

Methods for monitoring the condition of historic places

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Tony Walton

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ABSTRACT

Within New Zealand, the Department of Conservation manages numerous historic places including buildings, structures, archaeological sites, and wahi tapu. To achieve its statutory mandate to care for these places, a programme of condition monitoring is needed. This report outlines an approach to monitoring the condition of historic places taking into account the nature of the places involved, the frequency of reporting required to achieve adequate coverage, and the resources and equipment available to do the work. For consistency between agencies, the approach adopted builds on that piloted by the Auckland Regional Council. Methods that may be used include consulting existing records, completing standard checklists, recording new observations, annotating measured drawings or archaeological plans, and taking photographs. Provision for collation, analysis, and reporting of the information is also an important component of any monitoring programme. Data collected may be used in aggregate to report on the overall state of historic places on departmentally managed land. Forms for recording the condition of different types of historic place are contained in the appendices.

Keywords: historic places, condition, monitoring, reporting, New Zealand

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1. Introduction

This document outlines an approach to monitoring the condition of historic heritage places in New Zealand managed by the Department of Conservation. In the first section, the purpose of condition monitoring is discussed and condition monitoring is placed in the wider context of historic heritage management. The second section discusses some of the methods that are available for recording condition. These methods include the use of existing records, observation, checklists, topographical or archaeological mapping or both, and photography. The third section discusses collation, analysis, and reporting of the information. The appendices contain standard forms for recording the condition of different types of historic place.

1.1 WHAT IS CONDITION MONITORING?

Monitoring is 'the act of **measuring change** in the state, number, or presence of characteristics of something' (Department of Conservation 1998: 4). It involves the repeated collection of a specific set or sets of information over time and analysing the results to detect the changes that are occurring. The collection of this information facilitates identification of recurrent problems or fabric susceptible to damage. The problem areas, once identified, can be monitored more intensively and, where appropriate, management action taken. For individual historic heritage places monitoring involves measuring:

- Changes in the external pressures acting on the place
- Changes in the condition of the place
- The effectiveness of management actions on conservation of the place

The focus in this document is on the second of these. Condition monitoring requires a long-term commitment.

To be effective, a standard method of collecting data and a standard format for reporting is required. It is recommended that for consistency between agencies the department adopts a general approach consistent with that outlined by the Auckland Regional Council (Mackintosh 2001), supplemented and modified as required for departmental purposes.

1.2 WHY MONITOR CONDITION?

Monitoring condition is critical for the appropriate management of historic places. Information on trends in condition is essential for planning and to ensure that management practice remains responsive to any changes. Information about the changing condition of historic places allows managers to make rational, efficient, fair and consistent decisions when allocating resources.

Monitoring is an important component of a credible historic resources programme. Subsurface archaeological remains, earthworks, built structures, and landscape features are all susceptible to damage and change. Physical damage can occur through land clearance, cultivation, afforestation, trampling by stock, visitor impact, or natural events. The values associated with historic places can also be diminished through inappropriate changes or uses. The imperative for management of historic places, particularly archaeological sites, is to minimise the amount of avoidable disturbance. Monitoring is essential to better understanding of the resource so that it can be managed and conserved in the long term. Because it requires a long-term commitment of resources, monitoring needs to be placed in context of wider historic resources planning.

All sites managed by the Department 'require some degree of condition monitoring in order to determine the rate and causes of any deterioration, to establish if any negative visitor or management impacts are occurring, and indicate where intervention may be necessary. For some sites this may mean a visit no more regularly than every five or ten years following the collation of baseline data' (Southland Conservancy Historic Resources Protection Plan). It is essential that management decisions are based on a good level of understanding of the heritage place, its place in the wider landscape, and the factors that have led to the current state of preservation (Ferne & Gilman 2000: C32). Monitoring and record keeping is essential for effective management over both the short term and the long term.

The role of monitoring is as one component of management. It involves assessing the condition of the historic place, and may lead to recommendations that outline the requirements for conservation and to management activity that results in work carried out. Monitoring is essential to understanding a problem before any remedial action is attempted. The methods discussed in this document have general applicability, but in all cases tools should be chosen to fit needs.

1.3 WHICH HISTORIC HERITAGE PLACES SHOULD BE MONITORED?

The aim is to monitor the condition of all historic places on the actively managed list, and at least low level monitoring of all other known historic places. The latter should be monitored within a 5–8 year timeframe. Some places may be monitored as part of specific projects, e.g. long-term monitoring of earthworks project (Science & Research, DOC Investigation no. 1958), and so be subject to more detailed or intensive recording.

Condition monitoring of wahi tapu, in those cases where physical historic resources exist, will normally require an effective degree of tangata whenua participation and control in any decision-making (Nga Akiakitanga Nuku Kaupapa Maori a Te Papa Atawhai, draft waahi tapu policy guidelines, Department of Conservation, February 2001). Consultation with tangata whenua will ensure that any actions undertaken are consistent with the values of the place. The appropriate form to use is determined by the physical evidence, i.e. archaeological site, built structure, or botanical specimens.

1.4 WHAT INFORMATION NEEDS TO BE COLLECTED?

Condition monitoring will normally focus on what is significant or most valuable about the site, building, structure, or object. The environmental dynamics that produce impacts on a historic place also require attention. Key factors in monitoring are ease of recording, repeatability, cost-effectiveness and, as far as possible, the avoidance of subjective assessment. The level of recording decided upon directly affects the time and costs involved. This can range from simple sketch mapping, note-taking, and photography to detailed survey and measured drawings at a large scale. Given current resources and levels of skill, a qualitative approach is recommended, focussing on threats, condition, and management (also known as pressure–state–response model, cf. Mackintosh 2001). Quantitative methods may be employed for specific purposes. The mix of methods employed will vary according to the type of historic place involved, whether archaeological site, standing structure, or wahi tapu. Not all places need to be recorded in the same detail. Different levels of recording will be required according to circumstances.

1.4.1 The base-line visit or survey

The base-line visit or survey will involve the collection of detailed information and provide guidance on what should be recorded and in what detail. Detailed mapping or other recording may be undertaken, or recommended as a prerequisite for further condition monitoring. Where detailed records already exist, particularly large-scale maps, base-line monitoring provides a stocktaking of the current condition of the building, site, structure, or object. Key tasks of the baseline survey include providing some guidance on stability and vulnerability of the place and identifying appropriate photopoints. An agreed standard terminology for recording condition and vulnerability is desirable. The pattern and rate of encroachment of vegetation on heritage places is also a necessary component of recording. Finally, an important outcome of the base-line visit is a recommended timeframe for regular visits, (subject to review after each visit). Note that on the first visit the base-line form is intended for use along with the form appropriate to the type of historic place. Other information should be covered in detail in a written report with plan.

1.4.2 Subsequent monitoring visits

Subsequent monitoring visits will normally occur to a specified schedule, but opportunistic ad hoc reporting can also provide useful additional information and also checks that unexpected changes are not occurring. Where good documentation exists, subsequent monitoring visits may involve little more than keeping the records up-to-date.

Condition monitoring may identify structural or other problems that require assessment by professionals such as archaeologists, engineers, or conservation architects. This is not seen as part of the routine monitoring process.

1.5 WHO WILL COLLECT THE INFORMATION?

Practitioners with a sound knowledge of historic resources practice and extensive field experience should undertake the base-line visit, preferably accompanied by those staff who will assume the responsibility for future monitoring. Staff based in Area Offices will normally be responsible for routine monitoring thereafter to a set schedule. As far as possible staff with the necessary competencies in historic resources work should do the monitoring (cf. Department of Conservation 1998: 6).

2. Condition monitoring methods

The methods appropriate to monitoring existing condition are the standard recording techniques of field survey, photography, and making measured drawings. Only the purpose to which the techniques are put makes their use different from standard practice. A different mix of methods may be required for each type of historic place, e.g. archaeological sites, built structures, and wahi tapu. The search is constantly on for more accurate and efficient methods of producing useful documentation. Sources of information on field techniques used in compiling this document include Bowden (1999), Wood (1994), and Morriss (2000). Built structures, including buildings, bridges, and gun emplacements, can occur as important historic places in their own right, or as one component of a historic place.

How much to record is always a crucial issue. Recording is always selective. When determining the appropriate methods for use in each case, it is important to anticipate what questions are most likely to be asked of the information collected. If a detailed site plan or measured drawing already exists, adequate notes and photography of any details worthy of record may be all that is required. The nature of the record made will, inevitably, determine how it can be used later. An adequate plan (whether hand drawn or digital), an accompanying description, and the judicious use of photography are central to condition monitoring.

