

Survey Requirements for Mining Tenures

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Version 4.00

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Document Status

Standards under the *Survey and Mapping Infrastructure Act 2003*

The Standards under the *Survey and Mapping Infrastructure Act 2003* which are contained in this document were made by the Chief Executive on 27 February 2024, by Greg Payne, Director of Spatial Data, delegate of the chief executive for section 6, under the current Survey and Mapping Infrastructure Act (Chief Executive – Department of Resources) Delegation (No 1) 2023.

The standards take effect on 25 March 2024.

Guidelines under the *Survey and Mapping Infrastructure Act 2003*

The guidelines under the *Survey and Mapping Infrastructure Act 2003* which are contained in this document were made by the Chief Executive on 27 February 2024, by Greg Payne, Director of Spatial Data, delegate of the chief executive for section 7, under the current Survey and Mapping Infrastructure Act (Chief Executive – Department of Resources) Delegation (No 1) 2023.

The guidelines take effect on 25 March 2024.

The publishing of the standards and guidelines was approved by the chief executive on 5 March 2024, by Hugo Le Mao, Acting Executive Director Spatial Information, delegate of the chief executive for section 10, under the current Survey and Mapping Infrastructure Act (Chief Executive – Department of Resources) Delegation (No 1) 2023.

This document replaces the standards and guidelines made within the Survey Requirements for Mining Tenures v3.0, which were in effect from 1 November 2021.

Version History

Version	Date	Comments
3.00	25/10/2011	Document approved
4.00	25/03/2024	Document updated to align with current industry practices.

Approval

Position	Name	Date
Chief Executive		25/10/2011
Director, Spatial Data	Greg Payne	25/03/2024

Amendment History

Showing changes since Survey Requirements for Mining Tenures v3.00

Section Amended	Amendment	Reason
Multiple sections	Amendment of legislative references.	Updates required where title and/or section numbers in Acts or Regulations have changed.
Multiple sections	Amendment of references to department.	Department references updated to current department titles.
Multiple sections	Overhaul of document to improve structure of information and internal consistency.	Document structure was changed to place broad and general information in earlier sections, and specialised and technical information in separate, later sections to enhance utility and legibility. Number of sections reduced from eight to five, so that complementary subsections appear together.
1 <i>Introduction</i>	Section changed to contain contextual information and legislative environment of the document. Relevant historical context information moved here from previous section 8 <i>Historical Information</i> .	Retained and enhanced general, background resource information in this section, collated same from throughout other sections, and separated detailed technical information into later sections.
2 <i>Investigations</i>	Section title changed from 2 <i>Tenures</i> to reflect changes in content. Much of previous section 8 <i>Historical Information</i> moved here. Content changed to collate and update all information regarding spatial data and plan storage and access relevant to the context of mines surveying. Updated contact information and hyperlinks to reflect current departmental structure and digital resource locations.	Moved this information from previous section 8 to section 2 to provide context for information contained in later sections. Improved utility of document by condensing this information into a format that can be quickly navigated and referenced.
3 <i>General Mines Plan Considerations</i>	Section title changed from 3 <i>Boundary determination</i> to reflect changes in content. Collated and updated information that can be applied to all types of mines surveys. Removed boundary determination technical information to 4.5 <i>Boundary Determination</i> . 3.6 <i>Petroleum tenures</i> moved to section 5.1 <i>Petroleum Permits, Leases & Licenses</i> .	Broadly applicable information relevant to all types of mines survey moved from throughout the document to this section. Technical information regarding boundaries moved to sit in 4 <i>Survey and Marking of Mining Permits</i> with other requirements & standards applying to the survey of mining leases with boundaries. Technical and legislative information relating to petroleum permits moved to 5.1 to accompany and contextualise other petroleum lease survey information.

Section Amended	Amendment	Reason
<i>4 Survey and Marking of Mining Permits</i>	Section title changed from <i>4 Ambulatory Boundaries</i> to reflect changes in content. Content moved to 4.5.5 <i>Physical Feature Boundaries</i> . Collated much of previous sections 5 <i>Survey and Marking</i> and 6 <i>Plans of mining tenures</i> .	Ambulatory boundaries are no longer a common enough practice to justify an entire section of this document. Moved to 4.5.5 <i>Physical Feature Boundaries</i> . Previous sections 5 and 6 contained overlapping information. Content of these sections has been moved here and condensed to reduce redundancy and eliminate ambiguity that arose due to the splitting of information.
<i>5 Survey and Marking of Boreholes</i>	Section title changed from <i>5 Survey and Marking</i> to reflect changes in content. Majority of content moved to chapter 4 <i>Survey and Marking of Mining Permits</i> . 5.1 <i>General</i> moved to 1.3. 5.18 <i>Native Title</i> moved to 2.4. 5.19 <i>Permanent Marks</i> moved to 3.2. 5.26 <i>Report</i> moved to 3.4. 5.30 <i>Searches</i> moved to 2.1. 5.35 <i>Survey Records</i> moved to 3.4.	Considerations unique to surveys of boreholes, including the previous section 7, collated into this section. Information that is relevant to other types of mines surveying moved into the earlier chapters. Contents edited for clarity and flow where appropriate.
Removed: <i>6 Plans of Mining Tenures</i>	Section no longer exists as content moved as detailed in line 4 <i>Survey and Marking of Mining Permits</i> .	The information in the whole document has been condensed to the point less sections are necessary, so this information now resides in Section 4.
Removed: <i>7 Petroleum</i>	Section no longer exists as content moved as detailed in line 5 <i>Survey and Marking of Boreholes</i> .	The information in the whole document has been condensed to the point less sections are necessary, so this information now resides in Section 5.
Removed: <i>8 Historical Information</i> .	Section no longer exists as content moved as detailed in lines 1 <i>Introduction</i> and 2 <i>Investigations</i> .	Content has been summarised and amalgamated into earlier sections in the document, where it can provide context for information that comes after it.
Appendix A	Added the template for a Survey Instructions letter.	References to Survey Instructions letters are made throughout the document, so this example was added for context.

Summary

The Survey Requirements for Mining Tenures is a set of guidelines and standards for the surveying of resource extraction activities, that is enforceable under the *Survey and Mapping Infrastructure Act 2003*. The Petroleum and Gas (Safety) Regulation 2018 and the *Mineral Resources Act 1989* both call for surveys of resource extraction activities to be carried out under certain circumstances and empower the department to accept or reject a survey plan based on its compliance with these guidelines and standards.

This document also includes a quick reference guide to some of the department's stores of data that may be relevant to mines surveying, and to the Acts and other pieces of legislation that may impact a particular mines surveying activity. Always refer to the content of the current Acts in force, as this document does not duplicate that information.

The document is broken up into five sections. Sections 1 through 3 are background and general information that are applicable to all types of resource surveying. They also contain a small number of Guidelines and Standards under the *Survey and Mapping Infrastructure Act 2003*, labelled as such in the subtitles. Section 4 covers the specific considerations for surveys of leases, claims and other tenures that have boundaries. Section 5 covers considerations for petroleum wells and other types of boreholes. Sections 4 and 5 are, unless otherwise stated, Standards under the *Survey and Mapping Infrastructure Act 2003*.

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Table 1 - Abbreviations

Abbreviation	Title
ATS	Automated Titles System
AHD	Australian Height Datum
AMG	Australian Map Grid
CSR	Cadastral Survey Requirements
CISP	Computer Inventory of Survey Plans
DCDB	Digital Cadastral Data Base
GDA	Geodetic Datum of Australia
GPS	Global Positioning System
GNSS	Global Navigation Satellite System
MGA	Map Grid of Australia
MERCPA 2014	Minerals and Energy Resources Common Provisions Act 2014
MRA 1989	Mineral Resources Act 1989
MRR 2013	Mineral Resources Regulations 2013
MMOL	MyMinesOnline
PM or PSM	Permanent Survey Mark
P&G Act 2004	Petroleum and Gas (Production and Safety) Act 2004
P&G (Safety) 2018 Regulation	Petroleum and Gas (Safety) Regulation 2018
PWL	Petroleum Well Location Survey
SMI 2003	Survey and Mapping Infrastructure Act 2003
SCDB	Survey Control Data Base

Table 2 – Relevant Acts and Other Requirements

Title
Boundary identification for mining resources authorities < Practice Direction 4 – Boundary identification for mining resource authorities >
Cadastral Survey Requirements Version 8
Coal Mining Safety and Health Act 1999
Coal Mining Safety and Health Regulation 2017
Mineral Resources Act 1989
Mineral Resources Regulations 2013
Mineral Energy Resources Commonwealth Provisions Act 2014
Mining and Quarrying Safety and Health Act 1999
Mining and Quarrying Safety and Health Regulations 2017
Petroleum Act 1923
Petroleum & Gas (Production and Safety) Act 2004
Petroleum and Gas (General Provisions) Regulations 2017
Petroleum and Gas (Safety) Regulations 2018
Registrar of Titles Directions for the Preparation of Plans
Survey and Mapping Infrastructure Act (SMIA) 2003
Survey and Mapping Infrastructure Regulations 2014
Surveyors Act 2003
Surveyors Regulations 2014

1 Introduction

The following section is provided as information, unless otherwise stated.

