1 January 2005, or created after that date – copyright lasts until 70 years from the end of the year the photographer died.
- For photographs published anonymously or under a pseudonym:
 - Taken before 1 January 1955 – out of copyright;
 - Still in copyright on 1 January 2005, or created after that date – copyright lasts for 70 years from the year in which it was first published.

Copyright and selection

When selecting images for digitisation, it is important to be clear on the copyright status of each image. Is it in copyright? If so, who is the copyright holder? It is advisable to digitise images where either: copyright has expired; your organisation is the copyright holder; or the rights holder has assigned copyright to you in writing. For some images – collectively called “orphan works” – you may not know who the copyright holder is. Alternatively, you may be able to contact a copyright holder to seek their permission to use an image. Under these circumstances, each organisation should develop a risk-management strategy for digitising orphan works. Some organisations publish orphan works with a disclaimer along these lines: “All reasonable attempts have been made to contact the copyright owner of this image. If you have any information please contact ...”

Moral rights

The Copyright Amendment (Moral Rights) Act 2000

(www.austlii.edu.au/au/legis/cth/num_act/cara2000n1592000369/index.html)

protects the following moral rights for individual creators:

- the right of attribution of authorship (eg. where available the photographer must be named as the creator of the image)
- and the right of integrity of authorship (eg. the work should not be treated in a derogatory manner).

Indigenous protocols

A particular challenge for the State Library of Queensland, when developing Indigenous protocols, is to balance the need to provide appropriate access to its collections whilst acknowledging the moral, intellectual and cultural rights of Aboriginal people and Torres Strait Islanders, as the owners of their cultural heritage.

Cultural sensitivities must be taken into consideration when digitising images depicting Indigenous Australians. Images of deceased individuals and religious ceremonies, in particular, can cause offence to Aboriginal and Torres Strait Islander people.

The National Library of Australia has led discussions about the issues associated with displaying Indigenous images online. Images considered inappropriate for online display were grouped into four areas:

- Secret/sacred images
- Offensive images
- Images involving mourning the dead
- Any recognisable Indigenous person.

At a NLA Conference in November 2003, “there was general concern that Indigenous image history could be lost because of the need to restrict display of the material.”

Many organisations, including the State Library of Queensland are discussing the issue. State Library is developing a set of Indigenous Protocols in consultation with its Indigenous Advisory Council, and the Indigenous community.

State Library of Queensland commitments

- The recognition of the moral, intellectual, and cultural rights of Aboriginal people and Torres Strait Islanders as the owners of their knowledge
- To be guided by these protocols in SLQ’s interactions with Aboriginal people and Torres Strait Islanders, particularly with provision of information from its collections
- To encourage the involvement and participation of Aboriginal people and Torres Strait Islanders in the provision of relevant information by SLQ as well as ongoing development of collections

Community consultation

Consultation with the community is paramount. It is imperative to receive permission **in writing** from relevant individuals, family groups, and/or community organisations before proceeding with digitisation of any Indigenous images. If you do not have written permission to digitise the images, it is recommended that you do not proceed with digitisation of that item.

Disclaimers

It is recommended that a disclaimer is used when displaying Indigenous images. For example:

A warning is given that this site may feature culturally sensitive material, including offensive terminologies, photographs of deceased people and religious ceremonies.

PictureAustralia (www.pictureaustralia.org) uses the following disclaimer:

Indigenous Australians are advised that PictureAustralia may include images or names of people now deceased.

