SOLAR FARM

GUIDANCE FOR LOCAL GOVERNMENT IN PLAN MAKING

Queensland Treasury

Planning Group INVESTED IN PLANNING FOR YOUR FUTURE



Government

© The State of Queensland (Queensland Treasury) 2020

Licence:

This document is licensed under a Creative Commons Attribution (CC BY 4.0) International licence.



To view a copy of this licence, visit http://creativecommons.org/licenses/by/4.0/

Attribution:

Content from the Queensland Treasury should be attributed to:

The State of Queensland (Queensland Treasury) Queensland Treasury.

ISSN 1837-2848

normeter Translating and interpreting assistance

The Queensland Government supports and encourages the dissemination and exchange of information. However, copyright protects this publication. The State of Queensland has no objection to this material being reproduced, made available online or electronically but only if it is recognised as the owner of the copyright and this material remains unaltered.

Contents

1.0 Introduction		4
1.1	Background	4
1.2	Purpose of the guidance material	4
2.0	Solar farms – an overview	5
2.1	Locational requirements	6
2.2	Grid connection	6
2.3	Energy storage systems	7
3.0	Planning framework in Queensland for solar farms	8
3.1	The state planning instruments	8
3.2	Planning Regulation 2017	8
3.2.1	Use definitions	8
3.2.2	Zones	9
3.2.3	Development applications	10
3.2.4	Other applications and agreements	10
4.0	Plan-making considerations	11
4.1	Site visits	11
4.2	Mapping resources / data	11
4.3	Assessing competing land uses	12
4.3.1	Strategic analysis	
4.4	Strategic framework	13
4.5	Categories of assessment	14
4.6	Zones v. overlay approach	15
4.7	Codes - drafting assessment benchmarks	15
4.7.1	Addressing competing land uses - agriculture	
4.7.2	Glint and glare	
4.7.3	Visual amenity	17
4.7.4	Traffic and transport	17
4.7.5	Noise	
4.7.6	Flooding and stormwater	
4.7.7	Operational requirements for solar farm development	
4.7.8	Other impacts	19
4.8	Other tools	20
4.8.1	Temporary local planning instrument (TLPI)	20

5.0	Development Assessment	
5.1	Assessment approach	21
5.2	Possible referrals	21
5.3	Information requests / useful reports	
5.4	Conditions for solar farms	23
6.0	Supporting information	

1.0 Introduction

1.1 Background

The Queensland Government is committed to a target of growing renewable energy generation to 50 per cent by 2030 under the *Powering Queensland Plan*. Queensland recognises the part it needs to play in the national and international effort to reduce emissions.

The provision of solar energy on a commercial scale is a relatively new industry in Australia. However, Queensland is experiencing significant investment in large-scale solar generation.

Queensland has a natural advantage in developing its solar industry, given its strong solar resources, particularly in areas located close to existing electricity network infrastructure.

Local governments can support this emerging industry by identifying suitable areas for these developments and establishing appropriate planning provisions in their planning instruments to ensure impacts are appropriately managed.

1.2 Purpose of the guidance material

The Queensland Government has prepared the **Queensland Solar Farm Guidelines** to help achieve positive outcomes as the large-scale solar sector develops. Large-scale solar farm refers to a solar photovoltaic (PV) facility that generates over five megawatts (MW) of electricity for supply to an electricity grid. Solar PV is the type of technology typically used by solar farms in Queensland.

The guidelines have been developed in two parts, for different target audiences:

- **Part 1: Guidance for local governments** intended to provide local governments with information on plan-making and development assessment to assist their role as assessment manager for large-scale solar farm developments.
- Part 2: Practical guidance for communities, landowners and project proponents intended to assist communities, landowners and project proponents by providing information about the legislative framework which governs solar farm developments in Queensland, the planning and development process, and practical guidance for effective community engagement practices. It provides further advice for solar farm proponents and communities.

This Part 1 guidance material is not intended as an extensive resource on solar farm development and operation. Rather, the intention is to provide an overview of the planning issues that a local government may wish to investigate when drafting or amending a planning scheme. As solar farms are a relatively new industry in Queensland, local communities may not yet understand their operation and what are actual and perceived impacts. This guidance material may be used to inform local government advice to communities on solar farm impacts, and how these impacts are considered as a part of planning scheme amendments and the development assessment process.

This guidance material supports the **<u>State Planning Policy</u>** (SPP) and associated SPP state interest guidance material for Energy and Water Supply.

2.0 Solar farms – an overview

Currently, most solar farms in Queensland use photovoltaic (PV) technology, which consists of mounted PV solar panels that convert sunlight into electric current using semi-conducting materials.

The electricity generated must be used as it is generated or converted into another form of energy that can be stored. Unlike traditional power sources that provide a constant supply of electricity, the final output of the solar farm will vary depending on the strength of solar intensity and climatic conditions.

Solar farms can have a long lifespan of 20 years or more depending on the productivity of the PV solar panels and other components, the climatic conditions, ongoing maintenance of the solar farm and advancements in new technology.

The potential lifespan is an important consideration for land use planning.

While no solar farms have reached decommissioning in Queensland, international literature indicates decommissioning plans typically require the removal of infrastructure and land remediation.

A solar farm development generally consists of:

• **PV solar arrays attached to a mounting structure:** Collections of solar panels, known as solar arrays, are attached either to fixed tilt mounts or trackers which are designed to follow the sun's movement to maximise sunlight absorption.

The type of solar system technology chosen is relevant to determining the size, scale and co-location opportunities of the solar farm.

For example, depending on the efficiency of the technology used, larger spacing (i.e. more land) may be required for tracker systems (which rotate on axes) to account for their movement and to avoid shading as they track the sun.

• Electrical infrastructure: PV solar panels produce a direct current (DC) which must be converted to alternating current (AC) by an inverter system and fed through a transformer to increase the voltage to a level suitable to connect to an electricity grid.

Electrical infrastructure for a solar farm typically includes an inverter system, transformer, substation, overhead transmission lines and/or underground cables which may be on or off the site.

• Other infrastructure and activities: These typically include maintenance activities and infrastructure such as buildings, security (such as security fencing and alarm installations), and access tracks for the operation and ongoing maintenance of the solar farm.

Workers' accommodation and energy storage systems (battery storage) may also form part of the solar farm.

• Further discussion about these parts are included in section 3.2.1 – Use definitions.

With appropriate planning, there are a number of benefits associated with the solar farm development, including utilising a renewable energy source and low carbon technologies to secure energy supply. This contributes to reduced greenhouse gas emissions.