1.1 Preface

Mines Plans are a specific type of survey plan that illustrate the boundary, or changes to the boundary, of mining permits, as well as the locations of boreholes, most often petroleum wells. The Survey Requirements for Mining Tenures describe the process a cadastral surveyor will need to follow to carry out cadastral surveys of mining activities in line with legislation in the State of Queensland. These include the boundaries of mining permits, the location of petroleum wells (wells drilled for resource production) and capped mine shafts.

The scope of this document is to describe the specific requirements of surveying mining permits and to highlight points of difference between surveying mining permits and cadastral surveying. Additionally, where appropriate, this document will briefly explain why certain survey requirements are necessary because of legislation, which surveyors may not be familiar with, that covers resource extraction activities and the reporting thereof.

This document is not intended to duplicate information already available in other documents such as those listed under 1.3 Legislation below. It is expected that, when referring to this document, surveyors read it alongside the Cadastral Survey Requirements and the relevant Acts for the subject of the survey in question. All surveys should be carried out with the consultation of the department's Permit Data team and the mining registrar.

1.2 General Information

The Survey Requirements for Mining Tenures is a contemporary document and as such, only contains current relevant information and requirements. Previous versions can be consulted to understand how previous surveys may have been done, providing context for the information contained on older plans. These can be used as a reference for surveyors, mining permit holders and departmental officers working in the mining permit and survey fields.

Mining permits is the generic terminology used throughout this document and in discussions. It may refer to, but is not limited to, mining claims, mining leases, exploration permits, mineral development licenses, petroleum leases and pipelines. Exploration permits are issued for various types of resources in Queensland and are labelled as follows: Exploration Permit Coal (EPC), Exploration Permit Mineral (EPM), Authority to Prospect (ATP) for petroleum, which may sometimes be referred to as an Exploration Permit Petroleum (EPP), Exploration Permit Geothermal (EPG) and Exploration Permit Greenhouse gas (EPQ). Mining permits can also be referred to as permits, resource authorities, mining tenures or tenements. Surveys of all types of mining tenure are based upon the same principles and requirements; however, where unique survey considerations apply to a type of tenure, they are included in this document.

1.3 Legislation

The *Mineral Resources Act 1989* (MRA 1989) and subordinate legislation give direction for coal and mineral mining permits, and petroleum permits and wells are directed by the *Petroleum and Gas (Production and Safety) Act 2004* (PGA 2004).

The *Survey and Mapping Infrastructure Act 2003* (SMI 2003) provides for establishment of standards and guidelines for surveying to achieve an acceptable level of survey quality. The Cadastral Survey Requirements (CSR) have been established under this legislation. The current version is available at <https://www.resources.qld.gov.au/?a=109113:policy_registry/cadastral-survey-requirements.pdf>.

The *Land Title Act 1994* provides for establishment of directions from the Registrar of Titles regarding instruments lodged. The Registrar of Titles Directions for the Preparation of Plans has been published and the current version is available at <<https://www.titlesqld.com.au/wp-content/uploads/2021/05/directions-preparation-plans.pdf>>.

Other Acts may need to be consulted, including those explained in the specific cases covered in section 4.22.

This document does not contain the survey requirements for statutory mine workings plans. These are controlled by the *Coal Mining Safety and Health Act 1999*, and the *Mining and Quarrying Act Safety and Health Act 1999*. The document, Recognised Standard 10 – Mine Surveying and Drafting, should be consulted.

1.4 Surveyor Registration Requirements

Standard under the *Survey and Mapping Infrastructure Act 2003*

For surveys of petroleum well locations (PWL) and other surveys that do not reinstate or relate to a cadastral boundary, the surveyor is to be registered with the Surveyors Board of Queensland. In accordance with the *Surveyors Act 2003*, where a PWL survey relates to a cadastral boundary or requires the reinstatement of a cadastral boundary, the surveyor must be registered with the Surveyors Board of Queensland and either hold a cadastral endorsement or be supervised by a surveyor who does.

For surveys of mining permits and mining permit boundaries, the surveyor must be registered with the Surveyors Board of Queensland and hold a cadastral endorsement.

1.5 Survey Instructions and Advice

Survey Instructions are a specific type of communication that the Permit Data team issues to surveyors performing a boundary survey of mining permits. Survey Instructions may contain several documents, a standard letter highlighting much of the information contained in this document, along with the current permit description, additions and surrenders of surface area, coordinates, maps, other surveys, as well as the application document with details of the authorised holder and affected background land. A basic example of the letter is shown in <[Appendix A](#)>. For more information see Section 4.2.

Survey Instructions are only issued on request of the surveyor, or when the department requires it. General advice regarding any mines survey matter can be obtained by contacting the Permit Data team, Georesources Division, via <MinesSpatialSupport@resources.qld.gov.au>.

1.6 The Permit to Survey Process

Mining permits are administered by mining registrars, and responsibility is divided according to the type of resource. Coal leases are administered by the Coal Assessment Hub in Rockhampton, mineral leases by the Mineral Assessment Hub in Townsville, and petroleum leases by the Petroleum Assessment Hub in Brisbane. The Manager, Cadastral, Geodetic and Permit Data liaises with the Hubs for information relating to permits. Generally, only mining leases are surveyed, other forms of permit are mentioned later in the document. Mining leases will be applied for and may or may not be surveyed before being granted.

If a survey is deemed to be required, the mining registrar will notify the authorised holder of the permit under the MRA 1989, section 407 that their permit requires survey. This notification asks for the authorised holder to engage a cadastral surveyor, who will then perform the survey under the instructions set out by the Manager, Cadastral, Geodetic and Permit Data.

It is key that the surveyor understands the intentions of the holder for the new permit boundary. Applications can define the new permit boundary by coordinates with abutments, metes and bounds descriptions, or compiled from existing survey plans. It is imperative to ensure there is no ambiguity in the application. Where there is ambiguity or a lack of complete information, the surveyor should contact the Permit Data team for assistance (see Section 4.2). The location of a boundary must be able to be interpreted by a reasonable person with knowledge in interpreting measurements and other spatial information. If this is not the case, either the application or granted lease can be altered to ensure it meets these requirements. The Permit Data team will work with the relevant Hub to achieve this. A surveyor's role is to interpret and place the required monuments to suitably define on the ground the mining permit application. The department will provide satisfactory information to unambiguously survey the mining permit, and can assist in cases where there are complex circumstances to be navigated.

2 Investigations

The following section is provided as information, unless otherwise stated.

2.1 Sourcing Relevant Data

Queensland has had an extensive amount of resource exploration and extraction activity, and records have been kept of this activity over time. It is important for a surveyor to identify and obtain all relevant information in the area of the survey they are working on, both to ensure accuracy and to save time by avoiding repeating previous work. If the surveyor obtains data relevant to the survey from outside of the Department of Resources, a copy of that data should be submitted with the survey plan.

The surveyor's client should be able to provide a copy of all mining title information relevant to their permit. Other information that may be required is listed below and may not be complete:

- application description
- application sketch or diagram
- surface area description and amendments
- abandonments and surrenders
- depth restrictions on the mining title
- restricted areas and other special areas
- archival charts
- original field notes
- instrument of lease
- historic permits that existed at the time of application for the subject permit
- permanent mark search.

It may be challenging to acquire information related to activities conducted in the past, as terminology has changed over time. Leases that have become non-current post 1 July 1988 were called dead leases. The term 'dead' was then removed after the integration of the MERLIN Historic Tenures system with the MyMinesOnline (MMOL) database in 2015. They are now called historical permits. The departmental records have changed with the available technology of the day, and depending on when information was collected, the current location and accessibility of that data may vary.

2.2 Digital Information

The department maintains digital spatial information for all forms of permit and properties. Four main avenues for accessing this information are listed below.

2.2.1 GeoResGlobe

<[GeoResGlobe](#)> is the department's spatial visualisation and querying platform focussed on the minerals and energy resources of Queensland. Current and historical permit information can be viewed, examined, downloaded and resource authority reports can be accessed within GeoResGlobe. The limits and historical context of this data need to be understood when referencing it. The location of posts and the survey on the ground is always taken as the source of truth for permit boundaries.