2.1 EXISTING RECORDS

For archaeological sites, a potential source of information is the New Zealand Archaeological Association Site Recording Scheme. It may contain plans and photographs that are relevant to assessing change over time. Archaeological publications often contain plans of sites. Pukearuhe pa and redoubt, for example, were mapped in 1968 and the plan was published in Lawrence & Prickett (1984). Prickett has published plans of other pa managed by the Department including Koru pa (Prickett 1980) and Tataraimaka pa (Prickett 1982). Best's (1927) plans and descriptions of individual pa allow limited conclusions to be drawn about changes to some sites over many decades,

including areas which have been destroyed since (e.g. Okoki pa, Gumbley 1997). Maps of sites published recently include Gumbley (1997, 2000) and McFadgen & Williams (2000). As Thorne (1996) notes, however, some of this data is not primarily intended for management purposes and additional information is often required to devise plans for long-term conservation.

Aerial photographs are invaluable (Jones 1999, 2000). A number of collections exist, including the invaluable archive of vertical aerial photographs held by New Zealand Aerial Mapping. Others include that produced by Kevin Jones, Science & Research, Department of Conservation.

For standing structures and buildings, early photographs may be held in museum collections or other archives.

Older records are important for estimating what originally existed. This data is required to assess how much survives compared with what is presumed to have existed originally. The MARS formula (Darvill & Fulton 1998) is

$$\text{Percentage Area Loss} = \frac{\text{Projected Archaeological Extent} - \text{Current Area} \times 100}{\text{Projected Archaeological Extent}}$$

What constitutes 'loss', or better, 'total loss', and also what constitutes 'archaeological extent' require case-by-case field investigation.

2.2 MONITORING FORMS

(A predominantly quantitative approach based on visual assessment.)

The monitoring forms (see the Appendices) comprise a series of boxes promoting the collection of structured information, together with free-format fields chosen to reflect the particular characteristic of places. The forms ask for information about:

- Land use on site and around site
- Vegetation cover (including incidence of weeds)
- Soils and slopes
- Extent of erosion/damage
- Visitor pressure
- Agricultural/stocking issues

For built structures, particularly buildings, an assessment is required of:

- The surrounding area (including trees, drainage, ground cover, and fencing)
- Exterior cladding (including roof, walls, windows, and doors)
- Interior (including floor, ceiling, walls, fittings and chattels)
- Services (including plumbing and lighting)

The monitoring forms require an assessment of the overall condition of the site. An agreed standard terminology is desirable. English Heritage Data Standards Unit has promulgated the following terms and definitions: (refer http://www.mda.org.uk/fish/i_c.htm)

Good All or nearly all features of interest are well preserved for the period they represent. No sign of active damage.

Fair Some damage or part destruction of features of interest apparent, or some features of interest are obscured by more recent additions/alterations. For buildings, indicates structurally sound, but in need of minor repairs.

Poor Damage to the majority of the original features of interest is apparent, some significant features are missing. Some features of interest remain. Active damage apparent (e.g. for buildings water penetration, rot, etc.).

Very bad The majority of features of interest are so damaged as to be not surveyable or are missing. For buildings, this indicates structural failure or evident instability, loss of significant areas of roofing, or damage by a major fire or other disaster.

Uncertain Features of interest can not be investigated at the time of the assessment for any reason, e.g. obscured by cloud-cover, vegetation, ongoing building work, below ground services etc or the site could not be found.

Destroyed All features of interest have been destroyed. No further information can be gained from future investigation of the site. Includes demolished buildings, unless foundations, basements, etc., exist which are of interest (for which use 'very bad').

The monitoring forms require an assessment of what is causing damage and the extent and seriousness of the problem. An agreed standard terminology for recording damage and severity is desirable. It is recommended that National Trust for England and Wales standard terminology is used, adapted to New Zealand conditions as required. Causes of damage may include: burrowing animals, building work, burning, cultivation, demolition, environmental cause, information not available, metal detector activity, mining/quarrying, people, road construction, sheep, other stock, storm damage, tree planting, vandalism, vegetation, vehicles, and water action. Each option is assessed as to the extent and seriousness of the problem:

- Potential
- None
- Slight
- Moderate
- Severe

Stability may be assessed as stable, slow deterioration, rapid deterioration, or unknown. For consistency it is important that the agreed standard terminology is used.

The strength of a checklist approach lies in its adaptability to a range of circumstances. The process enables targeting of further recording needed to supplement the existing record.

A visual assessment may pick up changes and identify developing threats, but more detailed work to set standards and with an established timetable are necessary to do the job thoroughly. Small-scale, but insidious, threats are particularly difficult to monitor and so prevent.

On first visit to a historic place for condition reporting, both the base-line form and the form appropriate to the type of place need to be filled in. These provide basic information in a readily digestible form but always need to be accompanied by a condition report.

2.3 MAPPING

A plan of the historic place is important for monitoring condition. Where good plans exist re-survey is not justified. The level of survey will, however, restrict the potential use of a plan for monitoring. While topographical survey is desirable, it is not always possible or necessary. Three different levels of survey and monitoring may be recognised:

- Small-scale plan or sketch plan. Monitoring confined to the acquisition of a range of data at a fairly superficial level and with very limited potential for measuring gradual medium or long-term change.
- Medium-scale plan of a place and all components, but without detailed plans of each component (scale of site plan normally better than 1 : 1000.) Good potential for monitoring medium term change across site but limited usefulness for recording changes to individual structures.
- Large scale plan including details of place and all components (scale of site plan normally better than 1 : 500.) Good potential for monitoring medium and long term change across the site and individual components.

Plans should be accompanied by representative profiles.

For built structures there is again a range of levels of documentation. There is no single best way to record a standing structure, but ground, floor, and roof plans together with elevations and sections are usually required to adequately record condition. Construction breaks, if any, should be identified. Plans can be drawn inside or outside a building or both depending on circumstances. Plans are usually drawn at each of the floor levels of a building. Morriss (2000) discusses in detail the various methods employed in surveying buildings. A scale of 1 : 100 is large enough to record main details. Simple annotated sketches are invaluable in condition reporting whether or not a measured drawing is available.

2.4 PHOTOGRAPHY (INCLUDING AERIAL PHOTOGRAPHY)

The camera is the most versatile and often-used tool, but many photographs taken are of poor or indifferent quality and provide little useful information. A simple good-quality photograph is one of the most cost-effective ways of recording built structures. Even a single photograph of a standing structure or building can be invaluable if it shows its architectural character, indicates its function, suggests its context, is of good technical quality, and provides as much visual information about the subject as possible (cf. Brown 2001). A range of shots from general setting to matters of detail is, however, usually required. Earthwork sites, by contrast, are notoriously difficult to adequately photograph from ground level. For sites with a grass cover, aerial photography is the best option.

A photographic record should be made of all significant features. Subsequent monitoring should focus on areas of actual or potential damage, with periodic updating of the general coverage. The images may be captured in photographic or digital formats. Digital photography is becoming increasingly widely used and allows images to be checked for usefulness in the field. Images can be downloaded and stored electronically. The outputs may be in the form of the

original image, whether photographic or digital, or a line drawing or other scaled image derived from it. Three common image-based survey techniques (Clark 2001: 79–80) are: rectified photography, photogrammetry, and orthophotos. These three techniques all require special training and this limits their application.

Rectified photography Rectified photographs are an extremely useful and cost-effective form of recording particularly where the subject is flat and there is a large amount of detail. Errors of scale or position of objects are corrected by precise alignment during set up thus creating a true to scale image in two dimensions.

Photogrammetry Photogrammetry is the technique of taking precise measurements and from stereo (overlapping) photographs. The data captured is in three dimensions. It is the most economical way of creating a line drawing for a large area containing a lot of detail. Photographs should always include an appropriate scale in an upright or horizontal position within the frame.

Orthophotos Two-dimensional photographs which have been corrected for scale errors, that is, the scale is consistent across the photograph, irrespective of the relief or change in plane of the photograph. Orthophotos are a product of digital photogrammetry (Clark 2001: 113).

For most purposes, 35 mm cameras are adequate. Large format cameras have advantages (e.g. for producing rectified photographs that can be printed to scale), but are not standard photographic equipment.

Accurate records of photographs taken need to be kept. The name or identifier of the historic place, the subject, date, direction of view, and other details need to be recorded at the time the photograph is taken. The permanent record should contain contact sheets with labels and the negatives.