Solar developments can also facilitate local jobs and investment in local communities and businesses, particularly in regional areas. They may also provide supplementary incomes to assist in maintaining the viability of farms or small communities.

2.1 Locational requirements

Solar farm development locations are limited primarily by their access to transmission and distribution networks. However, there are a number of other relevant locational considerations for determining a suitable solar farm site including:

- Land characteristics clear, flat or gently sloping land, low hazard risk, particularly a low flooding risk.
- **Distance to, and capacity of, the grid** proximity to the electricity grid is needed for a solar farm to be economically viable. This can range from 2km up to 10km. Capacity of the electricity network also limits the number of new facilities that can be accommodated.
- Discussions with network service providers may assist in determining proximity to existing and future transmission and distribution corridors.
- Land use constraints whether the land is Agricultural Land Classification (ALC) Class A and Class B land, Important Agricultural Areas, and irrigated agricultural land each of which has differing needs, priorities within the community and constraints.
- Other land use constraints also need to be identified and fully considered such as biodiversity, cultural heritage or land subject to mining leases or adjoining residential areas.
- Climatic conditions high solar irradiation levels, low annual rainfall and low cloud cover.
- Proximity to centres of population to generate demand and provide a local work force.
- Safe and efficient operation of the road network consider capacity and suitability of the road network including traffic impacts during the construction and decommissioning phases of the development.

Sites that meet these characteristics are typically located in rural areas.

The physical size of a solar farm will depend on the available solar resources, climatic conditions and intended capacity of the solar farm. These factors in turn affect the technology and mounting infrastructure used, the electrical infrastructure for connection to the grid and/or energy storage (batteries).

2.2 Grid connection

A grid connection is essential for ensuring a solar farm's viability. Solar farms can be connected to the grid via a local substation, the transmission network or distribution network. The transmission network (Powerlink) transfers electricity from power generation sources to the transmission grid and bulk supply substations or switchyards. The distribution network (Energy Queensland) takes electricity to zone substations for supply to the low voltage network.

The grid connection process also assists in safeguarding network stability, performance and system security. The process is regulated by the Australian Energy Market Operator (AEMO) and the National Electricity Rules. It requires a separate application to AEMO and is not included in the development application assessed by local government.

Development applications for solar farms may be assessed without a confirmed grid connection, as it may not be possible to specify or finalise grid connections at the time of the development application. The final design and connection point may change following technical studies and advice provided as part of the grid connection process.

Proponents should be encouraged to undertake early discussions with the network service providers (Powerlink or Energy Queensland) to determine the feasibility of a future grid connection and avoid the need for a later change to the development application or approval.

Infrastructure associated with solar farm i.e. transmission lines, may need to cross land held by multiple owners, requiring easements across multiple properties. Site selection and facility design should look to

minimise these impacts. Local governments should use the pre-lodgement process to encourage applicants to seek this advice.

If necessary, local government can also seek third party advice from network providers through the assessment of a development application.

2.3 Energy storage systems

Electricity must either be consumed as it is generated or stored. Solar farm proponents may introduce energy storage capabilities in addition to connection to an electricity grid.

Anecdotal evidence suggests that electrochemical battery storage is currently favoured due to its modular design which allows a facility to increase its storage. These are typically housed within a shipping container on the same site as the solar farm. Energy storage systems are advancing with technology, and other current options include mechanical flywheels that harness rotational energy, compressed air energy, thermal energy storage and pumped hydro-power storage systems.

It is also possible that, in the future, energy storage may occur off site and become a stand-alone proposal. There may be more than one solar farm that feeds into the energy storage, allowing electricity to be released to the grid on demand.

3.0 Planning framework in Queensland for solar farms

Local governments are responsible for regulating the development of solar farms through their planning scheme. The growth in the solar farm industry provides a catalyst to consider how planning schemes anticipate and regulate solar farms and renewable energy. A planning scheme with a clear policy position will support local government in the assessment of solar farm developments to ensure potential impacts can be managed.

3.1 The state planning instruments

Under the *Planning Act 2016*, a local government must consider the state's land use planning interests as expressed in the state planning instruments, when making or amending its planning scheme. The state planning instruments are the SPP and any regional plan relevant to the local government area.

The energy and water supply state interest in the SPP includes a policy that local government is to enable the development and supply of renewable energy (such as solar farms) at the regional, local and individual scale in appropriate locations. There are likely to be other relevant state interests in the local government area that will need to be balanced against this interest, such as agriculture, biodiversity, cultural heritage and mining and extractive resources.

The SPP does not prioritise one state interest over another. This prioritisation occurs at the local level through local government planmaking, enabling it to be more fine-grained and specific to differing communities. The local government should balance the merits of supporting solar farms and any potential impacts with the other economic, environmental and community aspirations across its local government area.

A regional plan is a long-term strategic plan that provides the regional context for the state interest policies. The relevant regional plan may provide further considerations to inform a local government in balancing state interests in the local context.

3.2 Planning Regulation 2017

3.2.1 Use definitions

The Planning Regulation 2017 provides the use terms that must be included in local government planning schemes, which may be amended from time to time. These use terms apply to the extent of any inconsistency with the planning scheme. At the time of writing, solar farms fall under the defined use term 'renewable energy facility', being:

- a) the use of premises for the generation of electricity or energy from a renewable energy source, including, for example, sources of bioenergy, geothermal energy, hydropower, ocean energy, solar energy or wind energy; but
- b) does not include the use of premises to generate electricity or energy to be used mainly on the premises.

Workers' accommodation and energy storage systems may also form part of the solar farm but are not included in the definition of renewable energy facility. It is for a local government to determine if these uses are **ancillary** to the use of the solar farm, or are not, and therefore require separate development applications. The proximity of these uses to the site of the solar farm and the impacts of these uses could be a determining factor as to whether they are considered ancillary.

The electricity infrastructure required to connect renewable energy facilities to the network is separately defined and the impacts of this infrastructure will also need to be assessed by a local government. The definition relevant will depend upon the type of connection sought from the network service providers, i.e. to a substation or the transmission network or the distribution network. The infrastructure may be defined under the Planning Regulation 2017 use term 'major electricity infrastructure' being:

- a) the use of premises for—
 - (i) a transmission grid or supply network; or
 - (ii) a telecommunication facility, if the use is ancillary to the use in subparagraph (i); but
- *b)* does not include the use of premises for a supply network or private electricity works stated in schedule 6, section 26(5), unless the use involves—
 - (i) a new zone substation or bulk supply substation; or
 - (ii) the augmentation of a zone substation or bulk supply substation that significantly increases the input or output standard voltage.