Modern leases are generally plotted quite accurately, taking the description and position intent into account. There may be inconsistencies between aerial photography, lease boundaries and the cadastre as these different datasets are updated at different times. For most historical leases non-current before 1 July 1988, only the centroid was plotted and is represented in GeoResGlobe by a small 'M'. The position of some leases is not very accurate due to the poor descriptions of many of the historical mines. The Permit Data team continually update resource permit boundaries. Any errors or inaccuracies are progressively being improved.

The GeoResGlobe also displays information relevant to conducting surveys such as permanent survey marks, the cadastre, roads, rail lines, other transport corridors and others.

2.2.2 Resource Authority Reports

Resource authority reports can be downloaded from the <[Queensland Government Business Portal](#)>, or by using a feature action within GeoResGlobe. These reports contain information about the tenure, including some of the information required for a survey. The departmental version of the report is available internally and to the relevant registered holder. A public version of the report is available externally and contains limited information only.

2.2.3 Mines Survey Plans

To locate or acquire a mines plan image, contact <MinesSpatialSupport@resources.qld.gov.au>. Except for a small number of lost plans, all plans lodged with the Department of Resources, are held by the department within the Mines Survey Plan Register and the <[Automated Titles System \(ATS\)](#)> as digital images. The physical originals of all plans are held by State Archives.

2.2.4 Queensland Globe

The <[Queensland Globe](#)> is the mapping system targeting the public and displaying all property information. It also contains mining resource information, however, in less detail than the GeoResGlobe.

2.3 Other Sources of Information

2.3.1 Mining Registrars

Mining registrars are located at several locations around the state, including three Mines Assessment Hubs: The Mineral Assessment Hub in Townsville, the Coal Assessment Hub in Rockhampton, and the Petroleum Assessment Hub in Brisbane. All general inquiries should be directed to [the relevant assessment hub](#).

2.3.2 Files

Since 2015, mining permit records are digital and held in MMOL. For older permits, hard copy files are preserved by the relevant Assessment Hub. The relevant Assessment Hub can be contacted if information is required from a file.

The Department of Resources map charting is now displayed in the GeoResGlobe spatial viewer. The [GSQ Open Data Portal](#) contains digital copies of many charts. These records can be accessed via a metadata search within GSQ Open Data Portal, or a [spatial search](#) within the GeoResGlobe by turning on layers under the Products category and identifying the area of interest. All remaining historical charts are now stored in State Archives.

2.3.3 Register Cards

The data on the Register cards for mining leases and Mines Survey cards has been integrated into the relevant mining lease and survey plan databases as metadata. Physical copies are stored in State Archives.

2.3.4 Field Notes

The field note collection has not yet been digitized. They are kept by the Department of Resources with the cadastral field books, and if required a scanned copy can be requested by contacting MinesSpatialSupport@resources.qld.gov.au.

2.3.5 Native Title

Guideline under the *Survey and Mapping Infrastructure Act 2003*

The surveyor should verify with the holder and/or the mining registrar whether a Native Title assessment has been conducted on the permit, and if there are any associated requirements or considerations for the survey.

3 General Mines Plan Considerations

Standard under the *Survey and Mapping Infrastructure Act 2003*

(Unless otherwise stated)

All mines survey plans must meet the standards set in the Cadastral Survey Requirements document. The information within the windows below the Certificate at the foot of the plan is for departmental purposes. In addition, the following items also apply to all mines survey plans:

Lodgement Plan files are lodged digitally and provided in the following format:

- Full colour
- 300dpi .tiff or .pdf file
- A3 size (multiple pages permitted)

One file per plan (not one file per sheet), scanned in order by the sheet number. Do not include other information (PM sketches, survey records) in this file.

A copy of digital information identifying the extents of the permit boundary is also required coordinated using the GDA2020 reference framework. This can be in either plain text, .shp or .dwg format. For PWL plans, a coordinates table with the latitude and longitude in DMS, and the height in AHD for each wellhead is required.

The plan files and digital information outlined above should be lodged with the Permit Data team at <MinesSpatialSupport@resources.qld.gov.au> with the mining permit number(s) / borehole name(s) and MP number in the subject line.

Mines plans require different certificates depending on the subject of the plan. See Section 4 Mining Leases and Section 5 Borehole Plans for those specific certificates.

3.1 Permanent Marks

When a permanent mark is placed during the survey, the surveyor must lodge a permanent mark sketch plan with the local Department of Resources district surveyor. See section 3.28.2 of Cadastral Survey Requirements.

3.2 Corrections of Plans

Corrections for errors found during examination will be returned to the surveyor for correction with an email describing the problem.

Corrections for errors found after examination will be corrected by the Permit Data team in red in the plan archive. To request a correction to a plan, contact the manager of Cadastral, Geodetic and Permit Data via <MinesSpatialSupport@resources.qld.gov.au>.

3.3 Survey Records and Reports

Guideline under the *Survey and Mapping Infrastructure Act 2003*

Survey records or field notes are no longer required to be lodged with the survey plan unless the information required cannot be conveniently shown on a sheet of the plan. Survey records may also be called for in the instructions in particular circumstances. They may be recorded in any recognised style providing all necessary information is clearly described. Photocopies of plans are not acceptable as survey records. Surveyors are referred to section 21 of the Survey and Mapping Infrastructure Regulation 2014.

It may be appropriate to include a report where:

- survey reinstatement is not obvious
 - there are survey irregularities
 - additional details are required for boundary irregularities, including reasons for departure from applicant's description or marking and significant differences from original dimensions
 - location of relevant mine workings and installations may assist with positioning of the lease or claim
- or
- there is anything else which would help expedite the approval of the plan.

4 Survey and Marking of Mining Permits

Standard under the *Survey and Mapping Infrastructure Act 2003*

(Unless otherwise stated)

4.1 General

Mines plans of surveys of mining permits show the boundary of the permit. The surveyed boundary must be in line with the permit application and satisfy the priorities of the permit. The boundary is defined by the location of posts on the ground and the intention as described in the permit application. Existing granted leases, cadastral boundaries, post locations and any other information contained within the description of the lease must be adhered to. The following is a list of fundamental items to consider when performing a mining permit survey:

- Survey posts engraved with the mining lease number must be placed at all corners unless an exception is given.
- Any intersections with cadastral boundaries, whether it be the lease boundary or surface area boundary must have a mark placed. Cadastral boundaries must follow standard reinstatement practices.
- All areas, including surface areas, full lease boundary and areas of underlying parcels must be surveyed, and the calculated area tabulated on the survey plan.
- Surveys are to be connected to a datum; refer to the Cadastral Survey Requirements for the guidelines. Sufficient reference marks are to be placed.
- All long boundary lines must have line pegs placed no further than 1.5km apart.
- Where surface areas exist, severances of land parcels and connections to the background tenures are required.

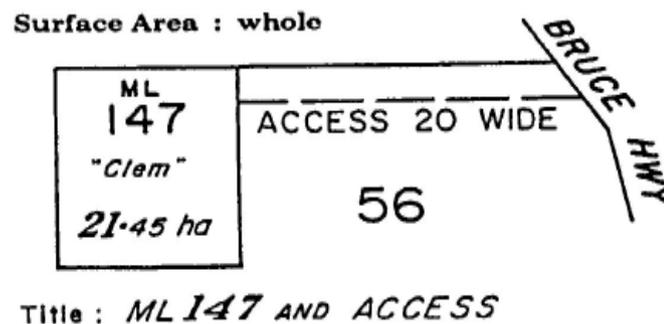


Figure 1 - Depiction of a surface area, an access and the background tenure

- If surveyed, the access to the lease must be illustrated on the plan.
- Surveys of two or more leases or permits may be drawn on the one plan form if the parcels are connected. The boundaries need not abut, but they must be part of the same survey.

The details of how to meet the requirements for each of these considerations is covered in the following sub sections.

4.2 Survey Instructions

Guideline under the *Survey and Mapping Infrastructure Act 2003*

Before commencing the survey of a permit under the MRA 1989, the surveyor should contact the Permit Data team at <MinesSpatialSupport@resources.qld.gov.au> for instructions. The instructions will include any special requirements of the particular permit and provide the relevant file searches, including a copy of the application and changes to its entitlements. Whilst the lessee or applicant should hold copies of their applications, corrections, partial surrenders, and other actions affecting boundaries, the surveyor cannot always be sure of obtaining all relevant and current information without contacting the department.