Receiving photographic donations

Flowchart depicting the procedures involved in correctly handling the donation of photographs:

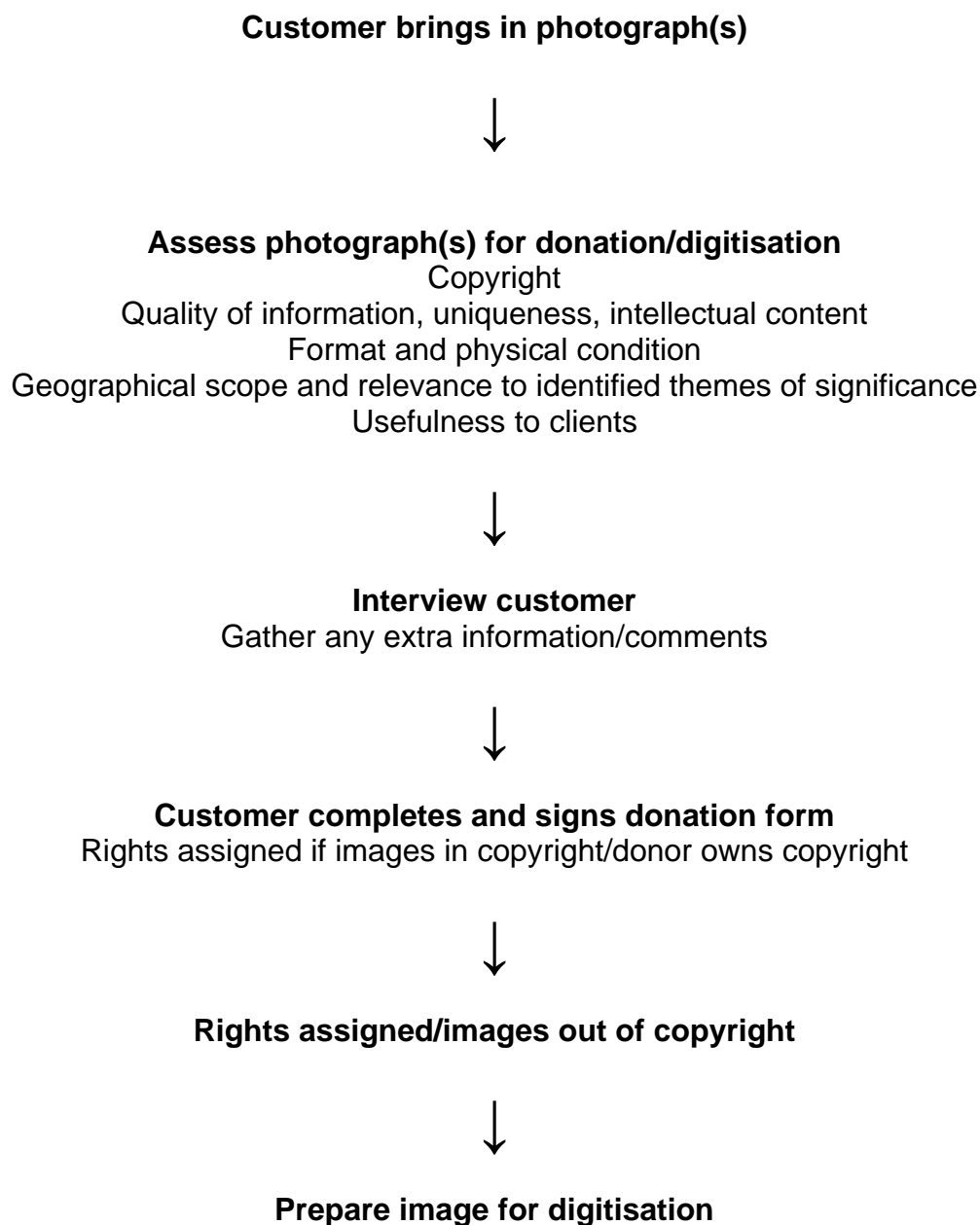


Image capture and optimisation

The process of image capture and optimisation relies heavily on having a clear, systematic workflow. Laying down the necessary steps to capture images with target specifications makes it easy for staff to follow and minimises errors. The following guidelines and procedures are consistent with State Library's Digitisation Standard for image capture and provide an example that can be applied to your own project.