Under the Planning Regulation 2017 the use term 'substation' is defined as:

the use of premises-

- a) as part of a transmission grid or supply network to—
 - (i) convert or transform electrical energy from one voltage to another; or
 - (ii) regulate voltage in an electrical circuit; or
- (iii) control electrical circuits; or
- (iv) switch electrical current between circuits;

The infrastructure required to connect renewable energy facilities to the network may also be defined as 'minor electricity infrastructure'. This administrative term is defined under the Planning Regulation 2017 as:

Development for a supply network or for private electricity works that form an extension of, or provide service connections to, properties from the network, if the network operates at standard voltages up to and including 66kV, other than development for—

- a) a new zone substation or bulk supply substation; or
- b) the augmentation of a zone substation or bulk supply substation that significantly increases the input or output standard voltage.

Development that is minor electricity infrastructure is development that a local categorising instrument is prohibited from stating is assessable development under schedule 6, section 26(5) of the Planning Regulation 2017. This means that a planning scheme cannot include provisions for this type of development and a local government does not assess this component of a development application.

The above excerpts from the Planning Regulation 2017 have been provided for ease of reading, however it is recommended that local governments and proponents refer directly to the Planning Regulation 2017 for current use definitions, as regulations are amended from time to time.

3.2.2 Zones

Renewable energy facilities such as solar farms are typically located in rural zones, however solar farms are not a traditional rural land use. The Planning Regulation 2017 provides the zones and zone purpose statements that must be used in planning schemes.

The purpose of the rural zone is to:

- a) provide for rural uses and activities; and
- b) provide for other uses and activities that are compatible with:
 - (i) existing and future rural uses and activities; and

- (ii) the character and environmental features of the zone; and
- c) maintain the capacity of the land for rural uses and activities by protecting and managing significant natural resources and processes.

Local government may also include overall outcomes for the zone to provide more detail about the development outcomes local government is seeking. While the overall outcomes must be consistent with the purpose statement of the zone, this is an opportunity to clarify where solar farms or other renewable energy facilities may be supported in the rural zone for example, in identified precincts. This may include, explaining how non-rural uses may be compatible where they do not compromise the long-term use of the land for rural purposes.

3.2.3 Development applications

The following development applications under the *Planning Act 2016* are likely to be required to establish a solar farm:

- Material change of use for renewable energy facility
- Material change of use for associated major electricity infrastructure
- With advancements in technology, it is possible that there may be future applications seeking a material change of use for battery storage on the same or separate site.
- As outlined in section 2.2 above, it is important to note that there is no requirement for these applications to be made at the same time, or by the same applicant.
- Development assessment considerations are discussed further in section 5.0 Development Assessment.

3.2.4 Other applications and agreements

In addition to securing a development approval under the *Planning Act 2016*, the solar farm proponent may require other approvals and agreements outside of the scope of local government. While some of these are listed below, it is up to the proponent to undertake necessary investigations to determine the required approvals and permits.

- **Confirmation of relevant purpose** Prior to lodging a development application, if the proposal involves the clearing of native vegetation, a determination about whether the development is for a relevant purpose under 22A of the *Vegetation Management Act 1999* (Qld) will be required.
- Environmental approvals A permit maybe required for the removal and/or relocation of protected flora and fauna under the *Nature Conservation Act* 1992 (Qld).
- **Duty of care** The proponent must exercise due diligence and duty of care to ensure all reasonable and practicable measures are taken to avoid or minimise harm to Aboriginal cultural heritage in relation to the *Aboriginal Cultural Heritage Act 2003* (Qld), the *Torres Strait Islander Cultural Heritage Act 2003* (Qld), and the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* (C'wlth).
- Grid connection and associated approvals and agreements under the National Electricity Rules Connection agreements must be applied for and entered once a formal connection has been approved by the Network Service Provider.
- Tenure / land owner consent for transmission infrastructure on State owned land There are several circumstances where the Department of Natural Resources, Mines and Energy may need to provide owners consent, including land that is a road or stock route, unallocated state land or land administered on behalf of the state.
- Approvals to run private electricity infrastructure along state-controlled roads or local roads Discussions with the Department of Transport and Main Roads will assist to determine relevant approvals associated with state-controlled roads.

- **Transport Infrastructure Act 1994** Approvals may be required under the *Transport Infrastructure Act 1994* (TIA) for access to the state-controlled road, including section 33 Prohibition of road works and section 62 Management of access. It is recommended discussions with the Department of Transport and Main Roads are undertaken to determine relevant approvals.
- **National Heavy Vehicle Regulator** Permits regarding heavy vehicle access may be required. It is recommended that proponents liaise with the National Heavy Vehicle Regulator to determine permit requirements.
- Commonwealth Environmental Protection and Biodiversity Conservation Act 1999 Approvals may be required if the development has the potential to impact on a matter of national environmental significance.

4.0 Plan-making considerations

The assessment of solar farm developments can be challenging, particularly where planning schemes do not include specific codes or measures against which solar farm proposals can be assessed. Local governments can respond by preparing or reviewing their planning schemes to anticipate solar farms and include specific provisions outlining the preferred policy position and measures.

It is recommended a local government give early consideration for how it wishes to consider solar farms in its local government area. Using the plan-making process avoids strategic land use decisions being determined by individual development applications.

4.1 Site visits

Each local government should consider what information it needs to make an informed decision about solar farms in consultation with its community. Research may include an examination of the history of solar developments within the region and discussions with neighbouring local governments to gain insight into their experiences with these developments.

Visiting established solar farm sites or solar farms that are currently under construction may be beneficial to help inform an understanding of impacts and benefits. Seeing 'real life' examples should also help the process of understanding whether the planning scheme can adequately respond to the impacts of this type of development or whether amendments may be required.

4.2 Mapping resources / data

There are several mapping resources that collectively provide information on the suitability of land for the development of solar farms and can assist in anticipating where there is likely to be greater demand for solar farms. These mapping resources factor in land characteristics, proximity to the grid and other supporting infrastructure, current land uses and climatic conditions. Examples include:

- Australian Renewable Energy Mapping Infrastructure (AREMI) mapping
- electricity generation mapping
- State Planning Policy state interest mapping, including mapping to major electricity infrastructure.