A dated photographic record is invaluable and enables quick detection of a range of different sorts of damage. The advantage of a photograph is that it is objective (although some points of interpretation may vary between observers) and the process is repeatable. There is no need to rely on notes made by a previous observer, with the inevitable problems of interpreting their record. The time series can be freshly analysed on each occasion with whatever interests the current phase of condition reporting requires.

Monitoring often requires getting back to the same spot and pipe pegs below the ground surface should be used sparingly as markers for recording and monitoring. Casual or strictly controlled photopoints of key areas of a site may be useful to help ensure that the same view is replicated in later photographs. The use of photopoints and photoframes is discussed in detail in Elwood (1998) and some of this material is summarised below.

2.5 PHOTOPPOINTS

A photopoint is a camera position where photos of a subject can be taken for comparison over time. A photoframe designates the exact direction, focus, and variables of the photos taken. Numerous photoframes can be established at one photopoint.

Photographs should be taken when shadows are minimal, e.g. on overcast days.

A tripod should be used to help standardise the photos taken, e.g. it removes the influence of a person's height. A tripod also reduces camera movement, allowing the use of lower shutter speeds and increased depth of field.

To ensure a permanent record, black-and-white images should be taken as well as colour. Colour print film allows for more easy reproduction after processing than slide film. 100 ASA is the standard film for daylight tripod photopoint photography.

The information recorded for photopoints should be precise. A person with no knowledge of the place may have to re-measure the photopoint in future years.

Photopoints shall be relocated at the exact position of the original photopoint and all variables (i.e. camera specifications, film, lighting, tripod height, etc.) should be closely replicated from one monitoring interval to the next.

2.5.1 Setting up photopoints

Sufficient photopoints are required to cover all features of the historic place. A permanent marker peg should be set into the ground at each point. Give each photopoint an identification number. Attach a disc marked with the photopoint number to the peg.

Record all relevant details. Record the location of the photopoint on the relevant NZMS 260 series map and on an aerial photograph or site plan. Also record the six-figure grid reference and, where possible, record the GPS location.

Find 2–3 nearby permanent features of the landscape to act as orientation points for relocating the photopoint. Immovable features provide good references.

Physically mark the reference features if it is likely that they will be difficult to relocate. For marking trees use numbered aluminium tags.

Draw a sketch map of the photopoint and the surrounding reference points. To aid relocation, take a photograph of the photopoint with the marker peg in position. Attempt to include the reference points within the frame of the photograph.

2.5.2 Taking the photos and recording the detail

Several photoframes can be taken at a photopoint. Complete the details for each photoframe taken.

Select a view that will provide useful information on the subject and briefly describe what the frame attempts to show.

Adjust the tripod to an appropriate height and record the distance between the ground and the bottom of the camera.

Adjust the focal length and aperture setting of the lens. Record these to ensure the correct depth of field will be established during re-measurement, e.g. Nikon

F70, 28 mm lens set on auto exposure and/or bracketing (unless otherwise specified) film Fujichrome 200 ASA, etc.

Record the compass bearings to define the boundaries of the photoframe and give the frame a unique identification number. Draw a quick reference sketch of the compass bearings.

Place a card in a convenient position in the foreground near the register of focus to show the photopoint number, photoframe number, the date and time, and the initial of the photographer.

Take the photograph. At least two exposures should be taken of each photoframe.

2.5.3 Managing photopoint monitoring data

Films should be processed after monitoring is completed for each time period.

Photographs and slides should be marked with the following:

- The date the photograph was taken
- Photopoint identification numbers
- Film rating

After establishment of the photopoints, the following items should be compiled for each photopoint:

- A copy of the completed recording sheets
- A copy of the photopoint establishment photograph/s
- Copies of the original photographs. To make photos more durable in the field, put them into a small plastic album or colour copy/scan and laminate them.

The person/s responsible for monitoring should then store the processed and marked prints, the negatives, and the original recording sheets within each historic places monitoring folder, or within a folder set up for storing all historic places monitoring data.

2.5.4 Re-measuring photopoints

Re-measuring the photopoints is simple when their location was recorded in sufficient detail and the information and original photographs was collated and stored at the completion of the initial fieldwork.

Gather together all the necessary equipment along with copies of the recording sheets used for previous monitoring. This information should have been collated with the original photographs at the completion of the initial fieldwork.

A film of the same type, speed and ISO/ASA rating used in the initial photographs should be used.

Variables, such as date, time, photographer, and negative number should be recorded on copies of the recording sheets in the re-measurement column.

Locate the marker peg, using the recorded orientation points, bearings, and distances. Remember to adjust for true north as magnetic north changes slowly over the years. If the marker has been removed you should still be able to

relocate the exact photopoint using the references and the original photographs of the actual photopoint.

Once you have located the marker peg (or position of the photopoint) set up the tripod and camera. Ensure the camera settings (e.g. tripod height and lens focal length) replicate the initial settings recorded as closely as possible.

Use a copy of original photo to get the framing right and take the replicate photograph.

2.6 CONDITION REPORTS

A condition report is defined here as a free-text report keyed to detailed plans (Fig. 1). The form taken by the report depends on whether the historic place concerned is a site, built structure, object, or wahi tapu. A condition report has a focus on current state of an historic place and on the rate or potential rate of deterioration. The report should identify damage, track changes, check the effectiveness of interventions, and make recommendations for further monitoring and interventions. Monitoring vegetation changes is an important part of the record, including identifying trees that need to be removed. This form of condition reporting is already in widespread use.

A detailed plan is required as a basis for recording observations, but in its absence a rough plan to scale will suffice.

3. Analysis, reporting, and use of information

3.1 EVALUATING AND STORING THE INFORMATION

Once the fieldwork is completed, the information needs to be interpreted and the results presented in a concise manner. The ultimate test of the usefulness of the information collected is its clarity of expression and ease of use over time.

Change over time is the focus, but the data collected may also be used, in aggregate, to report on the overall state of historic heritage both on departmentally managed land and on all land within particular regions, e.g. as part of state of the environment audits. The checklists will also provide information required by the Department and by other organisations for this purpose, e.g. Auckland Regional Council and the proposed cultural heritage monitoring network for the Auckland Region.

The monitoring programme should generate a substantial body of archive material including checklists, condition reports, and photographs. It is important that the information is stored so as to be accessible and readily