General image capture principles

The Colorado Digitization Program has developed the following Digital Imaging Best Practices (http://www.cdpheritage.org/digital/scanning/documents/WSDIBP_v1.pdf). The Program identifies the following 12 general principles for image capture:

- 1) Scan at the highest resolution appropriate to the nature of the source material.
- 2) Scan at an appropriate level of quality to avoid rescanning and re-handling of the originals in the future – “one scan policy”.
- 3) Create and store a master image file that can be used to produce derivative image files and serve a variety of current and future user needs.
- 4) Use system components that are non-proprietary.
- 5) Use system image file formats and compression techniques that conform to standards within the cultural heritage community.
- 6) Create backup copies of all files on a stable medium.
- 7) Create meaningful metadata for image files or collections
- 8) Store media in an appropriate environment
- 9) Monitor and recopy data as necessary
- 10) Document a migration strategy for transferring data across generations of technology
- 11) Anticipate a plan for future technological developments
- 12) Scan an original or first generation (i.e. negative rather than a print) of the source material to achieve the best quality image possible

Picture Queensland image capture standards

The *Picture Queensland standard for image capture and format* (available at: http://pictureqld.slq.qld.gov.au/_data/assets/word_doc/35691/pq_image_capture_v1.doc) is based on current best practice and other digitisation projects conducted by cultural institutions. The master copies of all images included on Picture Queensland should follow these specifications.

Black-and-white photographs

Bit-depth: 8-bit greyscale

Resolution: 600 ppi

Size: 6000 pixels along the longest side

Format: TIFF

Example filename: bro000087.tif

Colour photographs

Bit-depth: 24-bit colour

Resolution: 400 ppi

Size: 4000 pixels along the longest side

Format: TIFF

Example filename: bro000078.tif

Resolution

- Resolution is the amount of digital information within an image.
- Resolution is measured in pixels per inch (ppi).
- Definition of pixel = abbreviation of picture element. The coloured, or black and white, dot that is the smallest element of a digital image.
- Manufacturers frequently used the dpi or “dots per inch”. Dpi accurately refers to output devices (eg. the number of dots a printer puts on a piece of paper). Ppi is the standard measurement for scanning and onscreen display.
- A higher the number of pixels per inch at the point of image capture means a higher level of detail and quality in the resulting image.

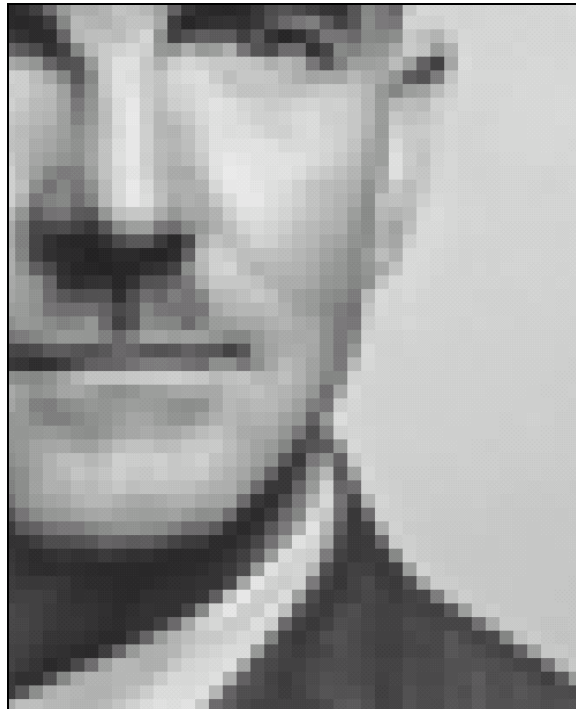


Image file formats

There are many different image file formats that have particular uses. Some formats are best for ensuring the integrity and storage of an image file, others are more suited to web access. The key is choosing the specific file format that suits your need. Below are the most commonly used file formats used in digital imaging.

TIFF

TIFF (Tagged Image File Format) 6.0 is used by the State Library as the uncompressed master archival file format for digital reproductions from paper and photographic media such as negatives.