There are also several mapping resources that collectively provide information on land that is important to current and potential agricultural production, mining resources and licences and other land use values:

- Web-based Agricultural Land Audit (WALI)
- Mines Online Maps

• the State Planning Policy state interest mapping.

Links to these resources are provided in section 6.0 of this guideline (Supporting Information).

4.3 Assessing competing land uses

Local governments will have to balance solar farm development against a range of other existing uses or matters such as agriculture, mining, extractive industry, cultural heritage and biodiversity as well as existing residential areas.

A planning scheme should already contain information about how these matters are supported or not supported in different locations in a local government area, but with the introduction of a new use it may be beneficial to review these sections of the planning scheme to ensure the intent reflects current community needs and sentiment.

These competing land uses, and the potential impacts will vary for each local government area. Local governments are best placed to understand the local context to respond and balance these interests.

4.3.1 Strategic analysis

Large-scale solar farms have a number of site selection criteria, as outlined in section 2.1, that provide a strong opportunity for planning schemes, through strategic analysis, to consider preferred locations for solar developments that minimise adverse social and environmental impacts.

Through undertaking a strategic analysis mapping exercise, using a geographical information system (GIS), a local government could determine areas with suitable conditions for a solar farm and areas of constraint.

Given the site location requirement for solar developments to be within proximity of transmission infrastructure, this analysis would be limited to a study corridor of up to 10km around the transmission and distribution networks within the local government area. The network service providers may be able to assist in providing this information.

Once the study area has been determined, areas of constraint can be identified, which may suggest areas that are not ideal for solar development or areas that may require additional mitigation measures to reduce potential land-use conflicts. The types of factors a local government might consider as part of the strategic analysis are:

- **important agricultural areas** land currently used for high value agricultural land uses, high quality irrigated cropping land, Agricultural Land Classification (ALC) Class A or B land, strategic cropping areas, priority agricultural areas
- **significant environmental areas** land mapped as protected vegetation, matters of national, state and local environmental significance, koala habitat, waterways, wetlands
- **residential and urban areas** existing and planned residential areas, especially those able to be readily serviced by infrastructure network, proximity to existing residential dwellings
- **existing or planned state and local transport network** including State-controlled roads, rail and local road infrastructure
- highly visible sites those seen from local tourist vistas, lookouts, tourist routes, state-controlled roads
- **topography** sloping land with a grade greater than 5%
- areas subject to natural hazards including coastal hazard areas, land subject to flooding and bushfire
- potential resource areas sites covered by mining leases, exploration permits, key resource areas
- efficient, effective and innovative infrastructure use consider if there are opportunities for infrastructure integration, co-location or use of existing infrastructure such as contaminated land or disused

land fill or extractive response sites or land close to operational mines with good access to existing infrastructure where solar farms could be investigated.

- Alternatively, innovative approaches and co-location may reduce the need for additional land areas. For example:
- the Jamestown solar farm in South Australia 'floats' on a wastewater treatment facility. This arrangement
 addresses water quality issues for treated wastewater as it prevents water evaporation and outbreaks of
 blue-green algae.
- the Kidston Renewable Energy Hub will include wind, solar and pumped hydro technology on the former Kidston gold mine. The Kidston solar project phase one was constructed on former tailings storage facility. The site also has remaining infrastructure such as existing transmission line, substation, access road, storage facility and airport strip.

The results of this analysis will provide local governments with strong baseline information on areas where solar farms may be supported on a local government scale, for those local governments wishing to attract the industry.

It will also identify areas that might not be suitable for solar development considering other competing priorities and features of the land.

This information will also allow local governments to determine clear and robust provisions in their planning scheme to regulate or facilitate potential solar farm applications.

Suitable sites or areas can then be assessed further for their suitability through the development assessment process or may be identified in the planning scheme to assist in attracting investment and provide greater certainty about these developments.

4.4 Strategic framework

The strategic framework of the planning scheme sets the policy direction and provides a basis for ensuring appropriate development occurs at the right time and in the right location in the local government area.

The strategic framework may require amendment to reflect the local government's policy position on renewable energy development as well as current community needs and sentiment. For example, renewable energy could be encouraged in areas identified in a strategic analysis as potentially suitable and can provide clear direction on areas where other values may be prioritised.

Note that the *Planning Act 2016* allows for policy positions in a strategic framework to be a consideration in development assessment where solar farms are impact assessable development. The strategic framework cannot be used to assess code assessable development applications as this assessment is bounded by the assessment benchmarks and any matters prescribed by regulation. Also, policy positions in the strategic framework cannot prohibit development - this can only be done through the Planning Regulation 2017.

Things to consider when preparing or amending a local planning instrument:

- What does the strategic framework currently say about renewable energy development, including solar farm development? Do the existing provisions provide clear direction about the local government's policy position relating to solar farm development?
- What is known about the possible benefits or impacts of solar farm development on other land uses in the local government area?
- What is known about the contribution of agriculture and associated agricultural industries to the local government area? How much agricultural land is required to sustain agricultural industries?
- What is known about the possible benefits or impacts of solar farm development on the local economy, environment, community and culture?

- How does this position support the SPP and any relevant regional plan?
- What are the community's views about impacts of solar farms?
- What needs to be regulated to achieve the strategic vision?

4.5 Categories of assessment

Planning schemes should prescribe both a category of development and a category of assessment for all components of solar farms. This enables the community and proponents to have certainty about the type of assessment and public consultation requirements when a development application is lodged. Local governments are therefore encouraged to review the category of assessment as a matter of priority.

In determining what category of assessment is appropriate for solar farms, local governments should consider the scale of the impact, the ability to include relevant assessment benchmarks to regulate the impact, alignment with the strategic intent of the planning scheme, together with the expected level of impact and community sentiment towards solar farms.

Solar farms would typically be identified in a planning scheme as assessable development (allowing local government to assess these applications, however, as for all uses in a planning scheme, the category of assessment for solar farms can vary within a local government area (code or impact).

Code assessment is a bounded assessment against the stated assessment benchmarks. There is no opportunity to assess or have regard to any other matters. There is a presumption in favour of approval where the assessment benchmarks are met. Code assessment may be determined for areas the local government has identified as appropriate for solar farms, as per a strategic analysis for example, co-located with similarly large-scale utility infrastructure, located on land free from constraints. If a local government is looking to facilitate solar farm development through this lower level of assessment, consideration should also be given to the category of assessment for the associated major electricity infrastructure.