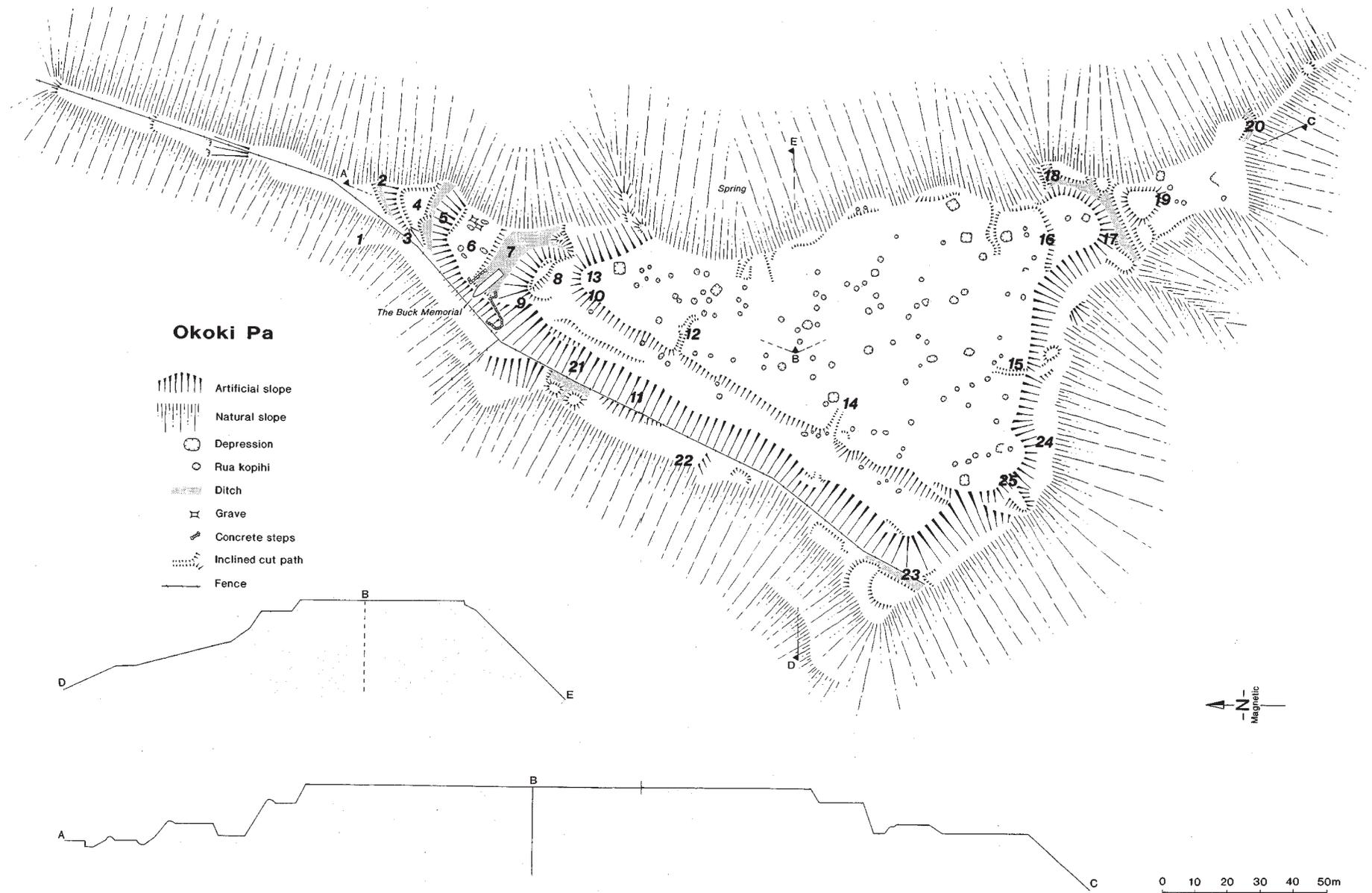


Figure 1. Okoki pa. The base map was fig. 2 from Gumbley (1997) with annotations on condition made by Kevin Jones and Tony Walton in May 1999. Notes were made on each of the 25 points identified on the plan. For a further example see Ngangana pa conservation plan (Department of Conservation 2002).

FIGURE 2. PLAN OF OKOKI PA.

retrievable. Best practice requires the department to develop what in UK would be called a SMR (Sites & Monuments Record) or—for information systems with a somewhat wider focus—a HER (Historic Environment Record) for the land that it administers. The NZAA Site Recording Scheme holds a mass of important information on archaeological sites, but is not designed for day-to-day asset-management use. The current VAMS/HAMS system is too narrow in scope to be wholly satisfactory, but key information from the monitoring programme could be incorporated in it as a second-best option. The Department needs to invest in basic record infrastructure for historic resources management.

Information systems to assist with collecting and storing up-to-date data about the condition, use, location, etc. of the assets being managed are central to asset management systems. The data is intended to assist both with day-to-day operations and forward planning. Information will be available as an aggregate measure of the Department's work in historic resources. Minimum data required is the date of the monitoring, an assessment of condition (whether no significant change, or deteriorating), and summary recommendations (e.g. no action required, increased frequency of monitoring required, or remedial action required).

Provision for long-term storage of information is crucial. The record system needs to be complete and have information about all relevant places, and have all relevant information about those places. Parallel sets of records of the fieldwork should be maintained in both the Area Office and in the Conservancy.

3.2 OUTCOMES OF MONITORING PROCESS

In summary, the whole process is:

Data collection Collecting, measuring, counting, and making observations.

Data should be quantified wherever possible. Agreed standard word lists should be used for recording qualitative differences to ensure comparability.

Analysis of data Identifying trends, and causes and effects, to determine what is happening over time.

Management action Acting on findings in terms of planning and actual intervention.

Review Assessing the value of the data, and revising the strategy.

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6. Glossary

Archaeological site Any place in New Zealand, including shipwrecks, which was associated with human activity more than 100 years ago and which, through investigation by archaeological techniques, may provide scientific, cultural or historical evidence as to the exploration occupation, settlement or development of New Zealand (Historic Places Act 1993). Any specific locality at which there is physical evidence for human occupation in the past that is, or may be able to be, investigated by archaeological techniques (New Zealand Archaeological Association Site Recording Scheme).

Built structure Any building or structure, including roads, bridges, gun emplacements, walls, mines, etc. over 30 years old.

Historic place Any land, building or structure that forms part of the historical and cultural heritage of New Zealand and is within the territorial limits of New Zealand. Includes anything fixed to this land (Historic Places Act 1993).

Historic resource A historic place within the meaning of the Historic Places Act. Includes any interest in a historic place (Conservation Act 1987).

Wahi tapu A place sacred to Maori in the traditional, spiritual, religious, ritual, or mythological sense (Historic Places Act 1993).

Appendix 1

BASELINE MONITORING FORM

(The document reproduced on the following pages is available on-line within DOC as WGNCR-43765.)

DEPARTMENT OF CONSERVATION BASE-LINE MONITORING FORM

***Refer to baseline form guide when completing form**

Name of historic site or area:	NZAA site number (if relevant):
	Type of site or area:
Location of historic site or area:	Metric Grid Reference Easting
	Northing

Local Authority:	Date:
Name of Fieldworker(s):	Organisation(s):
Weather:	Aspect:
Altitude (from sea level):	Ground distance from sea or water bodies (m or km):
Proximity to public or private access ways:	
Current land use of site or area:	Current land use of surrounding land:

Description of historic heritage resource (extra space is available overleaf):
Conservancy land unit number, name, and legal status:
Size of historic site or area (i.e. area covered):
Special features of historic site or area:
Integrity of historic site or area:
Identified pressures upon historic site or area:
Potential pressures upon historic site or area:
Additional notes:
Recommended time frame for monitoring:
Reasons for recommended time frame:
Resource consent application or NZHPT Authority processed:
Date of next visit:

Sketch plan (include photopoint location and reference points, direction of photo, GPS point location), further description or additional notes.

Photopoint Data		
Number of Photopoints established:	Photographer :	Date Established:

Photopoints		
Photopoint Number:	Description of photopoint I (i.e. location of photopoint, description of object photo of, whether peg placed at photopoint, grid reference, bearing, distance to object, other reference points,):	Film & Photo No.

GUIDE TO BASE-LINE MONITORING FORM

Name of site or area:	If there is more than one name for the place or area, list them all, to avoid confusion.
NZAA site number:	New Zealand Archaeological Association site record number = NZMS 260 Metric Map Sheet No. (e.g. R11) / consecutive number (e.g. 1).
Site type:	The type of cultural heritage resource (i.e. pa, midden, brickworks, karaka tree, house). Also note whether the resource is archaeological, botanical, wahi tapu, or a built structure.
Location of site or area:	Address, legal description, and further detail to help locate the site or area.
Metric grid reference:	Seven digit grid reference from Metric Map NZMS 260, 1:50,000 scale map. The map number should also be recorded in front of the grid reference, i.e. R11. Recording grid references is explained on all NZMS 260 maps.
Local Authority:	The district or city council the site or area is located within.
Date:	Date monitoring was undertaken.
Fieldworker(s) / Organisation:	Name of the people undertaking the monitoring and the organisation, authority, Iwi etc., they represent.
Weather:	Brief description e.g. raining, cloudy, clear, sunny, etc.
Aspect:	The predominant direction that the area faces. Measured by pointing a compass in that direction and recording the magnetic bearing.
Altitude:	Height above sea level in metres. Calculate from topographical map contours or GPS.
Distance from sea or water bodies:	Calculate on the ground if possible or from topographic map. Water bodies include, rivers, streams, lakes, etc.
Proximity to access ways:	Either public or private. Calculate either on the ground if possible or from topographic map.
Current land use over site or area:	Note the type of activity the land is predominantly used for.
Adjacent land use:	See above. Note particularly if the land use is different from above.
Description of cultural heritage resource:	Details of the features of the site or area. (e.g. When describing a pa site, include the number of pits, midden, foundations etc. When describing a building, describe the size, style, function, etc.) Include as much information as possible. You may refer to, add and amend the existing information on the site or area.
Conservancy land unit number, name, and legal status:	Record land unit number, name and legal status e.g. marginal strip, national park.
Size of site or area:	Provide a basis for comparison to measure extent and speed of decay. Size / Area—calculate the land surface covered by the site or area (i.e. 50 x 50m) and in m ² ; Height—highest point of the site or area.
Special features of the site or area:	Any particular features that are unusual or unique (e.g. architectural features, archaeological objects).
Integrity of the site or area:	Has the site or area been modified or altered? This can include positive alterations as a result of sensitive restoration. For buildings and structures, are they located on their original site?
Pressures on site or area:	Describe any main pressures or issues concerning site or area.
Potential pressures upon site or area:	Identify any signs of pressures that could develop in the future (e.g. erosion, stock, development etc.). Also note any vulnerability the site or area may have to these potential pressures.
Additional Notes:	Any further information about the site or area that might assist with future assessment and analysis.
Recommended time frame for monitoring:	All places and area should be monitored within an agreed timeframe. However, it is realised that the frequency of monitoring will vary for each place or area, according to several factors. These include access to place or area, pressures upon place or area, and management issues. Though the timeframe will vary between sites, the monitoring time for each site should be consistent.
Reasons for recommended time frame:	Describe the basis for the decision about the recommended time frame.
Resource consent application or NZHPT authority processed:	Any resource consent applications or NZHPT archaeological authorities processed relating to the site or area? If yes, describe any modifications that took place as a result of the resource consent or authority.
Date of next visit:	Specify date or period within which next monitoring visit needs to take place, based upon the recommended time frame.
Sketch of cultural heritage resource:	Sketch in plan view the layout of the site or area and the shape of the site or area.
Photopoints:	Photopoints are specific, referenced and relocatable points where a camera is set up and photographs taken. Take photos at the same time of the year and at a similar time in the day, so that effective comparisons can take place.
NEXT STEP:	FILL IN THE RELEVANT REGULAR MONITORING FORM!