TIFF was developed by Aldus and Microsoft Corp, and the specification was owned by Aldus, which in turn merged with Adobe Systems, Incorporated. Consequently, Adobe Systems now holds the copyright for the TIFF specification. Since it was designed for, and by, developers of printers, scanners and monitors, TIFF is highly flexible and platform-independent and is supported by numerous image processing applications.

TIFF has a wide distribution in the library digitisation industry. It is used as preservation format by the National Libraries of Australia and New Zealand, all Australian state libraries, Library of Congress and many other libraries who capture image files for preservation. TIFF is recommended by the Australian Government Information Management Office. Its suffix appears as .tif or .tiff.

JPEG

JPEG (JFIF JPEG File Interchange Format) file format is often used to deliver images online. JPEG derivatives are produced from the TIFF masters.

The following extract (Getty Trust, 2005) describes the JPEG format and forecasts a possible future change to JPEG2000 format.

The JPEG (Joint Photographers Experts Group) format is generally used for online presentation because its compression is extremely efficient while still giving acceptable image quality. It was developed specifically for high-quality compression of photographic images where minor perturbations in detail are acceptable as long as overall aesthetics and important elements are maintained. However, JPEG compression is lossy, so information is irretrievable once discarded, and JPEG compression above about 25% often creates visible artefacts.

The status of TIFF as the de facto standard format for archival digital image files is being challenged by two other formats: PNG (Portable Network Graphics) and JPEG2000. PNG was designed to replace GIF. It supports 24- and 48-bit colour and a lossless compression format and is an ISO/IEC standard. Browser application support for PNG is strong and growing.

By contrast, JPEG2000 uses wavelet compression, which offers improved compression with greater image quality. It also allows for lossless compression and for the client to specify resolution to accommodate various bandwidths, monitors, and browsers.

GIF

GIF is used for colour graphics (not photographs) in HTML documents. It appears as .gif. It is best used for cartoons or illustrations.

PDF

PDF (Portable Document Format) is often used to provide a version of documents, eg., music scores, whose primary purpose is for downloading and printing. PDF files ensure that documents designed for print retain the same layout and design elements as the original. PDF files appear with the suffix .pdf and require Acrobat reader, a free program.

File format	Pros	Cons	Suffix
TIFF	<ul style="list-style-type: none">• Storing master archival image files in an uncompressed format.• Industry standard preservation format.	<ul style="list-style-type: none">• Large file sizes.• Not suitable for web publishing.	.tif or .tiff
JPEG	<ul style="list-style-type: none">• Efficient image compression.• Comparatively small file sizes.• Good for web publishing and online delivery.	<ul style="list-style-type: none">• “Lossy” format – compressed data is lost forever.• Non-archival.	.jpeg or .jpg
GIF	<ul style="list-style-type: none">• Good for online graphics, particularly cartoons and illustrations.• Small file sizes.	<ul style="list-style-type: none">• Not suitable for photographs.	.gif
PDF	<ul style="list-style-type: none">• Minimises file sizes.• Effective for online delivery.• Documents are read-only (cannot be edited).	<ul style="list-style-type: none">• Difficult to make changes to documents.• Not suitable for photographs	.pdf

Scanner care and maintenance

- Ensure that the scanner is locked when it is being transported.
- Clean the glass surface with any glass cleaning product that does not leave streaks, but do not spray directly on to the glass.
- Be careful with images that contain sharp edges or metallic objects (eg. staples, rings or jewellery) as they may scratch the glass.

Scanning workflow

Establish a clear and easy-to-follow workflow to ensure that you create images of a consistently high quality. By having set steps, you will avoid missing small details. Scanning quickly becomes habitual, so you will soon find yourself instinctively following the workflow. When starting out, however, it is a good idea to have the stages of scanning in front of you.

