



Government of Western Australia  
Department of Mines and Petroleum

# Petroleum Division

## ADMINISTRATION OF GEOTHERMAL TITLES IN WESTERN AUSTRALIA



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## ADMINISTRATION OF GEOTHERMAL TITLES IN WESTERN AUSTRALIA

### 1 INTRODUCTION

This report outlines the legislative provisions relating to geothermal exploration and development in Western Australia and the relevant administrative processes involved.

#### 1.1 Background

Management of geothermal exploration and development in Western Australia is primarily the responsibility of Minister for Mines and Petroleum through the Department of Mines and Petroleum (DMP).

Ownership of geothermal energy resources in Western Australia is vested in the Crown (*Petroleum and Geothermal Energy Resources Act 1967* s9 and s10). However, exploration and development is carried out by the private sector. A system of allocating the rights of access to these resources is in place, which both assists the explorers/developers and provides long-term benefits to the community. The title system provides the framework for this allocation. The title issued defines the rights and the obligations of the government and the explorer/developer and provides the security of access to resources essential for the large capital investments required for exploration/development to occur. The rules for access to land and security of tenure are embodied in the State's geothermal legislation.

#### 1.2 The Nature of Geothermal Titles

Vacant geothermal exploration areas are allocated initially by publicly advertising areas, in terms of a number of graticular blocks (each 5 minutes of latitude by 5 minutes of longitude), as being available for application for the grant of Geothermal Exploration Permits. Grant of such permits is made on merit, consideration being given to the extent and appropriateness of the work proposals, together with the applicant's technical and financial ability.

In all cases, the holders of exploration and development titles are required to meet work commitments and comply with the conditions of approval to retain the rights to explore.

The holder of a Geothermal Exploration Permit has a statutory right to the grant of a Geothermal Production Licence for a commercial resource or a Geothermal Retention Lease if the resource is not presently viable but likely to become so in 15 years.

Titles issued for the actual extraction of geothermal energy are issued subject to appropriate conditions relative to safety, resource management, protection of the environment, etc.

An applicant for a Geothermal Production Licence is required to submit a notice outlining the nature of the proposed development, the method of operation and its environmental impact.

Further approvals must be obtained before any production can commence.

#### 1.3 Land Tenure Considerations

The conditions upon which geothermal exploration may occur vary depending upon the nature of land tenure.

Geothermal exploration and development titles may be granted over Crown land, pastoral land, reserved land and private land (s15). Entry into reserved land requires the written consent of the Minister for Mines and Petroleum who must first confer with the Minister responsible for the reserve land. Similarly, entry into private land for exploration and production can only be undertaken once compensation (if any) has been agreed to with the landowner. If compensation cannot be agreed, either party may refer the matter to the Local Court.

Legislative provisions and administrative procedures have been developed to particularly control access to Aboriginal reserve land. An entry permit must first be obtained under the Aboriginal Affairs Planning Authority Act from the Minister for Aboriginal Affairs.

Places of cultural and spiritual importance are protected under the *Aboriginal Heritage Act 1972 (WA)*.

### 2. ADMINISTRATION OF GEOTHERMAL TITLES

In fulfilling its responsibilities under State administrative arrangements, DMP:

- Administers competitive acreage releases based upon work program bidding.
- Assesses the appropriateness of exploration, development, and production methods.
- Regulates and oversees geothermal energy activities of title holders to ensure that they are conducted safely and in an acceptable environmental manner.
- Ensures that administrative processes and title holders respect the legitimate rights of landowners and other land users.

Geothermal titles are granted subject to conditions, which require separate submissions for each phase of exploration activity so that the requirements of other land owners and users who may be affected can be addressed. For example, a survey affecting an Aboriginal reserve would require consultation with the Aboriginal Affairs Planning Authority, which in turn would consult with the communities so affected.

Unlike mineral titles, the government from time to time invites interested parties to bid for geothermal exploration acreage. It is a competitive bidding process (although not all areas attract multiple bids), and the applicant who proposes the most comprehensive work program, and is both financially and technically able, is awarded a title.

### 3 LEGISLATION

Geothermal exploration and development in Western Australia is regulated and administered under the *Petroleum and Geothermal Energy Resources Act 1967*.

### 4. GEOTHERMAL TITLES

The Geothermal titles can be divided into exploration and development categories with development title evolving from the exploration titles. Exploration Permits are awarded by way of a competitive bid system. Applicants propose a program of exploration work for an area and, if that applicant is successful (on the basis of the work proposed and the ability to undertake the work), a permit is awarded which converts that offer of work into a firm commitment.