Acknowledgement:

Based on a form developed by Lucy Mackintosh for the Auckland Regional Council.

Appendix 2

ARCHAEOLOGICAL MONITORING FORM

(The document reproduced on the following pages is available on-line within DOC as WGNCR-43767.)

DEPARTMENT OF CONSERVATION ARCHAEOLOGICAL MONITORING FORM

***Use baseline form and previous visit form for reference *Use archaeological form guide for assistance**

Name of site or area:	NZAA site number:
	Site type:
Location of site or area:	Metric Grid Reference: Easting Northing

Local Authority:	Date:
Name of Fieldworker(s):	Organisation(s):

Size of Site (m ²):	Area:	Height:
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Indicator	Rating	Estimate (Tick appropriate box)	Notes (location of damage, particular species, etc.)
Current land use		<input type="checkbox"/> Grazing <input type="checkbox"/> Production forestry <input type="checkbox"/> Reserve or other protected public land <input type="checkbox"/> Cultivation <input type="checkbox"/> Under development <input type="checkbox"/> Residential / Commercial / Industrial (specify) <input type="checkbox"/> Other (specify)	
Current land use adjacent to place or area		<input type="checkbox"/> Same <input type="checkbox"/> Different	Specify any differences
Type of vegetation cover surrounding place or area		<input type="checkbox"/> Pasture <input type="checkbox"/> Predominantly exotic weed or scrubland <input type="checkbox"/> Exotic or Indigenous forest <input type="checkbox"/> No vegetation <input type="checkbox"/> Other (specify)	
Overall assessment of condition	1 2 3 4	<input type="checkbox"/> None or very few signs of disruption to site/area <input type="checkbox"/> Small areas of disruption to site/area <input type="checkbox"/> Large areas of disruption to site/area <input type="checkbox"/> Site/area almost completely or completely disrupted	Specify areas and types of disruption
Extent of loss	1 2 3 4 5	<input type="checkbox"/> Site/area been added to <input type="checkbox"/> Site/area the same size as previous visit <input type="checkbox"/> 20% or less of site/area lost since previous visit <input type="checkbox"/> 20% or more of site/area lost since previous visit <input type="checkbox"/> Site/area completely destroyed or not located	Specify percentage and features lost / gained
Speed of deterioration	1 2 3 4	<input type="checkbox"/> No deterioration visible since previous visit <input type="checkbox"/> Slow, ongoing deterioration visible <input type="checkbox"/> Rapid, ongoing deterioration visible <input type="checkbox"/> Severe periodic / one-off deterioration visible	
Integrity of site/area	1 2 3 4	<input type="checkbox"/> Not modified or slightly modified (<20% of place or area) <input type="checkbox"/> Partially modified (20–50% of place or area) <input type="checkbox"/> Heavily modified (50–80% of place or area) <input type="checkbox"/> Almost completely destroyed or removed (>80% of place or area)	

Continued next page >>

Indicator	Rating	Estimate (Tick appropriate box)	Notes (location of damage, particular species, etc.)
Extent of vegetation cover over place or area (excluding pasture)	1	<input type="checkbox"/> Vegetation absent or very uncommon (<10% of place or area)	Specify whether indigenous or exotic species
	2	<input type="checkbox"/> Vegetation over 10–20% of place or area	
	3	<input type="checkbox"/> Vegetation over 20–50% of place or area	
	4	<input type="checkbox"/> Abundant vegetation over 50% or more of place or area	
Effects of erosion or subsidence	1	<input type="checkbox"/> No signs of erosion or subsidence	
	2	<input type="checkbox"/> Occasional signs of erosion or subsidence (<20% of area)	
	3	<input type="checkbox"/> Common signs of erosion or subsidence (20–50% of area)	
	4	<input type="checkbox"/> Abundant signs of erosion or subsidence (>50% of area)	
Effects of Stock/animals	1	<input type="checkbox"/> No sign of stock/animals damage to site/place	
	2	<input type="checkbox"/> Occasional or old sign of stock/animal damage to site/area	
	3	<input type="checkbox"/> Common or fresh sign or stock/animal damage to site/area	
	4	<input type="checkbox"/> Abundant or extensive sign (stock on site) of stock/animal damage to site/area	
Disasters	1	<input type="checkbox"/> No sign of any disaster (e.g. fire, landslide, earthquake)	
	2	<input type="checkbox"/> Sign of an adjacent disaster since last visit to site or area, but site not damage	
	3	<input type="checkbox"/> Limited or localised damage to site or area as the result of a disaster since last visit	
	4	<input type="checkbox"/> Severe or widespread damage to site or area from a disaster since last visit	
Effects of Development	1	<input type="checkbox"/> No signs of construction, roading or other development activities	Specify types of development
	2	<input type="checkbox"/> Occasional, localised signs of construction, roading or other development activities	
	3	<input type="checkbox"/> Common signs of construction, roading or other development activities, but limited to certain areas	
	4	<input type="checkbox"/> Widespread signs of construction, roading or other development activities throughout the area.	
Effects of Visitors	1	<input type="checkbox"/> No signs of visitor impact upon place or area	Specify types of impact
	2	<input type="checkbox"/> Occasional localised signs of trampling, vehicular damage, rubbish, fossicking or other visitor impact	
	3	<input type="checkbox"/> Common signs of trampling, vehicular damage, rubbish, fossicking or other visitor impact	
	4	<input type="checkbox"/> Abundant signs of trampling, vehicular damage, rubbish, fossicking or visitor damage	
Fencing	1	<input type="checkbox"/> Secure, intact fencing around site	Specify purpose of and effects of fencing
	2	<input type="checkbox"/> Most of site fenced or secure site fence poorly maintained	
	3	<input type="checkbox"/> Surrounding area fenced	
	4	<input type="checkbox"/> No fencing or fencing through site	
Effects of Repair Work/Management	1	<input type="checkbox"/> Repair work or management visible that has improved the condition and integrity of the place or area	
	2	<input type="checkbox"/> No repair work or management impact visible	
	3	<input type="checkbox"/> Repair work or management undertaken that has caused limited, localised damage to the place or area	
	4	<input type="checkbox"/> Repair work or management work undertaken that has caused widespread damage or destroyed place or area	
Other effects upon place or area			Please specify

Continued next page >>

Recommended management actions	By whom	By when
Have management actions been undertaken as recommended by previous visit?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Any resource consent or NZHPT authority applications concerning place or area since last visit?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Change of ownership since last visit?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Information entered and processed	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Date of next visit:		

Photopoint Data		
Number of Photopoints established:	Photographer :	Date Established:

Photopoints:		
Photopoint Number:	Description of photopoint (i.e. location of photopoint, description of object photo of, whether peg placed at photopoint, grid reference, bearing, distance to object, other reference points, etc.).	Film & Photo No.

Sketch plan (include photopoint location and reference points, direction of photo, GPS Point location) and / or additional notes.