Example workflow

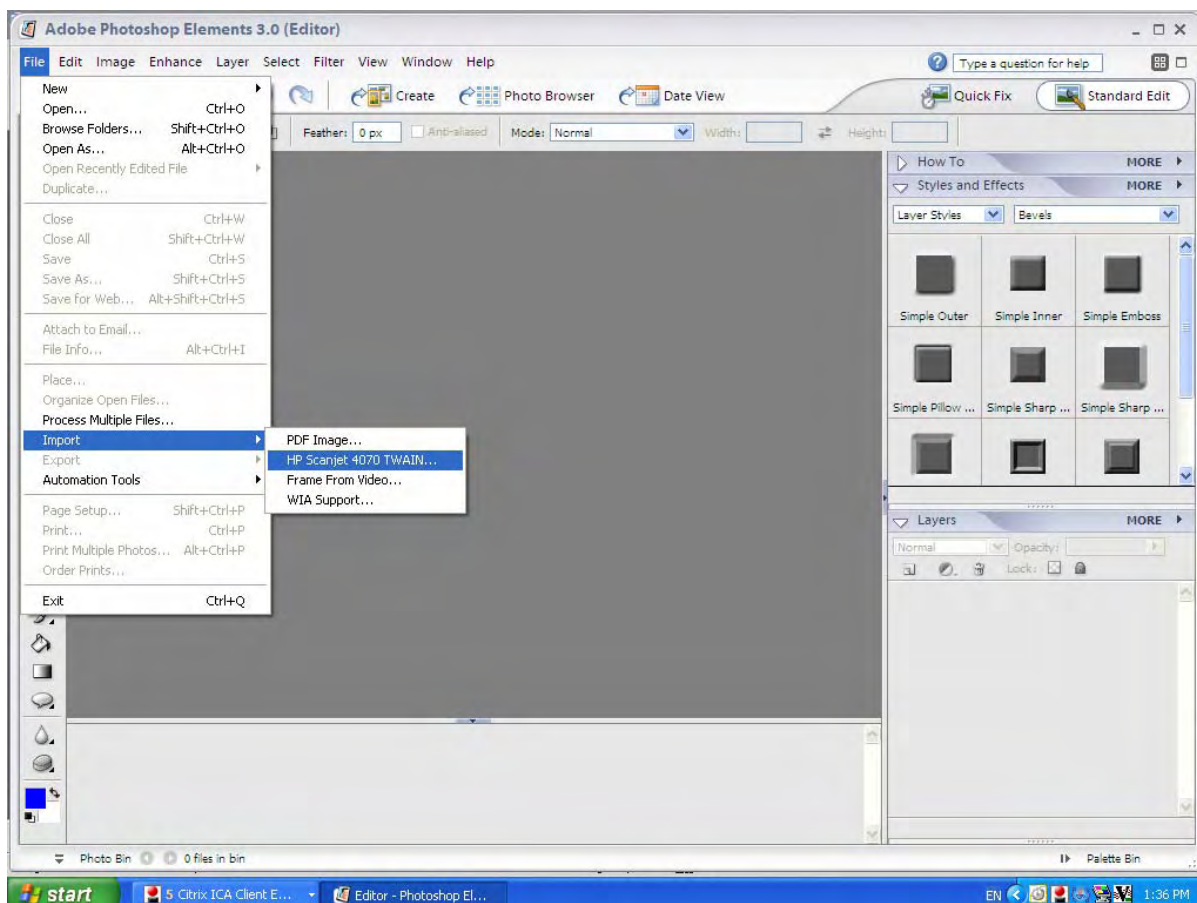
1. Place image facedown on flatbed scanner
2. Perform preview scan
3. Check scan settings (resolution, colour type, scan area)
4. Perform final scan
5. Rotate (if necessary) and crop
6. Adjust levels
7. Dodge/burn
8. Add noise
9. Save

Picture Queensland image capture

The following image capture procedures are consistent with Picture Queensland standards. These are a suggested set of procedures to ensure you are following industry best practice. It is based on using Adobe Photoshop Elements for image editing and scanner-specific software (eg. Canon's CanoScan or Hewlett Packard's HP Scanjet) for image capture. Other programs can be used to achieve images compliant with Picture Queensland standards, though it is recommended that you check the specifications of your applications carefully.

Scanning

1. Open Adobe Photoshop Elements
2. Import the scanning software by going through File → Import → [Scanning software] as shown below.