With the introduction of the <[Practice Direction 4 – Boundary identification for mining resource authorities](#)>, the content of mining lease and claim application documents has changed. It is no longer always possible to rely on these documents for a description of the holder's intention, as the simplest applications now contain a table of coordinates for the lease corner locations and nothing else. The role of the surveyor is still to document the location of the boundary on the ground, however, should there be any ambiguity or complexity, the Permit Data team should be contacted at the above email address for assistance in navigating the case. Mines surveying involves multiple different pieces of legislation which can be complicated to navigate. A Survey Instructions letter must be requested to provide the surveyor with the security of documented departmental advice, which can be used to explain any surveying decisions made.

The standard survey instruction letter can be found at <[Appendix A](#)>. The Special Requirements paragraph of the letter may be as brief or as detailed as the specific permit requires, and can include (but is not limited to) descriptions, diagrams and map excerpts.

4.3 Requirements

A survey plan of mining permits should:

- describe the subject land unambiguously on the correct plan form
- be suitable for annexing to an instrument of lease document or other title document
- provide evidence of the marking of the boundaries.

4.3.1 Examination Considerations

Guidelines under the *Survey and Mapping Infrastructure Act 2003*

When assessing a survey plan, the Permit Data team consider the information on the following lists as a starting point.

Presentation questions:

- Is it consistent with departmental requirements?
- Is the survey reinstatement correct and the information shown correctly?
- Has the surveyor's certificate been correctly attested?
- Have supplementary attachments to the survey report (if present) been lodged?

Application details:

- application description, including abutments
- applicant's sketch
- certificate of application
- if description stated as being identical to a previous lease
- position of datum post and application posts
- purpose the permit was applied for
- is a surface area required?
- areas of mining leases or applications covering background tenures
- compensation agreements with all affected landowners
- application amendments or abandonments
- resurrections of background tenures
- date of receipt of application by registrar, to determine priority
- roads and reserves, whether included or excluded from the lease or surface area
- restricted land, whether included or excluded from the lease or surface area
- unavailable areas
- access
- tidal and watercourse boundaries
- recommendations of the Land and Resources Tribunal.

For permits already granted, the following may also be relevant to the assessment:

- was there a recommendation to Minister for grant?
- was an instrument of lease issued before survey?
- past surrender/s of part of the lease or surface area
- past addition/s to the surface area
- are any subleases or licences present?

4.3.2 Depth Restrictions

On plans of mining leases, which are restricted in depth, the plan should be endorsed with a suitable statement, for example:

ML697 exists only below the depth of 15.24 metres beneath the surface except for Lot 83 where it exists on and beneath the surface.

4.3.3 Name of Lease

The name of the mining lease should be shown within the subject block.

4.4 Areas

Areas are computed in accordance with Cadastral Survey Requirements document section 3.6 'Areas'. An area must be shown for:

- the whole of the lease
- each surface area
- each background title severance by a surface area
- any subleases
- any licence over the lease.

4.4.1 Dimensions

Each case must be treated on its own merits, but the surveyed dimensions of a granted lease should not exceed the dimensions in the application. If a survey reveals unavailable land, the dimensions and area would usually be less than those in the application description and the certificate of application. The area may be limited by prerequisite permits, restricted areas, restricted land, or earlier mining permits. Apart from unavailable land, if a survey reduces the area from that shown on the application and it is not due to calculation differences, an abandonment or surrender should be lodged by the holder for the area not surveyed. The exclusion should be shown by action statement on the plan.

If a lease is designed to fit in between other leases, the description abutments may have to be used rather than dimensions, provided it does not increase the area.

4.5 Boundary Determination

Applications for mining permits can be made without placing posts, as long as the [strict guidelines](#) for such an application are followed. If any boundary determination lacks sufficient details, whether physical or written, the holder will be requested to update. Intention is critical.

When doing a modern survey, any previous surveys of the permit need to be considered. All pre-existing post and survey marks should be located.

In the assessment of a mining lease boundary, evidence to verify intention and entitlement must be considered. Since the marking out of the application need not be done by a surveyor, the accuracy of the original measurement of those boundaries could be uncertain.

Critical information for a reliable boundary determination:

- Coordinates must be of reliable accuracy – plotted from high accuracy satellite imagery, compiled from existing sources, or generated by means such as differential GNSS using the GDA2020 reference framework.
- Application posts must be durable and clearly marked to be valid; if they do not reflect the intention of the application, these need to be rectified through the mining registrar.
- Priority of permit must be adhered to. If a boundary abuts an existing granted permit or cadastral boundary, then the new boundary will follow the existing permit.

Until a permit has been surveyed, the application posts of mining claims and leases are the boundary marks. These posts need to be maintained, and the mining registrar is responsible for inspecting these to ensure compliance is maintained prior to survey.

Where a boundary is a parallel of latitude, a mark must be placed at distances of no greater than one minute of longitude.

A surveyor can be asked to establish and define mining permit boundaries under the MRA 1989 at three stages in a mining project:

- **Before the Application** is made, a surveyor sets out the application boundaries on behalf of the applicant and may even survey them at the same time. Boundaries are determined by the applicant's wishes, provided the land is available and they may be varied at will before the application is lodged. Note that it is not necessary for an application for a permit to be set out or described by a cadastral surveyor. The applicant or anyone the applicant asks is entitled to do the work.
- **After the Application** has been made to the mining registrar, but **before grant**, the surveyor must reconcile the written application with the information found in the field. Although the boundaries have essentially been fixed by the application description and the marking, it is still possible to vary a claim or lease on survey if it is appropriate to take advantage of sections 6 and 19 of the MRR 2013. This variation can only happen following the survey of an earlier abutting claim or lease which then itself defines part of the subject permit's boundaries.
- **Following Grant**, the boundaries have been fixed by grant and must be surveyed in the position established by the grant.

4.5.1 Evidence of Boundaries

The hierarchy of evidence for establishing the location of a permit boundary cannot be absolute. The mining industry in Queensland includes multi-billion dollar, multi-national corporations which may have dozens of production leases active at once, as well as single person, hand-mining operations that cover a single 100 m by 100 m plot of ground each. It is important that these standards are applicable to both of these example industry participants, and the entire spectrum between them.

The following list is in order of priority, for a new lease with no historical activity over the area:

- availability (subject to exclusions, compensation, and priority)
- application posts
- application and associated data (shapefiles, written description, coordinates table, sketches etc)
- abutments (should be included in the application description)
- monumented lines and corners
- metes & bounds
- areas (applied for area needs to be considered if significantly varied due to rent and compensation calculation)
- natural features (may be possible as an alternative method of description).

The scenario above is an ideal situation. Deviations from this are not unexpected, and examples of how to deal with many of the common scenarios are covered in the following subsections. Also see section 4.2 for details on accessing departmental advice, which is always encouraged.

Some examples of other evidence that may supersede some or all of the above list are:

- adjudication (i.e., a Tribunal or Court ruling)
- documented historical tenure
- physical evidence of previous mining activity
- current physical works.

The point of truth is always the location of posts on the ground (see section 4.6.1), however, there are situations where the application documents contradict the posts, or where the posts have not yet been placed, or where a lease has been purchased and re-posted by a new holder in a way that contradicts the documented historical boundaries. These are just a few examples of situations that may require departmental advice to establish the true boundary location. As industry evolves and technology advances, previously mined areas will be reopened as they become profitable once again, introducing more historical complexity. The capability and accessibility of GPS technology has improved drastically, and so holders are increasingly submitting spatial coordinates or basic shapefiles in lieu of a written lease description. This sometimes results in ambiguous holder intentions in a complex area with a lot of historical and legal context to navigate, which is why exceptions to the ideal evidence hierarchy can be necessary in order to achieve an accurate survey outcome. If several mining permits are to be surveyed at once, it is best to survey them in order of application so that any encroachments will be immediately apparent. Where there is an overlap, the earlier application is usually given precedence, but departmental advice should be sought as one or all of the applications may need to be adjusted.

4.5.2 Corners

The usual references to iron pins, reference trees and fences are shown on the plan. It should show connections or offsets to the posts, datum posts or other marks placed for the mining permit application.

4.5.3 Cadastral Boundaries

An application may refer to abutting previously defined cadastral boundaries for the fixation of the lease boundaries. The surveyor could then rely on a normal ‘fixed boundary’ approach.

Where a cadastral boundary has not previously been surveyed, for example, a pastoral holding boundary, the surveyor must verify its determination with the Resources – Surveying Services Team through surveyadvice@resources.qld.gov.au.

Mining leases need not match background tenure cadastral boundaries unless the applicant wishes it. They can overlap only part of a parcel or include more than a single parcel. There must be compensation agreements with all landowners affected by the surface areas of a lease. If no compensation agreement is reached, the lease or claim is truncated by the boundaries of that owner’s land. This will require the reinstatement of a cadastral boundary.