Impact assessment is a broader assessment against the state assessment benchmarks as well as any other relevant matters, such as the strategic framework. Impact assessable applications are subject to statutory public consultation. Impact assessment may be determined for areas where a local government has identified a solar farm may be inconsistent with the intent of the zone, where other values might be prioritised or where the land is subject to constraints that may not be able to be mitigated, for example on Class A or B agricultural land.

While formal feedback on individual solar farm developments can be gained through statutory consultation on impact assessable applications, there are also opportunities for formal feedback on a local government wide scale through statutory consultation on proposed planning scheme amendments. A local government may also wish to consider other forums or ways to consult with and gauge the community's views on solar farms outside the planning scheme or development assessment process and in a less formal way – not all consultation needs to be statutory. The *Community engagement toolkit for planning* produced by the Department of State Development, Manufacturing, Infrastructure and Planning may be of assistance in determining appropriate methods of engaging with the community.

Things to consider when determining a category of assessment:

- Is the category of assessment appropriate for all forms of renewable energy?
- Is the category of assessment consistent for all elements of a solar farm development i.e. solar farm component and the electricity connection?
- Have there been areas identified through a strategic analysis that might be more suitable to support as solar farm or renewable energy project. Can these areas be identified or described so that a lower category of assessment can be applied, rather than a blanket zone wide approach?
- If code assessment is considered appropriate, are the assessment benchmarks identified clearly drafted and do they consider all aspects, specific to the solar farm development?

• How do existing categories of assessment reflect the community's expectations as to how solar farms are assessed and consulted on? What may need to change?

4.6 Zones v. overlay approach

The decision to regulate solar farm development through a zone approach or overlay approach, or both, will largely be determined on how the planning scheme is structured. Zones identify areas of similar or compatible land uses and identify the dominant land uses. Overlays indicate where a constraint, environmental value or opportunity affects development, and provide additional or more specific assessment benchmarks related to the identified purpose.

For example, a planning scheme might use a rural zone code to identify precincts to manage impacts on agricultural land, other planning schemes might achieve similar outcomes through the use of an agriculture overlay code. Whichever approach is taken, these planning scheme components should provide relevant assessment benchmarks to manage impacts of solar farm development on the agricultural land and other rural uses in that zone. This may include provisions which seek to ensure the solar farm is compatible with the landscape character of the area and that it does not compromise the long-term use of the land for rural purposes.

Things to consider when preparing or amending a local planning instrument:

- Based on a strategic assessment, are there particular locations in the local government area that are more suitable for solar farms than others? Will these locations be treated differently in the planning scheme?
- What are the community's views about the impacts of non-rural uses in the rural zone?
- If the local government wishes to support solar farms, how can appropriate sites for solar farm development be identified in the planning scheme?
- Does the planning scheme ensure other values and uses are appropriately protected? e.g. tourist vistas, scenic amenity areas.

4.7 Codes - drafting assessment benchmarks

Local government should consider if its existing planning scheme and assessment benchmarks sufficiently manage the impacts of a solar farm, by ensuring the appropriate location, siting, design and operation. The impacts outlined below represent those associated with a typical solar farm as described in section 2.0.

The assessment benchmarks in a planning scheme should have a relationship to the strategic framework. They provide more detailed requirements that ensure development is consistent with the strategic planning for a community. This is particularly important when development applications are code assessable.

4.7.1 Addressing competing land uses - agriculture

Agriculture is provided as one example of a land use whose provisions may need to be reviewed by a local government when considering solar development in the area. This review may be informed by a strategic analysis of agricultural land, the needs of associated agricultural industries and seeking advice from agricultural industries and the Department of Agriculture and Fisheries.

The context for planning for rural areas is complex. It needs to respond to viability of the rural sector, recognition of the need to consider food security, significant adverse conditions due to climate change and prolonged drought, mining and resource tenure / permit conflicts and increasing pressure of alternative land uses for rural land, such as renewable energy, extractive resources, vegetation management and urban expansion.

The loss of agricultural land or resulting loss of productivity because of impacts from large scale solar developments can also impact the viability of agri-processing facilities (e.g. animal processors, cotton gins, sugar mills etc.). Solar farms developed on agricultural lands should aim to be reversible and allow for land to be restored to its pre-developed state.

Things to consider when preparing or amending a local planning instrument:

- Do the assessment benchmarks reflect and give effect to the strategic framework?
- How does the planning scheme identify and protect agricultural land (ALC Class A and B land, Important Agricultural Areas, Strategic Cropping Land, Priority Agricultural Areas etc.) from non-rural uses?
- How does the planning scheme consider and protect against non-rural uses and reconfiguration of a lot that may result in the fragmentation of ALC Class A and B land?
- How does the planning scheme identify and protect existing agriculture-related infrastructure such as drainage, irrigation or stock routes? How does the planning scheme support opportunities for co-location with development that is complementary to agricultural uses?
- What are the community's views about agricultural uses and their importance in the community?
- How does the planning scheme support the community's view?

4.7.2 Glint and glare

PV solar panels are designed to have low levels of reflectivity enabling as much light as possible to be absorbed thereby increasing electricity production and efficiency. To limit reflection, PV panels are constructed of dark, light absorbing materials and may be covered with an anti-reflective coating. The metal frames and mounting structures for panels may have glint and glare impacts, although these components are usually covered by the solar panel itself or limited to a small surface area. Single axis tracker designed developments, through their physical arrangement site, have been found to generate less glare than fixed tilt developments.

Glint and glare impacts should be considered on a case-by-case basis to ensure appropriate mitigation of reflection and glare impacts from solar panels, in particular for road users and aircraft pilots.

Some planning schemes may already contain code provisions that assess amenity impacts such as those caused by glint and glare, for instance through a rural zone code. Therefore, if the applicable codes are considered sufficient, no changes may be needed to the planning scheme to address this issue.

However, a local government may wish to consider the following to check glint and glare is sufficiently addressed under existing planning scheme provisions:

- Which planning scheme provision deals with glint and glare from a development of this nature and scale?
- How do existing planning scheme provisions address the potential for glint and glare resulting from the type and scale of development relevant to solar farms? What gaps in assessment benchmarks need to be addressed, and how?
- How do planning scheme provisions send clear signals to applicants about when a glint and glare assessment will be required? How can the requirements of what must be covered in a glint and glare assessment be made clear?
- How do mitigation measures in the planning scheme balance the level of risk presented by glint and glare with the viability of the development?
- How flexible is the planning scheme in dealing with applications where mitigation measures are unnecessary, for example where a solar farm is not located near sensitive uses and operational infrastructure (roads, aviation), and can be integrated into the existing landscape?