The scanning software will appear, with Elements in the background. Each manufacturer has different software, although they all have similar functionality.

You should be able to adjust the following scan settings:

- Scanning resolution
 - Colour type (Greyscale, black-and-white, RGB colour)
 - Image size
 - Brightness/contrast
 - Scanning area
3. Open the scanner lid and place the image face down on the glass plate. It is best to place the image square, up against the edge of the scanner. Then close the lid.
 4. Get a preview scan of the image by pressing (depending on your scanning software) "New Scan" or "Preview". After a short while, you will see a preliminary scan of the image.

5. Use your cursor to click and drag across the area of the image you want to capture.
6. Choose the appropriate colour type. For colour images choose RGB 24-bit colour, for black-and-white images choose 8-bit greyscale. Don't select the black-and-white 1-bit option, it is literally black or white, with no grey shades in between.
7. Select the correct scanning resolution. The table below is a guide to the scanning resolution you will need for your image to meet Picture Queensland standards, bearing in mind that black-and-white images need to be 600ppi and 6000 pixels on the longest side and colour images need to be 400ppi and 4000 pixels on the longest side.

Black-and-white images

Length of longest side	Scanning resolution (ppi)
10 inches	700
8 inches	800
7 inches	1000
6 inches	1200
5 inches	1400
4 inches	1600
3 inches	2200
35 mm slide	4000

Colour images

Length of longest side	Scanning resolution (ppi)
10 inches	500
8 inches	600
7 inches	700
6 inches	800
5 inches	900
4 inches	1200
3 inches	1400
35 mm slide	2400

By scanning your images at these resolutions, you will be creating images that have longest sides over 6000 pixels (for black-and-white) or 4000 pixels (for colour). This is to compensate for the area that will be lost when you crop that image during the editing process. It is safer to above the necessary image size, crop the image and then resize it, than risk having an image below the standard size.

8. When you are happy with all of the scan settings click "Scan" (or the equivalent in your software). Once the scanner has finished scanning, the final image will appear in Elements. It is now ready to be edited.

9. Close the scanning software so that you can access the image in Elements.

Image editing

The following steps in Elements will ensure that your image is the correct size and resolution, as well as having sufficient tonal qualities.

Open Elements

1. Open Elements from your computer's desktop
2. Select File → Open and open a file from the image folder (if the image hasn't already come up)