4.5.4 Physical Marks from the Application

The surveyor should carry out a field inspection and have the applicant or lessee point out all posts of the lease or claim. Adjoining lessees and applicants should be asked to do the same if encroachments are likely to exist and therefore entitlements jeopardised. The survey report should be clear on the presentation of this evidence in support of information shown on the survey plan.

Applicants and lessees must maintain the marking that was done for the applications. If the surveyor finds any encroachments or inconsistencies, physical or written, from the application, they should contact the mining registrar and the Permit Data team.

If the surveyor or the applicant believes a marking or boundary is not able to be maintained, they should seek the consent of the Registrar. Usually, this consent is only given if the marking or boundary has already been surveyed or is physically inaccessible.

Application posts should remain in place until the department has catalogued and examined the survey plan.

4.5.5 Physical Feature Boundaries

Guideline under the *Survey and Mapping Infrastructure Act 2003*

Using water boundaries or any other natural boundary for a mining permit boundary is theoretically possible but will present difficulties. If such a feature is used for a boundary description the surveyor must demonstrate how it was determined, and its use would be discouraged by most mining registrars.

There are some cases in which irregular boundaries are appropriate or unavoidable. Some mining permits with ambulatory boundaries do exist, notably a few old coal mining leases in Ipswich. In recent years ambulatory boundaries have been created where land subject to Native Title, such as a boundary watercourse, is excluded from an application that covers more than one title and there is no Indigenous Land Use Agreement. This enables a permit to be granted over the clear land whilst negotiations are proceeding for another application over the balance of the land desired. However, it is more common and good practice to create right line boundaries outside of the ambulatory boundaries, leaving as a buffer some extra land that is not in the application.

Surveyors dealing with ambulatory boundaries should refer to the Cadastral Survey Requirements under chapter 4 Physical Feature Boundaries. Surveyors dealing with tidal and non-tidal boundaries should refer to Part 7 SMI 2003.

4.6 Posts

4.6.1 Survey Posts

Survey posts must be placed at the corners of surveyed mining leases. Geographical or geodetic coordinates are frequently quoted for the position of posts, however, this does not change the dominance of the position of the post as placed in the ground, and so the determination of the boundaries devolves into a survey task.

A survey post is of square timber of at least the following dimensions: 100 mm on each side, 1000 mm long and sunk 600 mm in the ground with 400 mm above ground. The top should be tapered. The posts should be inscribed with the initials and surname, or company name, date of marking out, lease number of the applicant/holder. Where it is physically impossible to place a survey post, an alternative or equivalent mark may be used, appropriate to the circumstances. An example of an equivalent mark would be a cairn of rocks, painted star picket in concrete or other similarly prominent and durable mark. The surveyor should show reasonable diligence in ensuring that the mark is one that is capable of lasting at least as long as a post and of being identified as a boundary mark.

The surveyor should pay heed to public safety and, in built-up areas, to the aesthetics of a locality. Alternative marks driven flush may have to be placed or, in rare instances, the corner may have to be offset with pegs along the boundary line.

A surveyor dealing with a previously unsurveyed permit should search for the applicant's posts, as they are the primary evidence of location of the permit and function as boundary marks until a survey of the permit is completed. These original posts are to be distinguished from the survey posts placed by a cadastral surveyor on a survey of the same permit. These posts should be fixed by offsets in the same manner as fence posts, or by radiation for the longer connections, to the same accuracy as fence posts. Show offsets or connections to application posts, including datum posts, and the markings thereon, either on the face of the plan or tabulate them.

4.6.2 Moving Application Posts of Adjoining Land

A lease or claim application may describe the land as adjoining an earlier unsurveyed lease or claim. If the earlier land is then surveyed, the applicant for the subject land may adjust the marking out to adjoin the boundary of the just surveyed land.

It is important to understand that this provision only applies to an application, not a granted lease or claim. It may have the effect of shifting the subject application to a new position but does not allow the taking up of land that would not normally be available. See sections 6(3)(a), (b) and 16(3)(b) of the Mineral Resources Regulations (MRR) 2013. Also, it does not allow the size of the land to be increased.

4.6.3 Removal of Posts

Posts and their markings must be maintained until a lease is surveyed. Posts must be removed if an application is not made, is rejected or is abandoned. They must also be removed immediately before termination of a lease. See MRA 1989 section 312.

See also section 42 of the SMI 2003 regarding interference with a survey mark.

If a lessee appoints a surveyor to remove the posts following survey, they should not be removed until the plan is lodged with the department and approved, to ensure that the primary evidence of the location of the lease is kept until the survey is completed.

4.7 Surface Areas

4.7.1 Surface Area Representation

A survey plan shall show by statement the area of all background tenures covered by the surface area, including reserves and roads. Intersections of surface area boundaries with all background tenure boundaries must be shown on the plan as well. The surface area (whether whole, part, or nil) is shown on the plan by statement but must accord with the application description. Where the surface area is over part of the lease only, the land subject to surface area is detailed on the face of the plan by surveyed lines and the station numbers listed in a statement:

Surface Area Whole

or

Surface Area 25.75 ha (Station Numbers to be listed)

or

Surface Area Nil

When more than one surface area is contained within the one lease, they are described as 'Surface Area 1', 'Surface Area 2', etc. An area is shown on the plan for each, and an area of the total surface area is shown by statement.

In the past, when only one surface area was taken up, it was common to describe it as 'Surface Area' without a number. The next area should be described as 'Surface Area No.2' and later ones follow consecutively. The original surface area should be left un-numbered as there will be documents in various locations describing it as 'Surface Area' only. Show the original surface area on the plan as follows:

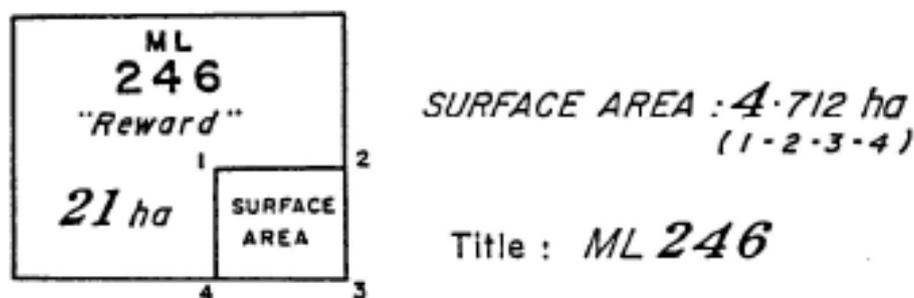


Figure 2 - Depiction of a singular surface area

It is now the practice for the mining registrar to allocate surface area numbers. 'Surface Area' is referred to in the title when the plan is of the surface area only.

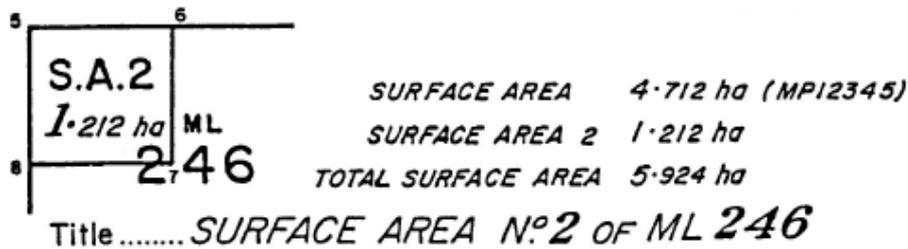


Figure 3 - Depiction of two surface areas on a plan of a single surface area

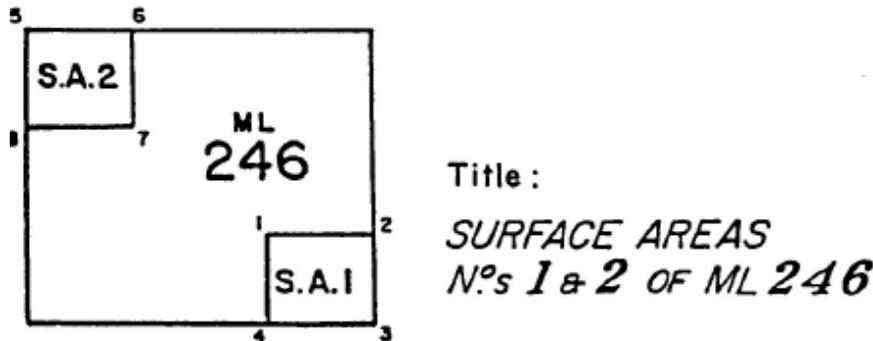


Figure 4 - Depiction of two surface areas on a plan of both surface areas

Surface areas may be marked with pegs rather than survey posts, unless the corner coincides with a lease corner. In that case a survey post should be placed. Reference trees should still be taken, and iron pins placed.