GUIDE TO ARCHAEOLOGICAL MONITORING FORM

Name of archaeological site or area:	If there is more than one name for the place or area, list them all to avoid confusion.
NZAA site number	New Zealand Archaeological Association site record number—NZMS 260 Metric Map Sheet No. (e.g. R10) / consecutive number (e.g. 1).
Metric grid reference:	Seven digit grid reference from Metric map NZMS 260, 1:50,000 scale map. The map number should also be recorded in front of the grid reference, i.e. R11. Recording grid references is explained on all NZMS 260 maps.
Site Type:	The type of cultural heritage resource (i.e. Pa, Midden, Brickworks, Karaka tree, House)
Location:	Address, legal description and further detail to help locate the site or area,
Fieldworkers / Organisation:	Name of people undertaking the monitoring and the organisation, authority, Iwi, etc., they represent.
Local Authority	The district or city council area the site or area is located within.
Date:	Date monitoring was undertaken.
Size / Area / Height of site or area:	Provide a basis for comparison to measure extent and speed of decay. Size / Area—calculate the land surface covered by the site or area (i.e. 50 x 50m) and in m ² ; Height—highest point of the site or area.
Current land use over site or area:	Note the type of activity the land is predominantly used for.
Adjacent land use:	See above. Note particularly if the land use is different from above.
Type of vegetation cover:	See options (Indigenous = native species; Exotic = introduced species)
Overall condition:	The amount or level of disruption to the site or place.
Extent of loss:	Estimate the percentage difference in size (area and height) of the site or area between this visit and the previous visit. State whether the percentage refers to a loss or gain in size (through restoration, excavation etc.). Judging the amount of loss to a site or area is difficult, and requires a considerable estimation. Refer to any sketches and photo's from the previous visit. Describe your method of judgement in the notes to aid consistency between monitoring visits.
Speed of deterioration:	Sites or areas begin to decay from the moment of construction, at a variable rate depending on many factors. This gives an indication of the health of the site or area.
Integrity of the site or area:	Has the site or area been modified or altered since the last visit? This can include positive alterations as a result of sensitive restoration. Is it located on its original site?
Extent of vegetation cover:	Estimate the extent vegetation covers the site or area (excluding grass).
Erosion or subsidence:	Continual process through natural forces, e.g. air (wind), water (stream/river/tidal action)
Stock/animals:	Note the type of stock/animal signs (i.e. trampling, rooting, tracking, etc) .
Disasters:	Single event natural hazard that may have caused damage (e.g. cyclone, fire, landslide, etc)
Development impact:	Note any modern structures, services or utilities that exist on or near the site or area.
Visitor impact:	Includes people visiting the site of the place or area for leisure, scientific or archaeological interest, management activities, etc.
Fencing:	Specify type of fencing around the site or surrounding area.
Management impact:	Including fencing, restoration, clearing of vegetation, pest control, animal control, visitor control, etc.
Management needs / actions: (Please fill this section in)	Specify particular issues that require management attention, arising from the monitoring assessment. Identify who is responsible for carrying out the required action and the date by which it will be achieved.
Resource consent applications or NZHPT authorities:	Have any resource consent applications or NZHPT Authorities concerning the site or area been lodged since the last visit. Attach details to monitoring form.
Change of ownership since last visit?	If ownership has changed, ensure that the new details are collected so that it forms part of the background information.
Information entered and processed:	Tick yes once the information has been entered onto a database or system.
Date of next visit:	Allocate a date within which the next monitoring visit needs to take place, based upon the recommended time frame in the base-line form, or any re-estimation of the recommended time frame for monitoring based on information gathered from this site visit.
Photopoint data:	Refer to base-line form for location of photopoints. Refer to Guide to Base-line Monitoring Form for further information about photopoints.
<i>Acknowledgement:</i>	<i>Based on a form developed by Lucy Mackintosh for the Auckland Regional Council.</i>

Appendix 3

STRUCTURE MONITORING FORM

(The document reproduced on the following pages is available on-line within DOC as WGNCR-43787.)

DEPARTMENT OF CONSERVATION BUILT STRUCTURE MONITORING FORM

***Use baseline form and previous visit form for reference**

***Use built structure form guide for assistance**

Name of site or area:	NZAA site number (if relevant):	
	Site type:	
Location of site or area:	Metric Grid Reference: Easting	
		Northing
Local Authority:	Date:	
Name of Fieldworker(s):	Organisation(s):	
Size of Site (m²):	Area:	Height:

Indicator	Rating	Estimate (Tick appropriate box)	Notes (location of damage, particular feature, etc.)
Current use of site or area		<input type="checkbox"/> Residential <input type="checkbox"/> Commercial <input type="checkbox"/> Industrial <input type="checkbox"/> Transport and communication <input type="checkbox"/> Agricultural <input type="checkbox"/> Memorial <input type="checkbox"/> Other (specify) <input type="checkbox"/> Not used or occupied	
Current use of adjacent built places and areas		<input type="checkbox"/> Same <input type="checkbox"/> Different	Specify any differences
Type of vegetation cover surrounding place or area		<input type="checkbox"/> Pasture <input type="checkbox"/> Exotic or Indigenous forest <input type="checkbox"/> Predominantly exotic weed or scrubland <input type="checkbox"/> Non-vegetated <input type="checkbox"/> Other (specify)	
Extent of loss	1 2 3 4 5	<input type="checkbox"/> Site/area been added to <input type="checkbox"/> Site/area the same size as previous visit <input type="checkbox"/> 20% or less of site/area lost since previous visit <input type="checkbox"/> 20% or more of site/area lost since previous visit <input type="checkbox"/> Site/area completely destroyed or not located	Specify percentage and features lost / gained
External Area of Structure (please state in notes if this is not applicable)			
Condition of Roof / cover of structure	1 2 3 4	<input type="checkbox"/> None or very few signs of leaks, loose or missing materials <input type="checkbox"/> Small, localised areas of leaks or loose or missing materials (<20% of roof or cover) <input type="checkbox"/> Large areas of leaks, loose or missing materials (>50% of roof or cover) <input type="checkbox"/> Roof or cover collapsed or removed	Specify
Condition of Exterior	1 2 3 4	<input type="checkbox"/> None or very few signs of rotting, crumbling, spalling, cracking or corrosion, etc. Paint or other protective finishes in sound condition <input type="checkbox"/> Small areas of rotting, crumbling, spalling, cracking or corrosion, etc. Some evidence of failure of paint or other protective finishes <input type="checkbox"/> Large areas of rotting, crumbling, spalling, cracking or corrosion, etc. Substantial evidence of failure of paint or other protective finishes <input type="checkbox"/> Significant loss of fabric with widespread areas of rotting, crumbling, spalling, cracking or corrosion, etc	
Speed of deterioration of external fabric	1 2 3 4	<input type="checkbox"/> No deterioration visible <input type="checkbox"/> Slow, ongoing deterioration <input type="checkbox"/> Rapid, ongoing deterioration <input type="checkbox"/> Severe periodic / one-off deterioration	
Integrity of external fabric	1 2 3 4	<input type="checkbox"/> Not modified or slightly modified (<20% of site or area) <input type="checkbox"/> Partially modified (20–50% of site or area) <input type="checkbox"/> Heavily modified (50–80% of site or area) <input type="checkbox"/> Almost totally or completely destroyed or removed (>80% of site or area)	
Internal Area of Structure (please state in notes if this is not applicable)			
Condition of Interior	1 2 3 4	<input type="checkbox"/> None or very few signs of leaks, dampness, vandalism, demolition, etc <input type="checkbox"/> Small areas of leaks, dampness, vandalism, demolition, fire, etc <input type="checkbox"/> Large but localised area of leaks, dampness, vandalism, demolition, fire, etc <input type="checkbox"/> Large and widespread areas of leaks, dampness, vandalism, demolition or fire, etc	Specify
Speed of deterioration of internal area	1 2 3 4	<input type="checkbox"/> No deterioration visible <input type="checkbox"/> Slow, ongoing deterioration <input type="checkbox"/> Rapid, ongoing deterioration <input type="checkbox"/> Severe periodic / one-off deterioration	