Rotate image

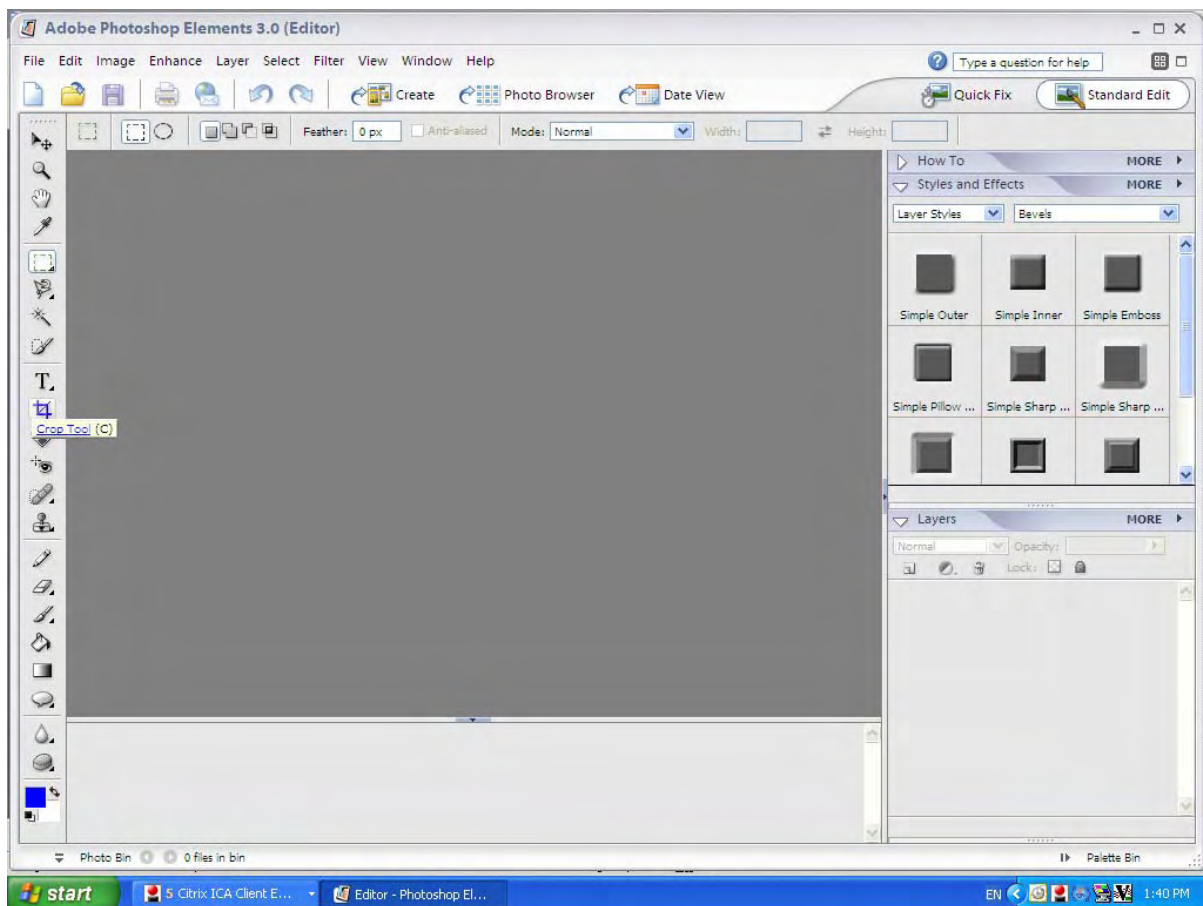
If, for whatever reason, your image is on the wrong angle, it is possible to rotate into its correct orientation.

Click on Image → Rotate and select the appropriate angle. You can flip the image on its head if it is upside-down, you can move it 90 degrees in either direction, and you can even automatically straighten the image if it is slightly off kilter by selecting Image → Rotate → Straighten Image.

Crop image

The crop tool allows you to select the portion of the image that you want to keep. Since one of the objectives of Picture Queensland scanning is to create a preservation copy of the original image, it is not recommended that you aesthetically crop the image. Peripheral details, such as mounts or borders, can provide useful contextual information and should be included in the scanned image.