Once a geothermal energy resource is identified, the permit holder has the right to convert that resource to a production title (e.g. s53 *Petroleum and Geothermal Energy Resources Act 1967*) or, if that discovery is presently uneconomic, it may be retained for future use as a Retention Lease (e.g. s48 (B) *Petroleum and Geothermal Energy Resources Act 1967*).

Petroleum titles and geothermal titles may subsist in respect of the same blocks. An endorsement on all petroleum and geothermal titles will require applicants to enter into consultative discussions with existing title holders to ensure a constructive working relationship. Applicants will receive notification if the title overlaps.

The various titles are as follows:

#### ***Petroleum and Geothermal Energy Resources Act 1967***

***Geothermal Exploration Permit (GEP)*** – authorises the holder to explore for geothermal energy and to carry out such operations and execute such works as are necessary (s38). Provided the conditions of the permit are fulfilled the permittee has the right to renew the permit on a reduced area basis (s42).

By conditions to the permit the permittee is obliged to fulfil the promised work program in a timely manner (ss43 (2)), in accordance with good oil field practice and securing the health and safety of workers (s91).

***Geothermal Drilling Reservation (GDR)*** – authorises the holder to drill for geothermal energy resources and to carry out such operations and execute such works as are necessary for that purpose (s43 (D)).

The holder of a drilling reservation may extend the term to accommodate further drilling (s43 (F)) and, as with permits, is obliged to drill the commitment well(s) in accordance with good oil field practice.

***Geothermal Retention Lease (GRL)*** – is a holding title although it authorises the holder to continue to explore for geothermal energy and to carry on such operations and execute such works as are necessary for that purpose (s48(C)).

Retention Leases are granted over the blocks comprising a geothermal energy resource (s48A), which is currently not economic. Depending on circumstances further exploration work may be undertaken. However the lessee is obliged to undertake re-evaluation studies on the commercial viability of the geothermal energy resource as required from time to time by the Minister (ss48 (H)(3)).

***Geothermal Production Licence (GPL)*** – authorises the holder to recover geothermal energy from the licence area, explore for geothermal energy, and to carry on such operations as are necessary for that purpose (s62).

Geothermal Production Licences are granted over the blocks comprising a commercial geothermal energy resource and usually emanate from a Geothermal Exploration Permit, Drilling Reservation, or Retention Lease (s50 and s50 (A)). The Geothermal Production Licence is subject to the conditions imposed on the grant of title (s66).

***Geothermal Special Prospecting Authorities (GSPA)*** – allow limited prospecting for geothermal energy but do not authorise the drilling of a well (s105). Geothermal Special Prospecting Authorities are granted subject to conditions, which control the extent of work (ss105 (4)) and are for a maximum of six months (ss105(6)).

**Geothermal Access Authorities (GAA)** – allow the holder of a permit, drilling reservation, lease or licence to conduct exploration activities outside their areas. This includes the drilling of deviated wells (s106). As with Geothermal Special Prospecting Authorities, a Geothermal Access Authority is controlled by conditions (ss106 (5)) and is limited in time to the operation necessitating the access (ss106 (7)).

All titles are issued with an endorsement, which outlines the necessity to observe the requirements of other land holders and users and of the *Aboriginal Heritage Act 1972 (WA)*.

The terms of the various petroleum titles are summarised in Appendix 1.

## 5. APPLICATION AND GRANT PROCESSES

### 5.1 *Petroleum and Geothermal Energy Resources Act 1967*

#### **Geothermal Exploration Permits and Geothermal Drilling Reservations**

Geothermal Exploration Permits are granted by the Minister following a competitive bid system. Notice is published in the Government Gazette inviting applications for either specified areas or any vacant area within the State (s30).

Applicants pledge a program of work and the grant is made (or not) on the efficacy of that work program. Consideration is also given to the technical and financial ability of the applicant (s31).

#### **Geothermal Production Licences and Geothermal Retention Leases**

Geothermal Production Licences and Geothermal Retention Leases are granted over the blocks containing geothermal energy resources within Geothermal Exploration Permits and Geothermal Drilling Reservations to the holder of those titles as a matter of right upon application but subject to conditions (s54 and s48B respectively). Geothermal Retention Leases are granted in circumstances where the geothermal energy resource is not presently economic but is likely to be within 15 years.