Indicator	Rating	Estimate (Tick appropriate box)	Notes (location of damage, particular feature, etc.)
Integrity of Internal area	1 2 3 4	<input type="checkbox"/> Not modified or slightly modified (<20% of site or area), including furnishings and decoration <input type="checkbox"/> Partially modified (20–50% of site or area) <input type="checkbox"/> Heavily modified (50–80% of site or area) <input type="checkbox"/> Almost totally or completely destroyed or modified (>80% of site/area)	
Extent of vegetation cover over site or area	1 2 3 4	<input type="checkbox"/> Vegetation absent or very uncommon (<10% of site or area) <input type="checkbox"/> Vegetation over 10–20% of site or area <input type="checkbox"/> Vegetation over 20–50% of site or area <input type="checkbox"/> Abundant vegetation over 50% or more of site or area	Specify whether native or exotic species
Effects of stock/animals	1 2 3 4	<input type="checkbox"/> No sign of stock/animals damage to site or area <input type="checkbox"/> Occasional or old sign <input type="checkbox"/> Common or fresh sign <input type="checkbox"/> Abundant sign	Specify type(s) of animal and sign
Effects of erosion or subsidence	1 2 3 4	<input type="checkbox"/> No signs of erosion <input type="checkbox"/> Occasional signs of erosion (<20% of area) <input type="checkbox"/> Common signs of erosion (10–50% of area) <input type="checkbox"/> Abundant signs of erosion (>50% of area)	
Disasters	1 2 3 4	<input type="checkbox"/> No sign of any disaster (fire, landslide, earthquake etc) <input type="checkbox"/> Sign of an adjacent disaster to site or area since last visit, but site not damaged <input type="checkbox"/> Limited or localised damage on site or area from a disaster since last visit <input type="checkbox"/> Severe or widespread damage on site or area from a disaster since last visit	Specify type(s) of disaster and damage
Effects of Visitors	1 2 3 4	<input type="checkbox"/> No sign of visitor impact (trampling, vandalism, rubbish, fossicking etc) on site or area <input type="checkbox"/> Occasional localised signs of visitor impact <input type="checkbox"/> Common signs of visitor impact <input type="checkbox"/> Abundant signs of visitor impact	Specify type(s) of impact
Fencing	1 2 3 4	<input type="checkbox"/> Secure, intact fencing around site <input type="checkbox"/> Most of site or area fenced or secure fence poorly maintained <input type="checkbox"/> Surrounding area fenced <input type="checkbox"/> No fencing or fence through site	Specify purpose and effects of fencing
Effects of Development	1 2 3 4	<input type="checkbox"/> No signs of construction, roading or other development activities <input type="checkbox"/> Occasional, localised signs of construction, roading or other development activities <input type="checkbox"/> Common signs of construction, roading or other development activities, but limited to certain areas <input type="checkbox"/> Widespread signs of construction, roading or other development activities throughout the site or area.	Specify type(s) of development and effects
Management impact	1 2 3 4	<input type="checkbox"/> Management work visible that has improved the condition and integrity of the site or area <input type="checkbox"/> No work or management impact visible <input type="checkbox"/> Management work undertaken that has caused limited, localised damage to the site or area <input type="checkbox"/> Management work undertaken that has caused widespread damage or destroyed site or area	Specify work and impact
Other effects upon place or area			Please specify

Recommended management needs / actions:	By whom	By when
Have management actions been undertaken as recommended in previous visit?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Any resource consent applications concerning place or area since last visit?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Change of ownership since last visit?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Information entered and processed?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Date of next visit:		

Photopoint Data		
Number of Photopoints established:	Photographer:	Date Established:

Photopoints		
Photopoint Number:	Description of photopoint (i.e. location of photopoint, description of object photo of, whether peg placed at photopoint, grid reference, bearing, distance to object, other reference points, etc.).	Film & Photo No.

Sketch plan (include photopoint location and reference points, direction of photo, GPS Point location) and / or additional notes.

GUIDE TO BUILT STRUCTURE MONITORING FORM

Name of site or area:	If there is more than one name for the place or area, list them all, to avoid confusion.
NZAA site number:	New Zealand Archaeological Association site record number – NZMS 260 Metric Map Sheet No. (e.g. R11) / consecutive number (e.g. 1).
Site Type:	The type of cultural heritage resource (i.e. House, Monument, Bridge, Wharf, etc).
Location:	Address, legal description and further detail to help locate the site or area.
Metric grid reference:	Seven digit grid reference from Metric Map NZMS 260, 1:50,000 scale map. The map number should also be recorded in front of the grid reference i.e. R11. Recording grid references is explained on all NZMS 260 maps.
Local Authority:	The district or city council area the site or area is located within.
Date:	Date monitoring was undertaken.
Fieldworkers / Organisation:	Name of people undertaking the monitoring and the organisation, authority, Iwi, etc., they represent.
Size / Area / Height:	Provide a basis for comparison to measure extent and speed of decay. Size / Area – calculate the land surface covered by the site or area (i.e. 50 x 50m) and in m ² ; Height – highest point of the site or area.
Current use of site or area:	Note the type of activity the land or site is predominantly used for.
Adjacent land use:	See above. Note particularly if the use is different from above.
Type of vegetation cover:	See options (Indigenous = native species; Exotic = introduced species)
Extent of loss:	Estimate the percentage difference in size (area and height) of the site or area between this visit and the previous visit. State whether the percentage refers to a loss or gain (through restoration, excavation, etc.). Briefly describe the features (if known) gained or lost since the last visit. Check that 'special features' identified in base-line form are still present. Refer to any sketches and photo's from the previous visit. Describe your method of judgement in the notes to aid consistency between monitoring visits.
Roof/cover of structure:	Includes spouting and flashings. Specify materials and any changes to materials or condition since last visit.
External fabric:	Are the original exterior cladding materials in good condition or been modified? Describe any factors affecting the exterior.
Speed of deterioration of external fabric:	Elements of cultural heritage resources begin to decay from the moment of construction, but the rate at which the place or area decays depends on many factors and gives an indication of the health of the place or area.
Integrity of exterior:	Are there any modifications or alterations visible? Is it located on its original site?
Internal fabric:	Is the original interior in good condition or modified? Describe any factors affecting interior.
Speed of deterioration of internal fabric:	Elements of cultural heritage resources begin to decay from the moment of construction, but the rate at which the site or area decays depends on many factors and gives an indication of the health of the site or area?
Integrity of interior:	Are there any modifications or alterations visible?
Extent of vegetation cover:	Estimate the extent vegetation covers the site or area.
Stock/animals:	Note the type of stock/animal if known and the type of sign(s) (i.e. trampling, rooting, tracking, etc).
Erosion:	Continual process through natural forces, e.g. air (wind), water (stream/river/tidal action).
Disasters:	Single event natural hazard that may have caused damage (e.g. cyclone, fire, landslide, etc).
Visitor impact:	Includes people visiting the site of the place or area for leisure, scientific or archaeological interest, management activities, etc.
Fencing:	Specify type of fencing around the site or surrounding area.
Development impact:	Note any modern structures, services or utilities that exist on or near the site or area.
Management impact:	Including restoration, repair, cleaning, visitor control, etc.
Management needs / actions:	Specify particular issues that require management attention arising from the monitoring assessment. Identify who is responsible for carrying out the required action and the date by which it should be achieved.
Resource consent applications or NZHPT authorities:	Investigate whether resource consent applications or NZHPT authorities concerning the site or area have been lodged and / or granted since the last visit. Attach details to monitoring form or describe any modifications that took place as a result of the resource consent or authority.
Change of ownership since last visit?	Check on the background information for ownership details. If ownership has changed, ensure that the new details are entered into the Cultural Heritage Inventory, so that it forms part of the background information.
Information entered and processed?	Tick yes once the information has been entered onto a database or system.
Date of next visit:	Specify a date or period within which the next monitoring visit needs to take place, based upon the recommended time frame in the Baseline Monitoring form, or any re-estimation of the recommended time frame based on information gathered from this site visit.
Photopoint data:	Refer to Base-line Monitoring form for location of photopoints. Refer to Guide to Base-line Monitoring Form for further information about photopoints.
Acknowledgement:	<i>Based on a form developed by Lucy Mackintosh for the Auckland Regional Council.</i>

Appendix 4

BOTANICAL MONITORING FORM

(The document reproduced on the following pages is available on-line within DOC as WGNCR-43773.)