4.7.2 Surface Area Intersections

The intersection of a cadastral boundary with a mining lease surface area should be pegged and the allocated areas of the surface area shown on the plan. This includes intersections on easement boundaries.

The applicant or lessee must have a compensation agreement in place with the holder of each parcel of land affected by the surface area before the lease can be granted. If the survey reveals that the surface area encroaches over land for which there is no compensation agreement, then that part of the lease must be excised from the mining lease.

4.8 Access

The access to a lease is only required to be surveyed if it is over freehold land, is required in the Survey Instructions, or the holder chooses to have it surveyed. If access is via an established and well maintained road over freehold land, advice from the Permit Data team through MinesSpatialSupport@resources.qld.gov.au should be sought as surveying the access may not be required.

When surveyed, angles are marked with survey pegs. For long accesses it may be acceptable to survey and mark one side only, contact the Permit Data team for advice. Intersections of the access on cadastral boundaries must be pegged, requiring a reinstatement of the cadastral boundary.

Describe access on the face of the plan in the same manner as a road.

Example: ACCESS 20 WIDE

If access to a mining lease is surveyed the title on the survey plan should read 'ML xxx and ACCESS'.

Examples: ML 53 and ACCESS

ML 52, ML53 and ACCESS (ML53)

ACCESS (ML 53)

Where a surveyor finds that the surveyed access deviates from the description of the access in the application, the surveyor should request further advice from the mining registrar. An application by the holder for variation of access may be required.

4.9 Background Tenures

All existing cadastral background information should be shown on the survey plan. Where a mining permit covers lands held under other tenures, all boundaries and descriptions of those lands are to be shown on the plan. The boundaries of the subject block are to be distinguished by heavier lines. Show underlying descriptions in light block as follows:

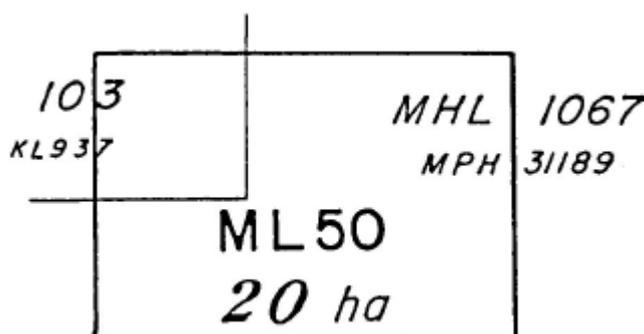


Figure 5 - Depiction of background tenure using light block

When the background tenure has separate strata titles in depth, the description of the surface strata should be shown. It may be necessary to show a table listing descriptions and plan numbers of the sub-surface tenures. Care should be taken where the background tenure has a depth restriction that is not defined by numerical description. A descriptive term such as 'to the depth of the coal seam' has sometimes been used in older leases.

4.10 Calculated Lines

A line calculated between two surveyed corners may be used in some instances, such as the unsurveyed side of a long access. Lines with computed dimensions should be labelled 'calc' or 'calc orig' on subsequent plans.

4.11 Certificates

The surveyor should endorse the plan with the appropriate approved certificate. For the forms refer to <https://www.business.qld.gov.au/industries/building-property-development/titles-property-surveying/surveying/standards-forms>.

4.12 Easements

No provision exists under the MRA 1989 to register an easement over a mining claim or lease. An easement across a background tenure should be shown on a survey plan of a mining permit. It should be clearly depicted whether the application includes or excludes the easement from the surface area or lease.

4.13 Lapsed and Historical Boundaries

Lapsed boundaries are previously cancelled boundaries or boundaries of historical leases. They are generally only shown when used for survey reinstatement. Use a dotted hairline to show a former description on the face of the plan and include the bearings and distances.

If the applicant intends the new application to cover a historical lease or claim, the new description should include words such as 'coincident with previous ML or MC', and care should be taken with marking out to demonstrate that the application truly covers the original permit. This is most likely to happen when a historical lease is surrounded by land that is not available for taking up. If the posts are not close to the corner it intends to mark, the application will be displaced and parts that overlap the historical permit will have to be truncated.

4.14 Locality

The locality must be included on the face of the plan to assist with locating the lease. The locality box should always include the latitude and longitude of the centroid of the lease and may also include the locality name if the surveyor so chooses. The centroid in this context refers to the approximate centre point of the entire extent of the survey. Accuracy should not be greater than to a second. Where there is more than one sheet per plan, the locality should be shown on and for the first sheet only, which should depict an overview of the surveyed land (see section 2.3 of Cadastral Survey Requirements).

4.15 Lot on Plan

Except in special circumstances, the lot on plan system is not used for mining permit surveys. See section [4.22.1 Special Arrangements](#).

4.16 Meridian

MGA azimuth should be used. See also Cadastral Survey Requirements, section 3.24 'Meridian'.

4.17 Mining Districts

The mining district is shown in the title block of the plan. Most mining district boundaries coincide with the boundaries of local authorities.

4.18 Restricted Areas

These are areas of land set apart under the MRA 1989 for special purposes, usually to restrict or control certain mining activity. Plans of restricted areas are usually compiled plans, however, they can be surveyed and when this happens, the restricted area must be shown in the same way as for mining lease requirements.

4.19 Restricted Land

Restricted land should be identified in the field and surveyed as an exclusion from the surface area(s) of a mining lease unless the chief executive or the landowner has given approval to include it in the surface area(s). See section 238 of the MRA 1989. The boundaries should be dealt with in the same manner as a surface area. Restricted land boundary corners may be marked with survey pegs except where they coincide with a corner of the lease.

Restricted land must be defined and marked on survey and the surface area reduced accordingly. Restricted land should be depicted on the plan in its relationship to the surface area and the lease boundaries in the same manner as a surface area. It should be labelled 'Restricted land', or alternatively, the letters 'RL' may be used. If there is more than one parcel of restricted land, they should be numbered consecutively from 1.

Improvements that create restricted land should have been identified in the application for a mining lease. See section 245(1)(h) of the MRA 1989. An improvement must be located by survey and the restricted land boundaries set out at the specified distance from the improvement. The distances are set out under 'restricted land' in the Dictionary in the Schedule to the MRA 1989. The feature causing each parcel of restricted land should be identified in the survey records or the report.

4.20 Roads

There are four methods of showing areas of dedicated roads through mining leases and other exclusions or reservations on a plan, depending upon the mining lease application. In all cases the road boundaries should be plotted on the plan:

- The road may be included in the surface area of a mining lease if a compensation agreement for the road surface has been made. The area of the road within the surface area must be shown by statement on the plan form. The road boundaries are shown in light lines.
- The road may be excluded from the mining lease. The road boundaries then form lease boundaries and are shown in heavy lines. Full dimensions are required but not the area.
- The road may be excluded only from the surface area of the mining lease. The road boundaries are shown in medium lines. Full dimensions of the road are required. The surface area is shown by statement.

- Where no surface area is required for the mining lease, the area of the road is not shown, only the area of the mining lease.

4.21 Severances

All severances of background tenure boundaries by mining claims or mining lease surface area boundaries must be surveyed. The survey plan must show the severances with intersections on the boundaries and the areas affected.

4.22 Specific Case Requirements

The department regulates several different types of resource extraction activities, and there are differences in how these activities should be surveyed. This section covers how each activity differs to or extends on the rest of the standards laid out in this chapter in regard to surveying and plan creation.

4.22.1 Special Arrangements

A licence is the right to use specified land for certain purposes. Apart from a mineral development licence, which is dealt with separately under the *Mineral Resources Act 1989*, licences are provided for in some of the special Acts, in particular the *Mount Isa Mines Agreement Act 1985* and the *Commonwealth Aluminium Corporation Agreement Act 1957*. In both cases licence areas occur within the mining lease. Licences are surveyed, and the plan drawn, in the same manner as for leases.

4.22.2 Mineral Development Licenses

The survey of a mineral development licence or an application for a mineral development licence is to be done to the same standards of accuracy and marking as a survey for a mining lease. The concept of surface area does not apply to a mineral development licence.

4.22.3 Mining Claims

Mining claims are registered by the mining registrar and are not generally surveyed, but the minister may call for a survey under section 407 of the MRA 1989, or the holder may elect to have a survey done. Claims are now often field inspected by the department, and differential GPS measurements of posts are taken at this time. This data is then recorded in the permit register, and the boundaries as displayed in GeoResGlobe are updated.

The process for surveying claims is similar to that for surveying mining leases. Connections must be made to the nearest cadastral boundary, and boundary intersections must be pegged. The description of the survey plan should read 'Area Occupied as Mining Claim xxx'.