4.7.3 Visual amenity

In comparison to wind farms, solar farms have a low profile that typically does not exceed two to four metres above ground level. Visual amenity may be a consideration if the solar farm is to be located close to an area with high scenic amenity, viewsheds or vistas from key tourist roads or public spaces or an existing residential area. The impact of a solar farm on visual amenity may be caused by the appearance of large-scale site cover, in contrast to an area of high scenic amenity. Associated above ground infrastructure such as transmission lines may also require consideration. Given the highly subjective nature of this impact, not every solar farm proposal will require a visual impact assessment.

Landscape mitigation measures typically include:

- establishing a setback distance from boundaries with sensitive land uses, or areas of high scenic amenity to allow boundary vegetation
- retention of existing mature boundary vegetation or landscaped boundaries of the solar farm where there is an interface to a sensitive land use or area of high scenic amenity.

Typically, a planning scheme will already include provisions to ensure new development avoids, minimises or mitigates impacts to areas of identified high scenic amenity and setback requirements from sensitive land uses. If the planning scheme already includes provisions that address the impact of solar farm impacts on visual amenity, no changes may be required. Local governments should check the planning scheme codes.

However, a local government may wish to consider the following when preparing or amending a local planning instrument to ensure solar farms are appropriately considered:

- How do planning scheme provisions identify and protect areas of high scenic amenity (e.g. through overlays and/or local area plans)? Are these provisions sufficient to mitigate the impacts associated with solar farms?
- How do planning scheme provisions identify any landscape values and characteristics that need to be protected?
- How do planning scheme provisions send clear signals to applicants about when a visual impact assessment would be required to protect these values and characteristics?
- What planning scheme provisions need to be included to ensure development avoids or mitigates impacts to visual amenity?
- How do mitigation measures in the planning scheme balance the level of risk presented by visual amenity with the viability of the development? e.g. are there circumstances where mitigation measures are unnecessary?

4.7.4 Traffic and transport

The main impacts from solar farms on transport infrastructure and traffic occur during the construction and decommissioning phases of the development. Solar farms generate traffic movement that has the potential to impact on the road network, including state-controlled roads, railway corridors and railway level crossings.

During the operational phase, the road network is used to transport operational staff, maintenance equipment and plant (i.e. water trucks for cleaning of panels, repair equipment) to the site. Typically, this involves a small amount of daily vehicle movements involving light vehicles.

Planning scheme codes should already include adequate provisions to ensure new development avoids, minimises or mitigates impacts on local roads. Therefore, there may be no changes needed to the planning scheme to address this issue. Local government may also refer to the Department of Transport and Main Roads guideline, *Guide to Traffic Impact Assessment 2017* for further information on how to assess the traffic impacts of a proposed development (see section 5.0 of this guideline – Supporting information).

Things to consider when preparing or amending a local planning instrument:

- Which planning scheme provisions deal with traffic impacts from a development of this nature and scale?
- Can existing planning scheme provisions adequately address any adverse impacts on the safety and efficiency of local transport networks resulting from this type and scale of development?
- Do planning schemes provisions deal with managing of construction impacts of the development to ensure roads can be maintained or returned to a pre-construction standard?

4.7.5 Noise

Solar farms have relatively low noise emissions resulting from the operation of electrical equipment and maintenance activities. The primary source of noise from solar farms is during the construction phase of the project.

Things to consider when preparing or amending a local planning instrument:

• Can existing planning provisions adequately address any adverse impacts of construction and operation resulting from this type and scale of development?

4.7.6 Flooding and stormwater

Solar panels are impervious structures and at most times of the day will be in a position that allows water to fall or run off directly onto the ground. Due to the increase in impervious area, there is a potential for increased run off on the site and from the site.

Hydrological assessments should be undertaken during the assessment phase to determine site and off-site impacts, influence design and mitigation measures. Typically, local government planning schemes will contain adequate provisions around stormwater management.

Mitigation measures relate to site selection and design, such as maintaining existing contours and overland flow characteristics of the pre-developed site, as well as operational controls such as raising electrical and other susceptible equipment above the modelled flood level for the site.

Solar farms can provide beneficial outcomes, for example, the collection of overland flow for the purposes of irrigation or stock watering purposes (provided it is in accordance with the relevant Water Plan).

Things to consider when preparing or amending a local planning instrument:

- Which planning scheme provisions deal with flooding and stormwater impacts from a development of this nature and scale?
- How has the proximity of solar farm infrastructure to areas with a potential flooding or stormwater management risk, water resource catchments and water supply buffer areas been considered?
- How do existing planning scheme provisions appropriately avoid or mitigate the risk to people, property and infrastructure from this type and scale of development within a flood hazard area?
- Do existing planning schemes adequately address flooding and storm water issues for this type and scale of development to avoid or minimise impacts on environmental values?
- Does the planning scheme ensure that pre-development overland flow pathways, flow rates and quantities are maintained and there is no change to water quality (e.g. sediment, chemicals)?
- How are impacts avoided or mitigated through the scheme, for example, requiring separation (disconnection) of panels to maintain groundcover that promotes filtering and infiltration of overland runoff?

4.7.7 Operational requirements for solar farm development

Solar farms, like other types of development require consideration of the operational aspects associated with the development. Planning schemes are likely to already include provisions that will address the operational impacts of a solar farm but may benefit from a review to ensure these are adequate and relevant to solar farm developments.

Things to consider when preparing or amending a local planning instrument:

- How does the planning scheme require and review operational management practices to reduce impacts on the land and impacts on adjoining agricultural operations (avoiding or limiting chemical use, soil management, overland flow controls)?
- How does the planning scheme ensure construction management practices minimise impacts on soil such as:
 - storage of excavated soils and replacing these as part of decommissioning
 - opting for removable options for foundations for PV solar arrays, such as ground screws instead of buried concrete foundations
 - site configuration and material selection to avoid land fragmentation and to manage overland flow.
- How does the planning scheme require decommissioning activities such as removing infrastructure, appropriate disposal, recycling or reuse of components prior to the cessation of the use?

4.7.8 Other impacts

There are several other potential impacts from solar farms that may be raised as issues in the development assessment process, including whether solar farms cause electromagnetic radiation/interference or whether solar farms create a 'heat island effect'.

There are limited studies on these potential impacts at present, particularly in the context of Queensland. Local governments may wish to conduct their own independent research and consider new research as this emerges. In the interim, the following provides a brief overview on these potential impacts for consideration:

• Electromagnetic radiation/interference – Electromagnetic radiation (EMR) is a form of energy transfer as a stream of particles or electromagnetic waves. Exposure to EMR can occur on a daily basis as it is generated by a number of common household appliances, such as microwaves, televisions, computers and mobile phones.