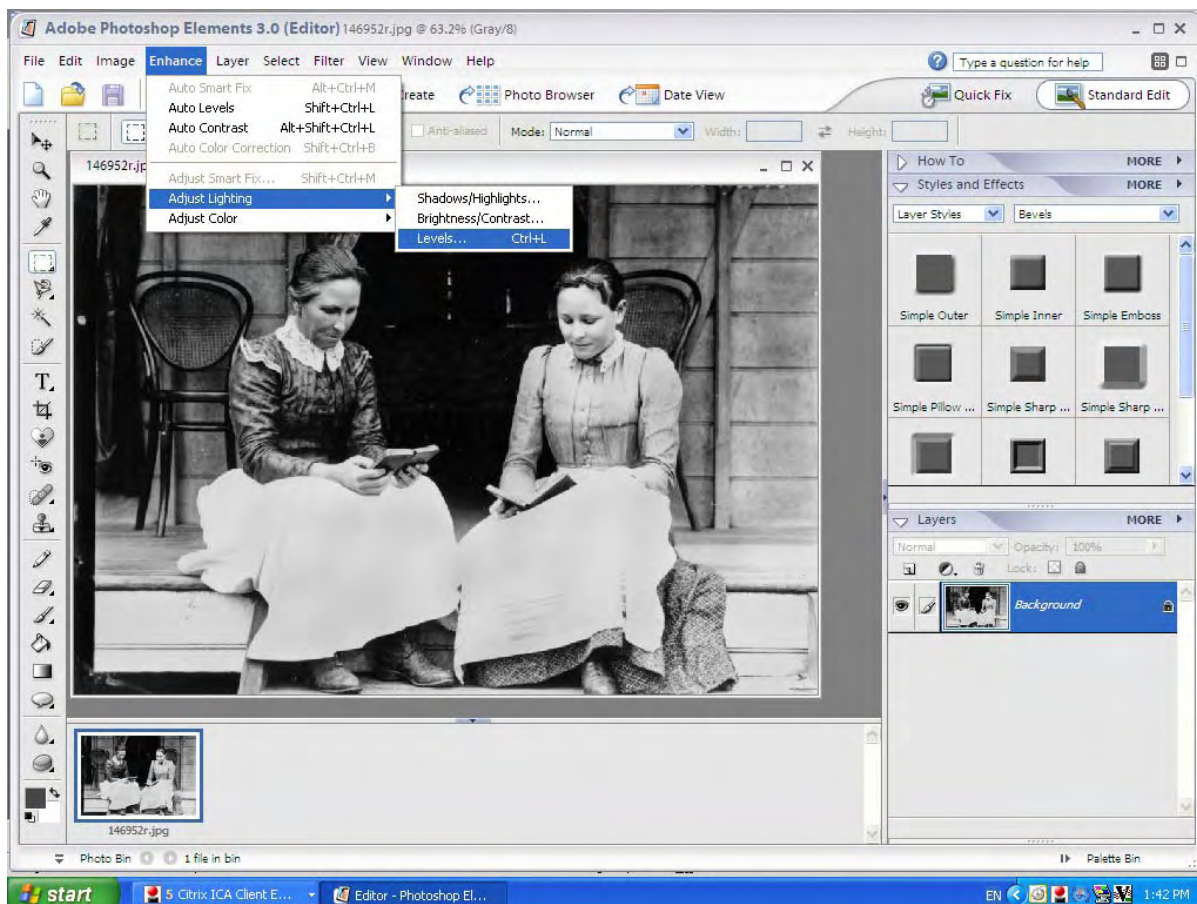
1. Click on the crop tool in the toolbox then click and drag it over the section to be cropped.
2. Release the mouse button and hover outside the image – the cursor becomes a straight double arrow if on the edge of the image selection, or a curved double arrow if outside the image area.
3. Use the double arrow feature to drag of the edge of the image to the desired position.
4. Press Enter or click the green tick in the toolbar to confirm the cropped area.
5. Press escape or Edit → Undo if you have made a mistake with the crop.



Adjust levels

Sometimes during the scanning process, slight tonal inaccuracies may appear in the image. This can be reflected in dark areas being too dark (even totally black) or lighter areas being too bright. This lack of tonal range can be addressed by adjusting the lighting levels of your image. The purpose of adjusting the levels is not to bring out something that was not in the original image, nor is it to “smarten-up” the picture. It is to ensure that the tonal qualities of the original image are accurately reflected in the digital image.

1. Go to Enhance → Adjust Lighting → Levels.
2. Select one of the buttons at the bottom of the graph. The middle button represents the midtones, the right hand button the highlights and the left hand button the shadows. Moving the buttons will adjust the “level” of midtone, highlight or shadow in the image. Experiment with how changing the levels affects the image. It takes a very long time to develop a feel for adjusting levels.
3. Click preview to compare before and after. You can use Edit then Undo, from the Toolbar if you are unhappy with the results and want to try again as well.
4. Click OK when you are happy with the results



When adjusting the Levels, you are looking to bring tone to the picture. Always ask yourself, “what is the main subject of the picture?” The main subject has to have as much detail as possible. If you are editing a portrait, for example, and a person’s white shirt appears just as a white block, you can adjust the shadows to bring tone and detail to the image. When editing images, remember that you want to remain as true to the original as possible – manipulating the image too much will not be an accurate representation of the picture.