Claims are usually surveyed by measuring between the application posts depicting the land occupied by the claim. Reference marks should be placed to aid any future reinstatement of the land occupied. Overlaps on earlier mining permits must be truncated unless section 6 of the MRR 2013 applies.

Offsets from the survey mark to the claim post must be taken and recorded for the plan. Survey pegs may be used to mark the corners.

Should the area not conform in shape (section 53 of the MRA 1989), the direction of the applicant or claim holder and the mining registrar should be sought regarding the intended or permitted shape. Non-conformity of shape may be acceptable if availability is determined by adjoining areas. The registrar should be advised of any variations from the application.

Where an area is found upon survey to exceed the prescribed area, a survey sketch should be prepared describing the area as 'Survey of area occupied as mining claim' and a copy promptly forwarded to the mining registrar of the Mineral Assessment Hub. The status of the mining claim may then be determined under section 53(4) of the MRA 1989. A copy of the survey sketch should also be forwarded to <MinesSpatialSupport@resources.qld.gov.au>.

When the excess area has been determined and the applicant has moved their posts to the approved positions, a survey plan must be lodged showing the original mark positions as well as the final boundaries.

Excess areas disclosed by survey in adjoining claims should also be referred to the mining registrar.

4.22.4 Sub Leases

Sub-leases should be shown on the plan in the same manner as a head lease. For example, the boundaries are displayed in a heavy line style and boundary dimensions, areas, severances, and marks placed in the ground are all shown.

4.22.5 Consolidated Leases

Two or more contiguous leases may be cancelled, and a consolidated lease granted by the Minister under section 299 of the MRA 1989. It is possible a survey will be required of a consolidated lease under section 407 of the MRA 1989. Two diagrams on the plan will be required. The first diagram will disclose the position of all the leases including the gaps. The second diagram will show the exterior boundary of the consolidated lease. It may be possible to compile some boundaries, particularly the internal ones.

A lease may be consolidated without survey if sufficient survey information for all boundaries exists, and the external boundary marks are extant. In this case a compiled plan of the whole of the new lease may be adequate. A field survey may be required if there is not enough survey information to compile the dimensions of the consolidated lease. The boundary marking is the same for a survey of a single lease. Internal boundaries need not be marked unless they define a gap. The boundaries will have to be compiled and shown on the plan in the first diagram, the one depicting all the original lease boundaries.

The surveyor should be aware that gaps may occur between granted leases, which may have not been apparent before the survey was carried out. If the land in a gap is wanted to be included in the new lease, a fresh mining lease application will be required to cover it and consolidation cannot take place until the new application is granted. However, section 299 (5) of the MRA 1989 enables the Minister to include gaps in a consolidated title. Refer to the mining registrar before including any land that is not in the granted mining lease.

4.22.6 Surrenders

Each severance area being surrendered from the lease and surface area, as well as the total area surrendered, is to be shown by statement on the plan. The area remaining is shown on the face of the plan, in the normal manner. The description and action statement on the survey plan should indicate whether a partial surrender affects the lease or the surface area. It is important to verify the action with the lessee and the application for surrender since a surrender from the surface area does not mean a surrender from the whole lease. In some circumstances, such as a small surrender from a large lease, it may be acceptable to show only the surrendered part on the plan.

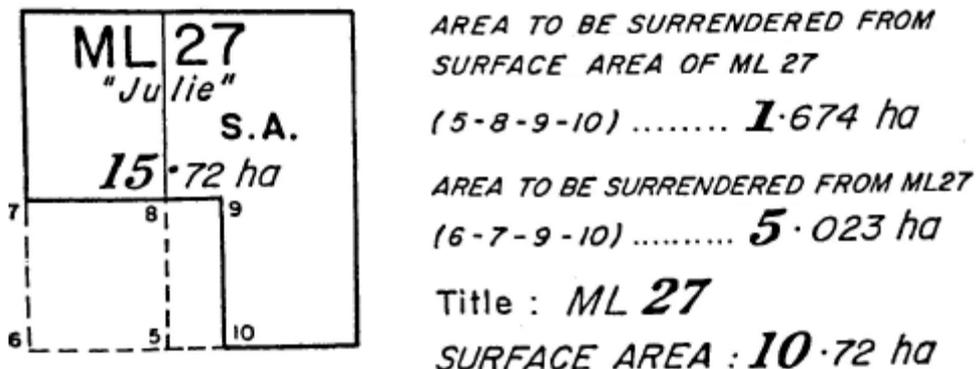


Figure 6 - Depiction of a surrender and the associated area totals

The holder may surrender different parts of their lease at different times over the lifetime of the lease. When drawing up a survey plan of a partial surrender on a lease, show the area of the lease as it is immediately before the current surrender. This means that, for a lease where the holder has already surrendered part of the lease, show the current reduced boundary, rather than the original extent of the lease at grant. This can be shown in the Schedule of Areas on the face of the plan.

If the lease has not been surveyed before the partial surrender, all of the original lease boundary posts must first be located by survey. The lease as granted must be defined first, and the instrument of lease is drawn up on the original grant. The partial surrender then becomes an endorsement on the instrument. Surrendered corners do not have to be marked but they must be capable of being correctly shown on the survey plan.

See also Cadastral Survey Requirements 3.6.2 Balance areas.

4.22.7 Identification Surveys

The plan requirements for a boundary identification survey of all or part of any existing mining permit are the same as the plan requirements for a survey of that permit, except that the plan title should be headed:

IDENTIFICATION SURVEY OF

Identification survey plans must have a completed certificate, refer to <https://www.business.qld.gov.au/industries/building-property-development/titles-property-surveying/surveying/standards-forms>.

An identification survey of a previously unsurveyed mining lease should not mark the boundaries, it should only find and identify the application posts. If boundaries are to be marked, or a difference between the positions of the posts and the dimension in the application needs to be resolved, a full survey must be done. Reference marks may be placed on an identification survey.

A submission of this plan to the Permit Data team as an MP is sufficient to fulfill the requirement under section 16 of the SMI Act, an additional submission of the same plan as an IS is not necessary.

4.22.8 Compiled Plans

Compilation is allowed in certain cases; however, the surveyor should be satisfied that the posts are truly located at the cadastral corner they purport to identify.

The datum post must be shown on the plan. This will involve a field inspection and fixing the post. A measured connection or offsets to the same standard as for showing fence posts is suitable. The offsets to the datum post from the appropriate surveyed boundary corner must be shown tabulated.

Where the whole plan is compiled, dimensions are not qualified by the word 'Orig'. Station numbers or letters are shown only when required to describe specific actions such as additions to surface or partial surrenders.

If a compiled surround closes within the allowable limits of error, a calculated area should be used. If not, a compiled area is to be used and labelled where applicable 'Bal'.

Where a survey of only a small part of a large permit is wanted, lines may be adopted from the application description for the balance. The plan may not be suitable for issue of a lease and the compiled boundaries may be subject to amendment, since availability will depend upon a field survey of the full lease or application. These lines should not be confused with calculated lines derived from survey information.

Compiled plans must bear the appropriate certificate from Form 18. Refer to <https://www.business.qld.gov.au/industries/building-property-development/titles-property-surveying/surveying/standards-forms>.

They must also bear the following statements:

Copied and compiled from xxx (insert Plan Numbers)
in the Department of Resources

and:

The datum post was found by inspection to agree with the lease application as shown hereon
.....
Cadastral Surveyor

4.22.9 Exploration Permits

Surveys are not normally required but may be needed for settlement of boundary disputes with adjoining claim, lease, licence and permit holders or for marking of boundaries to define land available for mining permit applications. The survey requires a geodetic connection to establish the corners of

sub-blocks. It is usual to mark only those corners or parts of boundaries needed to satisfy the purpose of the survey.

The Block Identification System is a geographic grid system originally established using the basic unit (a block) of five minutes of latitude by five minutes of longitude by reference to the Australian Geodetic Datum 1966 (AGD66). The sub-unit (a Sub-block) was defined as one minute of latitude by one minute of longitude by reference to AGD66.

Coordinates should now be given using the current State geodetic reference framework prescribed under the SMI Act. On survey plans of a whole or partial exploration permit, the datum of the coordinates should be stated on the face of the plan as follows:

Geographic Coordinates on Geodetic Datum of Australia 2020 (GDA2020)

When bearings are given, both forward and reverse azimuths should be shown where applicable.

Plans of exploration permit surveys should show connections to cadastral boundaries near exploration permit corners and show comparison of meridians. Where astronomical observations are taken, a meridian table should be shown.