In the context of solar farms, EMR has the potential to be generated from infrastructure associated with a solar farm such as; grid connection lines, underground network cabling, electrical transformers, inverters and substations.

EMR is classified according to its frequency or wavelength i.e. Extremely Low Frequency (ELF), Very Low Frequency (VLF), Radio Frequency (RF) and Microwave (MW). The majority of infrastructure associated with solar farms fall under the ELF radiation classification with negligible to immeasurable emissions. Due to the negligible electromagnetic radiation produced by solar farms and related infrastructure, no specific mitigation measures are required beyond compliance with normal electrical safety practices and standards.

• Heat island impact – There are claims that large-scale solar farms may produce higher than average temperatures when compared to their surrounding environment. This phenomenon is known as the 'heat island effect'. While the heat island effect is known to exist in large urban areas, the same impacts resulting from large-scale solar farms are not currently known in the Queensland context as no studies have been undertaken in Australia or more specifically Queensland. Given the limited evidence-based risks around the heat island effect caused by solar farms, mitigation measures are not considered necessary at this time.

4.8 Other tools

4.8.1 Temporary local planning instrument (TLPI)

A TLPI is a statutory instrument proposed by a local government to suspend or override its planning scheme. A TLPI does not require public consultation, has effect under the *Planning Act 2016* for a period of two years and is designed to be implemented quickly to address urgent planning issues that would be further exacerbated should the planning scheme be amended through the normal process.

If a local government identifies a deficiency in their planning scheme to respond and adequately address the potential of a proposed solar farm development, a TLPI may provide an interim measure. Early discussions with the Department of State Development, Manufacturing, Infrastructure and Planning is encouraged for local governments wishing to explore this tool.

5.0 Development Assessment

The following section provides guidance to local governments on key matters that may be considered when assessing an application for a proposed solar farm development.

5.1 Assessment approach

Solar farm applications, as with all large-scale development proposals, are likely to generate significant interest within the community. Local government may choose to take a proactive approach to the assessment of solar development applications. Key initiatives may include:

- **Pre-lodgement meeting processes** local government could encourage proponents to use the prelodgement process to discuss site specific issues, information requirements, determine necessary referrals, potential approvals and agreements relevant to the development and community engagement strategies.
- Pre-lodgement services are also provided by the State Assessment and Referral Agency (SARA) within the Department of State Development, Manufacturing, Infrastructure and Planning. Early discussions with SARA may assist proponents and local governments determine likely referrals and associated information requirements.
- **Community engagement** consultation doesn't have to be a statutory requirement to be undertaken. Keeping the community informed of the application may assist in managing the expectations of the community. Informal information sessions with the local community and adjoining neighbours prior to lodging an application and throughout its assessment may be encouraged.
- The Community engagement toolkit for planning produced by the Department of State Development, Manufacturing, Infrastructure and Planning is a useful tool in determining appropriate methods of engaging with the community.
- **Factsheets** local government may consider developing a short fact sheet about how the planning scheme addresses solar farms and outlines the considerations and expectations for potential applications
- **Site visits** visiting established solar farm sites or solar farms that are currently under construction may be beneficial to help inform an understanding of impacts and benefits.
- Seeing 'real life' examples should also help the process of understanding whether the standard suite of local government conditions can deal with the impacts of this type of development or whether new conditions will need to be drafted.

5.2 Possible referrals

While local government is the assessment manager for solar farm development applications, the state may have a referral role, depending on whether the site involves any state interests. Possible referrals may include:

- **Distribution network service providers** Energy Queensland for connections on distribution network <5MW and Transmission network service provider Powerlink for connections on transmission network and all connections greater than 5MW. Powerlink and Ergon are likely to be referral agencies. Referral to these entities is direct (not through SARA).
- SARA referral for development on land subject to an infrastructure designation this may be the case for power transmission lines and corridors and substations. Planning schemes list lots that are subject to a designation and trigger referral.
- SARA referral including to DTMR if the solar farm will likely impact the safety or efficiency of the **state transport corridor** (including rail level crossings).

- SARA referral including to DNRME if the development involves the clearing of **native vegetation**. (note requirements for confirmation of relevant purpose included in section 3.2.4 Other applications and agreements).
- A local government may seek advice from any third party about a development at any point before a decision is made.

5.3 Information requests / useful reports

Information that may be required by the planning scheme to support a proposed application or to assist local government in its assessment of a proposed solar farm development might include:

- **proposal plans**, showing the location of the proposed infrastructure layout of the site, including access points and related infrastructure.
- **separation distances to sensitive land uses** in proximity of the site, including consideration of future development areas.
- preliminary grid connection plans, as it is common for the grid connection component of a solar farm to be considered separately, the impacts associated with this component can be requested as part of the initial application. While a proponent may not be able to provide a confirmed grid connection, they may be able to provide the options being considered, to allow preliminary feedback and consideration.
- **agricultural land assessment**, while development on important agricultural land might be unavoidable if there is no other land suitable for solar projects, local government might require the proponent to demonstrate that they have sought to avoid or minimise impacts on agricultural land and associated industry and where impacts must occur, those impacts are mitigated to ensure that there is no net loss to agricultural productivity as a result. An agronomist report and analysis of soil fertility may assist with determining potential impacts. Solar farms developed on agricultural lands should aim to be reversible and allow for land to be restored to its pre-developed state.
- traffic impact assessment and transport management plan, including during both construction and
 operation. This would include vehicle trips by types of vehicle, an assessment of access points to the land,
 dust management mitigation measures during construction, identification of haulage routes, considering
 any impacts on school bus routes. A road standards assessment and/or pavement impact assessment,
 requiring a pre-construction road condition assessment may also be required to assist mitigation and
 maintenance of roads during construction period and repair standards post construction. The Department
 of Transport and Main Roads Guide to Traffic Impact Assessment 2017 provides further information about
 how to assess and mitigate traffic impacts (See Section 6.0 Supporting Information).
- **stormwater management plan**, ensuring off-site overland flow rates and flow paths are compatible with pre-development flows to minimise impacts on downstream properties or not exacerbate erosion.
- **reflectivity assessment**, potentially if adjoining or in proximity to existing residential development, however new technologies in solar panel construction has resulted in a reduction of potential reflectivity. It is recommended that proponents should demonstrate that a proposal will mitigate reflection or glare impacts.
- decommissioning / rehabilitation plan, identifying the actions that need to be undertaken when
 operations of a solar farm permanently cease. These actions include the timing for the removal of
 infrastructure and rehabilitation of the land to a suitable character and/or quality, such as soil stabilisation
 and re-vegetation works. A decommissioning and rehabilitation plan should be prepared as part of a
 development application to allow appropriate conditions to be imposed.
- **landscape plan**, including provision for landscaped buffers where necessary, and weed management strategies.