#### **Geothermal Special Prospecting Authorities**

Geothermal Special Prospecting Authorities (GSPA) may be granted for exploration work (other than drilling a well) preliminary to an applicant making a bid for a permit or drilling reservation. These authorities are limited in time to a specific exploration activity (e.g. a seismic survey) and cannot be dealt with, i.e. cannot be transferred or encumbered. More than one authority can be granted over the same area (s105).

GSPAs may also be granted with an acreage option. This option provides the holder the exclusive right to apply for a geothermal exploration permit or geothermal drilling reservation. The request is usually limited to 6 months following the expiry of the GSPA.

#### **Geothermal Access Authorities**

Geothermal Access Authorities (GAA) may be granted to holders of Geothermal Exploration Permits, Drilling Reservations, Leases, Retention Leases and Special Prospecting Authorities when limited access into adjacent areas is required. Geothermal Access Authorities can also accommodate wellheads from directional drilling into another area. Geothermal Access Authorities are capable of being transferred and otherwise dealt with (s106).

## 6. GEOTHERMAL OPERATIONS

### 6.1 **Permits Licences and Leases**

Operations under geothermal exploration permits and leases may consist of geophysical surveys (such as seismic and gravity), and the drilling of wells. All geothermal titles are subject to conditions, which require the title holder to obtain Departmental approval before commencing any field operations. At the time an application for a particular operation (e.g. drilling of a well) is made, a detailed examination of the area, which is the subject of the operation, is undertaken. Any referrals to other parties, which are likely to have an interest in the land, are made at this time either directly by the titleholder or by the DMP. Conditions protecting other interests are likely to be applied at that time.

### 6.2 **Exploration**

Geothermal exploration operations for onshore areas are relatively non-intrusive. In fact, field operations only occupy a small percentage of the six year permit term, with most of that time being occupied by office studies, computer modelling, and laboratory studies. A seismic survey of some 50 km would possibly take two to three weeks, and the drilling of a well up to four weeks.

Drilling and seismic surveys are subject to stringent conditions that are imposed by way of a Ministerial direction, which has the full authority of the Act (s95).

## 6.3 Production

Licence operations relate to the installation of production equipment and the recovery of geothermal energy. Separate approval is also required to install plant and equipment and to commence recovery operations.

The production facility in a geothermal field would consist of pumps, flow lines, and perhaps storage tanks. In all, that facility would only occupy a few hectares of a typical production licence.

## GEOTHERMAL TITLES

### SUMMARY OF GEOTHERMAL TITLES

### APPENDIX 1

TITLE	TERM	AREA	RIGHTS	OBLIGATIONS	CONDITIONS
Geothermal Exploration Permit	6 year initial term; 5 year renewal terms (on a reduced area basis).  Maximum of two renewals.	160 blocks maximum.	To explore for geothermal energy.  To convert any geothermal exploration permit to a geothermal production title or retention lease (if presently uneconomic).	To fulfill the work commitment on which the grant of title was made and in the time frame prescribed.  To conduct operations in accordance with good oil field practice.  To provide a safe working environment for employees.  To pay annual fee.	Work commitments.  Field operations, installation of equipment not to be undertaken without approval of Minister.  Entry onto lands where native title rights and interests in that land have not been fully extinguished only with consent of native title holders or registered native title claimants for such land.  Payment of royalty on geothermal energy produced.  Environmental protection.  Compliance with enabling Act, regulations and directions.
Geothermal Drilling Reservation	3 years (plus 12 month extension period if appropriate).	Corresponds to potential size of prospect (usually 3-4 blocks).	As for Geothermal Exploration Permits.	As for Geothermal Exploration Permits.	As for Geothermal Exploration Permits.
Geothermal Retention Lease	5 year term. Right of renewal for subsequent 5 year periods.	Corresponds to size of geothermal energy resource (usually 3-4 blocks).	To explore for geothermal energy to convert to a production title once economic viability confirmed.	As for Geothermal Exploration Permits but also obliged to conduct economic viability studies as requested.	As for Geothermal Exploration Permits.
Geothermal Production Licence	Indefinite term.	Corresponds to size of geothermal energy resource (usually 3-4 blocks).	To recover geothermal energy.	To recover geothermal energy in accordance with directions of Minister.  To conduct operations in accordance with good oil field practice.  To provide a safe working environment for employees.  To pay annual fee.	Pay royalty at prescribed rate.  Field operations, installation of equipment not to be undertaken without approval of Minister.  Entry onto lands where native title rights and interests in that land have not been fully extinguished only with consent of native title holders or registered native title claimants for such land.  Environmental protection.  Compliance with enabling Act, regulations, and directions.