5 Survey Marking of Boreholes

Standard under the *Survey and Mapping Infrastructure Act 2003*

(Unless otherwise stated)

5.1 Petroleum Permits, Leases and Licences

Petroleum lease surveys and plans are done in a similar manner to those for mining leases, and this section covers the differences and additional requirements. Authorities to Prospect under the *Petroleum Act 1923* and the *Petroleum and Gas (Production and Safety) Act 2004* are defined by blocks and sub-blocks related to whole minutes of AGD66 geographical coordinates. These blocks were created using AGD66, and the boundaries and corners remain in the same locations on the ground today, although the datum has changed. Long lines resulting from these coordinates should have forward and reverse bearings.

Surveyors interested in surveying petroleum leases should approach the Manager, Cadastral, Geodetic and Permit Data via <MinesSpatialSupport@resources.qld.gov.au>.

5.2 Relevant Acts and Definitions

All petroleum well location (PWL) surveys are carried out under the provisions of sections 28 and 29 of the Petroleum and Gas (Safety) Regulation 2018 (P&G (Safety) 2018 Regulation). This applies to surveys under the *Petroleum Act 1923* as well as the *Petroleum and Gas (Production and Safety) Act 2004* (P&G Act). Their purpose is to define and record the position and elevation of petroleum wells. Note that sec 299(1) of the P&G Act defines coal seam gas as petroleum when it occurs naturally in association with coal or oil shale. Section 2 of the 1923 Act defines a well and Schedule 2 of the P&G Act defines a petroleum well for that Act. Boreholes for coal seam gas are included in the term 'petroleum well' in this paper.

The submission of a PWL plan to the Permit Data team as a mines plan with a barcode beginning with MP is sufficient to fulfill the requirement under section 16 of the SMI Act, an additional submission of the same plan as an IS is not necessary.

5.3 Time Limitations

Section 28(1) of the P&G (Safety) 2018 Regulation requires that not later than six months after drilling starts the location and elevation of the well be surveyed. If a survey is completed prior to drilling commencing, it is the responsibility of the surveyor to ensure the location recorded will remain accurate post commencement. Section 29 requires that not later than three months after the completion of the survey of a well, the permit holder shall submit to the chief executive a survey plan certified as to accuracy by the person who made the survey.

5.4 Plan Content and Formatting

The survey must be drawn on the standard plan form used for surveys of mining permits. It should show all relevant horizontal and vertical location information and include a description of the mark used for level datum and its value, using a second sheet if necessary. Where a location is carried out by means of a connection to a geodetic network, it should be clearly stated whether distances are reduced to the spheroid at terrain height, or at mean sea level.

All current permits and background tenure over the land on which the well is located must be shown on the plan. This includes cadastral information as well as any authority to prospect or petroleum lease. As petroleum well plans display coordinates for the wells, they do not need to include locality coordinates.

The name of the well is its primary identifier, and it is important that it be shown correctly on all documentation. In cases where more than one well in a sequence is located on a plan, list each well name in the title plate. For example: 'PWL of Maccullochella 1, 2 and 3' is appropriate, but 'PWL of Maccullochella 1 – 3' is not. The plan is to be formatted at an A3 size and may include multiple sheets. The plan should be designed so that it is still legible when shrunk and printed on A4 size sheets. No more than 15 wells should be represented on a single survey plan.

5.5 Accuracy, Marks, Connections

The department requires that petroleum wells be located to a certain level of precision when surveyed.

Section 28 of the P&G (Safety) 2018 Regulation states:

“(3) The survey must be tied to—

(a) the State control survey under the *Survey and Mapping Infrastructure Act 2003*; and

(b) a survey mark related to the AHD.

(4) The location and elevation of the petroleum well or bore must be surveyed to the level of accuracy required under—

(a) a survey standard that applies to the type of survey and the area in which the survey is being carried out; and

(b) the *Survey and Mapping Infrastructure Act 2003*.”

The survey should connect the well to two suitable permanent reference marks within two kilometres for horizontal control. One or both marks may be utilised as a benchmark for elevation control if suitable. One of these reference marks should be a permanent survey mark as defined in the *Survey and Mapping Infrastructure Act 2003*. It is expected the surveyor be able to accurately locate the position of well heads, and control to a positional uncertainty of no greater than 30 mm, for both horizontal and vertical positions.

Single point positioning by GNSS is not an acceptable method of location. All traverses must be closed. The elevation of a well is to be related to the AHD.

MGA should be used for the meridian of connections around the well. This should be shown in the appropriate box in the plan title block. Where a cadastral connection is made, the line used for datum should be clearly labelled on the face of the plan.

Where there is not a suitable mark within 2 km of the well, a permanent benchmark should be established by the surveyor to minimise positional uncertainty and complement the connection to horizontal and vertical datums. These should be easily accessible and be suitably durable, and their details should be included on the face of the plan.

Where a petroleum well is within 200 m of a cadastral boundary, a connection to that boundary is essential to provide certainty as to which land parcel the petroleum well is in. If a well is connected to a boundary of a title registered with the registrar of titles and boundary reinstatement is necessary, the surveyor should treat the survey as an identification survey and as such complete the survey to that standard. A connection to all other wells, roads, railways, fences, public utility services, buildings, or structures within 200 m of the well is required.

5.6 Presentation of Coordinates

Well coordinates must be displayed defined by the current national datum. Geographic and MGA coordinates of the well are required for all PWLs. Coordinates should be shown in accordance with the current Cadastral Survey Requirements for depiction of coordinates on plans and clearly labelled MGA or GDA as appropriate.

The coordinates of the well and reference marks are to be shown on the plan. The descriptions and values of the points from which these coordinates were derived should also be shown. Elevation details including the level of the well and benchmarks placed are to be added to the plan.

Plan presentation of coordinates should be in tabular form, and contain fields to identify station numbers, well names, PM number, positional uncertainty, lineage, measurement method, and any remarks required. Coordinates must be shown to four decimal places for geographic or two decimal places for grid.

5.7 Certificate for Petroleum Well Location Surveys

The certificate for petroleum well location surveys should be drafted on the face of the plan in the space reserved for certificates. A suitable form is:

----- hereby certify that I have/the company has surveyed the location of the petroleum well as shown on this plan, that the survey was performed in accordance with the *Petroleum and Gas (Production and Safety) Act 2004*, the *Petroleum and Gas (Safety) Regulation 2018*, the *Survey and Mapping Infrastructure Act 2003* and associated Regulations and Standards, achieving the accuracies of the Standards and that the said survey was completed on -----

Signature of Surveyor Date

5.8 Requisitions

The chief executive may require a plan be amended within a particular period after submission to satisfy the requirements of section 29(3) of the P&G (Safety) 2018 Regulation, or the chief executive may reject the plan.

6 Keywords

SIG/2024/6769; Survey Requirements for Mining Tenures; Survey Requirements; Mining Tenure; Mining; Standards; SRMT;

Appendix A – Survey Instructions Sample

Attention [REQUESTER]

Dear [REQUESTER],

Re: Survey of [LEASE/S]

In response to your email dated [DATE], the following instructions are issued for the survey of the above mining leases. You are welcome to contact the Permit Data team for further advice and information relating to the content in these instructions.

Surveys are to be affected in accordance with the provisions of the *Surveyors Act 2003*, the *Survey and Mapping Infrastructure Act 2003* and associated Regulations and Standards, the *Mineral Resources Act 1989*, and the Mineral Resources Regulations 2003. The Survey Requirements for Mining Tenures subordinate legislation covers considerations specific to mines surveying in more detail and specifies which sections of the Acts and Regulations are relevant. This document is available from the survey standards page of the website of the Department of Resources and should be referred to throughout the survey process. This instruction letter should be considered supplemental material to the requirements outlined in the SRMT, and not an all-encompassing guide.

SPECIAL REQUIREMENTS

Survey of this lease/s is required because of concerns surrounding [ISSUES] and should eliminate related uncertainty.

[FOR EXAMPLE] This lease is located across multiple cadastral boundaries and abuts road parcels, the surface areas are close to various existing infrastructure and restricted land, and the waterway that forms the western boundary has never been fully surveyed.

LODGEMENT

The plan should be submitted to the Permit Data team inbox in .pdf or .tiff format. It should be 300 dpi and in black and white. A copy of digital information (shapefile or similar) identifying the extent of the tenure boundary should be submitted to the Permit Data team in projected GDA2020/MGA2020 coordinates. The files are to be emailed to the Permit Data team using the email address provided below.

<MinesSpatialSupport@resources.qld.gov.au>

Yours sincerely,

[Permit Data staff]

for the Manager,

Cadastral, Geodetic and Permit Data

Georesources,

Department of Resources