- construction management plan, to the local government's usual standards and requirements.
- erosion and sediment control plan, to the local government's usual standards and requirements.

5.4 Conditions for solar farms

The following section provides guidance to local governments on key matters to consider when conditioning development approvals for solar farms.

It is acknowledged that most local governments will already have a suite of standard conditions that are applied to development approvals, however it may be worthwhile reviewing these conditions in light of this new type of development.

As stated earlier, it would also be beneficial for the local government to undertake its own research by visiting existing facilities or those under construction to better understand the types of impacts of these facilities may have on the community.

While every site and solar farm will be different, conditions of approval should typically consider the following key matters:

• **Construction management:** Construction impacts are usually managed through imposing development conditions. Where the scale of construction activities is likely to result in adverse impacts to amenity, the integrity of infrastructure, or road safety and efficiency, conditions relating to construction management may be warranted. Conditions relating to construction impacts generally cover erosion and sediment control, hours of construction, noise, air quality, access and traffic, roadworks and earthworks.

The submission of a construction environmental management plan should be requested by a local government as part of an operational works application to demonstrate compliance with local government standards relating to construction of the facility.

• Access, car parking and traffic management: Vehicle access is an important consideration for any development. Conditions relating to the provision of access and car parking on the site should clearly set out applicable design specifications and locations by referencing approved plans and standards.

Requiring a pre and post construction dilapidation survey (or a road condition assessment), and a condition to repair any damage to the identified haulage routes at no cost to Council. Conditions on haulage routes, considering school bus routes etc. should also be considered.

• **Stormwater management:** Stormwater impacts have the potential to adversely affect adjoining properties and catchments. Consequently, local government should consider imposing conditions to ensure that solar farms do not adversely interfere with the existing hydrological regime of adjoining properties or catchments.

Conditions for stormwater management typically require stormwater run-off from roof and impervious surfaces to be collected internally and directed to a lawful point of discharge and may require compliance with an approved stormwater management plan.

- Erosion and sediment control: To complement stormwater management conditions, erosion and sediment control conditions typically require prevention of contaminants like sediment and siltation from entering sensitive waterways. This could be achieved by referencing an erosion and sediment control plan prepared as part of the application, that meets the local government's requirements.
- Interface landscaping: Where a local government requires landscape buffers, it may be appropriate to condition the specifications of a landscape plan and/or specific landscape buffer locations, plant species, planting densities and buffer widths.
- Bushfire buffers/setbacks: Where a solar farm adjoins bushfire prone areas, it may be appropriate to
 impose conditions requiring cleared bushfire buffers/setbacks to be established. A local government should
 only consider imposing conditions requiring cleared bushfire buffers/setbacks where there is a risk of fire or

bushfire impacts due to existing adjoining vegetation or a solar farm facility and should seek third party advice.

• **Decommissioning and rehabilitation**: A decommissioning and rehabilitation plan identifies the actions that need to be undertaken when operations of a solar farm permanently cease.

A local government may also consider including conditions relating to the appropriate disposal, recycling or reuse of components, requiring the removal of solar farm infrastructure (not the substation or distribution/transmission infrastructure), ensure environmental impacts are addressed and return the land to an agreed state.

Consideration might also be given to linking this condition to a timeframe for example within 12 months after the use is no longer operational.

6.0 Supporting information

(i) Planning framework

• Planning Act 2016

https://www.legislation.qld.gov.au/view/html/asmade/act-2016-025

• Planning Regulation 2017

https://www.legislation.qld.gov.au/view/html/asmade/sl-2017-0078

• State Planning Policy (SPP) July 2017

https://planning.dilgp.qld.gov.au/planning/better-planning/state-planning/state-planning-policy-spp

- Regional plans
- <u>https://planning.dilgp.qld.gov.au/planning/better-planning/state-planning/regional-plans</u>

(ii) Spatial data

• Australian Renewable Energy Mapping Infrastructure (AREMI)

http://nationalmap.gov.au/renewables/

• Department of Natural Resources, Mines and Energy Electricity generation map

www.dews.qld.gov.au/electricity/renewables/tools/solar-maps

• Department of State Development, Manufacturing, Infrastructure and Planning's SPP Interactive Mapping System (IMS) and Development Assessment Mapping system (DAMS)

https://planning.dsdmip.qld.gov.au/maps

MinesOnlineMaps

https://www.business.qld.gov.au/industries/mining-energy-water/resources/onlineservices/minesonlinemaps

• Department of Transport and Main Roads guideline, Guide to Traffic Impact Assessment 2017

https://ww.tmr.qld.gov.au/business-industry/Technical-standards-publications/Guide-to-Traffic-Impact-Assessment

• Heavy vehicle access maps

https://www.tmr.qld.gov.au/business-industry/Heavy-vehicles/Heavy-vehicle-routes-andrestrictions

(iii) Agency contacts for further information:

Australian Renewable Energy Agency

https://arena.gov.au/

• Department of Natural Resources, Mines and Energy

https://www.dnrme.qld.gov.au/

• Queensland Government – information about Clearing for a relevant purpose

https://www.qld.gov.au/environment/land/vegetation/development

• Department of State Development, Manufacturing, Infrastructure and Planning – contact the relevant SARA regional office

http://www.dsdmip.qld.gov.au/contact-us/regional-contacts.html

• Department of Transport and Main Roads - regional office contacts

https://www.qld.gov.au/transport/contacts/roads

• Department of Transport and Main Roads access permits

https://www.tmr.qld.gov.au/community-and-environment/planning-and-development/othermattersrequiring-approval.aspx

• National Heavy Vehicle Regulator

https://www.nhvr.gov.au/

(iv) Other stakeholders:

• Clean Energy Council

https://www.cleanenergycouncil.org.au/policy-advocacy.html



Queensland Treasury

1 William Street, Brisbane GPO Box 611, Brisbane, Queensland 4001 Tel: 07 3035 1933 or 13 QGOV (13 74 68) Email: info@treasury.qld.gov.au