Indicator	Rating	Estimate (Tick appropriate box)	Notes (location of damage, species etc.)
Extent of vegetation cover over tree/plant	1 2 3 4	<input type="checkbox"/> Vegetation absent or very uncommon (<10% of tree/plant) <input type="checkbox"/> Vegetation over 10–20% of tree/plant <input type="checkbox"/> Vegetation over 20–50% of tree/plant <input type="checkbox"/> Abundant vegetation over 50% or more of tree/plant	Specify indigenous or exotic species
Possums	1 2 3 4	<input type="checkbox"/> No sign (droppings, pad runs, bark scratching and bite marks) <input type="checkbox"/> Signs uncommon, often quite old <input type="checkbox"/> Common fresh signs but sometimes scattered <input type="checkbox"/> Abundant fresh signs	Type of sign and damage
Stock, deer, goats, pigs	1 2 3 4	<input type="checkbox"/> No sign(droppings, major tracks and hoof prints) <input type="checkbox"/> Sign uncommon, often quite old <input type="checkbox"/> Common fresh sign but sometimes scattered. Occasionally seen or heard, but only away from tree/plant <input type="checkbox"/> Abundant fresh signs. Commonly seen or heard throughout the area.	Type of animal / sign
Ground cover	1 2 3 4	<input type="checkbox"/> No bare soil, rock, or eroding soil. Ground vegetation (ferns, moss, seedlings etc) abundant (50–100%). Leaf litter on ground floor <input type="checkbox"/> Bare soil, rock very uncommon. Ground vegetation (20–50%). Leaf litter common on ground floor <input type="checkbox"/> Bare soil, rock/gravel/cement covering up to 50% of ground floor. Ground vegetation <20%. Some leaf litter on ground floor <input type="checkbox"/> Bare soil, rock/gravel/cement on ground floor. No ground vegetation. Leaf litter very scarce or not present	
Effects of erosion	1 2 3 4	<input type="checkbox"/> No damage caused by wind, rain, erosion etc <input type="checkbox"/> Occasional, small areas of damage caused by wind, rain, erosion etc <input type="checkbox"/> Common areas of damage caused by wind, rain, erosion etc., but limited to certain areas <input type="checkbox"/> Abundant areas of severe damage caused by wind, rain, erosion etc	
Disasters	1 2 3 4	<input type="checkbox"/> No sign of any disaster (fire, landslide, earthquake, lightning etc) <input type="checkbox"/> Small, localised areas damaged by fire, landslide, earthquake lightning or other disaster since last visit <input type="checkbox"/> Damage 10–50% of tree/plant due to fire, landslide, earthquake, lightning or other disaster since last visit <input type="checkbox"/> Severe and widespread damage to tree/plant from fire, landslide, earthquake, lightning or other disaster since last visit	Specify type(s) of disaster
Effects of visitors	1 2 3 4	<input type="checkbox"/> No signs of visitor impact <input type="checkbox"/> Occasional localised signs of trampling, vandalism, rubbish, pruning or other visitor impact <input type="checkbox"/> Common signs of trampling, vandalism, rubbish, pruning or other visitor impact, but limited to certain areas <input type="checkbox"/> Abundant signs of trampling, vandalism, rubbish, pruning or visitor damage	Specify type(s) of impact
Fencing	1 2 3 4	<input type="checkbox"/> Secure, intact fencing around tree/plant <input type="checkbox"/> Most of tree/plant fenced or secure fence poorly maintained <input type="checkbox"/> Surrounding area fenced <input type="checkbox"/> No fencing	Specify purpose of and effects of fencing
Effects of Development	1 2 3 4	<input type="checkbox"/> No signs of draining, roading or other development activities <input type="checkbox"/> Occasional, localised signs of draining, roading or other development activities <input type="checkbox"/> Common signs of draining, roading or other development activities, but limited to certain areas <input type="checkbox"/> Widespread signs of draining, roading or other development activities throughout the area.	
Management Impact	1 2 3 4	<input type="checkbox"/> Management work visible that has improved the health of the tree/plant <input type="checkbox"/> No work or management impact visible <input type="checkbox"/> Management work undertaken that has caused limited, localised damage to the tree/plant (e.g. machinery impact, graffiti, line trimmers, limb removal, herbicide treatment) <input type="checkbox"/> Management work undertaken that has caused widespread damage or destroyed tree/plant	Specify work and impact
Other effects upon tree/plant			Please specify

Continued next page >>

Recommended management needs / actions	By whom	By when
Have management actions been undertaken as recommended by previous visit? Any resource consent applications concerning tree/plant since last visit? Change of ownership since last visit? Information entered and processed? Date of next visit:	<input type="checkbox"/> Yes <input type="checkbox"/> Yes <input type="checkbox"/> Yes <input type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> No <input type="checkbox"/> No <input type="checkbox"/> No

Photopoint Data		
Number of Photopoints established:	Photographer:	Date Established:

Photopoints		
Photopoint Number:	Description of photopoint (i.e. location of photopoint, description of object photo of, whether peg placed at photopoint, grid reference, bearing, distance to object, other reference points, etc.)	Film & Photo No.

Sketch plan (include photopoint location and reference points, direction of photo, GPS Point location) and/or additional notes.

GUIDE TO BOTANICAL MONITORING FORM

Name or other identifier of place or plant:	Name or other identifier. If there is more than one name, list them all to avoid confusion.
Registration / Plan number:	Royal NZ Institute of Horticulture Notable Trees registration number, District Plan and schedule number, Auckland Regional Council Cultural Heritage Inventory (CHI) number, etc.
Botanical name / Common name:	Include both the botanical name and the common name of the plant or tree. If there is more than one name list them all to avoid confusion.
Grid reference:	Seven digit grid reference from Metric Map NZMS 260, 1:50,000 scale map. The map number should also be recorded in front of the grid reference, i.e. R11. Recording grid references is explained on all NZMS 260 maps.
Year planted / By whom:	If known state the year the plant or tree was planted and who planted it.
Location:	Address, legal description and further detail to help locate the site or area.
Name of fieldworkers / Organisation:	Name of the people undertaking the monitoring and the organisation, Authority, Iwi, etc., they represent.
Date:	Date monitoring was undertaken.
Weather:	Brief description e.g. Raining, cloudy, clear, sunny, etc.
Height (only applies to single trees/plants)	Highest point of tree/plant. Height can be estimated by using the formula: height = btanA
Girth of trunk (only applies to single trees/plants):	The distance around the tree/plant trunk at a particular height.
Spread of canopy (only applies to single trees/ plants):	The areal extent of the tree/plants canopy.
Area covered (only applies to a stand or group of trees/ pants):	The areal ground coverage of the stand of group of trees/plants.
Current land use:	Note the type of activity the land is predominantly used for.
Type of vegetation cover:	See options (Indigenous = native species; Exotic = introduced species)
Adjacent land use:	See above. Note particularly if the adjacent land use differs from that surrounding the tree/ plant.
Canopy condition:	Provide a description. Canopy condition is a very useful indicator for examining forest condition. Canopy cover can be reduced by the browsing by possums and insects, climatic stresses and disease. Canopy species are also important to the supply of food for native invertebrates and birds.
Root system condition:	Provide a description. Look at the base of the tree and at roots that have spread more widely.
Extent of loss:	Briefly describe details of any part of tree/plant removed, e.g. branch removed, several trees removed. Also note any new growth since the last visit. Judging the amount of loss to a site or area is difficult, and requires a considerable estimation. Refer to any sketches and photo's from the previous visit. Describe your method of judgement in the notes to aid consistency between monitoring visits.
Speed of deterioration:	Note causes of any deterioration e.g. ageing, vandalism, removal, etc.
Extent of vegetation cover over tree/plant:	Note the type of species and areas it covers, e.g. canopy, trunk, ground level.
Erosion	Continual process through natural forces, e.g. air (wind), water (stream/river/tidal action).
Disasters:	Single event natural hazard that may have caused damage (e.g. cyclone, fire, landslide).
Effects of visitors:	Includes people visiting the site of the tree/plant for leisure, scientific interest or management activities, etc.
Fencing:	Specify type of fencing around the tree/plant or surrounding area.
Development impact:	Note any modern structures, services or utilities that exist on or near tree/plant.
Management impact:	Includes fencing, restoration, clearing of vegetation, pest control, animal control, visitor control, etc.
Management needs / actions: (Please fill this section in)	Specify particular issues that require management attention arising from the monitoring assessment. Identify who is responsible for carrying out the required action and the date by which it should be achieved.
Resource consent applications:	Have any resource consent applications concerning the tree/plant been lodged since the last visit. Attach details to the monitoring form, or describe any modifications that took place as a result of the resource consent or authority.
Change of ownership since last visit?	If ownership has changed, ensure that the new details are collected so that it forms part of the background information.
Information entered and processed:	Tick yes once the data has been entered onto a database or system.
Date of next visit:	Specify a date or period within which the next monitoring visit needs to take place, based upon the recommended time frame in the Baseline Monitoring form, or any re-estimation of the recommended time frame for monitoring based on information gathered from this site visit.
Photopoint Data:	Refer to Base-line Monitoring form for location of photopoints. Refer to guide in Baseline Monitoring form for further information about photopoints.
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