2.0 Introduction

This report has been prepared by Visionstream on behalf of Telstra as supporting information to a Planning Permit Application for the installation of a 70.0 high telecommunications facility at 195 Forrest Road in Pickering Brook, WA 6076, which is more formally known as Lot 61 on Diagram 53905.

Refer to Appendix 1 for Title details

All mobile phone network operators are bound by the operational provisions of the federal *Telecommunications Act 1997 ("The Act")* and the *Telecommunications Code of Practice 2018*. The *Telecommunications (Low-Impact Facilities) Determination 2018* allows for the upgrade of existing mobile phone network infrastructure without the consent of a relevant statutory authority.

In this instance the proposed development does not comply as a "Low Impact facility" under the definitions contained in the Commonwealth legislation. Therefore, it is subject to the provisions of the *WA Planning and Development Act 2005* and the provisions of the Shire of Kalamunda's *Town Planning Scheme No. 3*.

3.0 Proposed Scope of Works

The proposal is inclusive of the following scope of works:

- Installation of one (1) 70.0m high lattice tower;
- Installation of one (1) triangular headframe;
- Installation of six (6) new panel antennas (no greater than 2.8m in length);
- Installation of twelve (12) remote radio units (RRUs)
- Installation of one (1) Telstra Equipment Shelter that is not more than 3m high with a base area of not more than 7.5m² at the base of the aforementioned tower;
- Installation of associated ancillary cabling and equipment;
- Installation of 14m by 14m chain-link fence with a 3m wide gate.

Refer to Plans attached in Appendix B for further details.

4.0 Purpose of the Proposal

The purpose of the application is to receive development approval for the installation of a telecommunications facility at 195 Forrest Road in Pickering Brook on behalf of Telstra.

Mobile Black Spot Program:
This program will deliver mobile coverage to a large number of regional and remote communities who, for the first time, will be able to access fast mobile voice and data services. The improved coverage is increasing access to new technologies for key regional sectors like agriculture, transport, mining and tourism – technologies which rely on a fast, reliable and affordable mobile network.

The Mobile Black Spot Program builds upon significant investments already undertaken by Telstra to expand and upgrade our mobile network. Our partnership with the Federal Government will involve Telstra investing an additional almost $260 million of our own funds to build more than 650 new sites across the three rounds of the Mobile Black Spot Program. This is over and above the billions of dollars we have spent on our mobile network in recent years.

We've worked with State and Local Governments to attract tens of millions of dollars in additional targeted funding.

Telstra is committed to providing improved mobile coverage to regional and remote Australia. Over the past 10 years, approximately 15 per cent of our total capital investment has been in areas which cover the remotest 2 per cent of the population.

Our network investment expenditure is almost entirely self-funded. In the 11 years to 2016, less than 1 per cent of the money spent on our network has been government funded.

In addition to the Mobile Black Spot Program, Telstra will also be installing up to 250 small cells in selected areas where appropriate infrastructure is available, which will bring high speed 4G data services to small country towns. These small cells also support 4G HD (VoLTE) Calling, allowing customers to make calls on supported handsets.

Telstra continues to invest significantly in maintaining and expanding our mobile network across Australia.

By way of a background:

Mobile phones and mobile broadband devices continue to play an important role in the lives of Australians. This includes providing the fundamental ability to be in contact with family and friends, operating businesses more efficiently and effectively as well as dialling triple 0 during a natural disaster or other emergency.

Because of the ever growing demand for more data and better reception, mobile phone carriers such as Telstra continually have to upgrade and expand mobile phone networks to eliminate coverage blackspots and to keep up with the demands and expectations placed upon them by the community.

Recently Telstra has identified the need to increase the capacity of the mobile phone network in Pickering Brook due to demands placed upon the existing network by people in the locality.

As the incumbent telco Telstra knows how important access to modern telecommunications infrastructure is and in order to remedy the lack of mobile phone coverage in the aforementioned areas Telstra wishes to establish a new mobile telecommunications base station facility at 195 Forrest Road in Pickering Brook.

5.0 Mobile Telecommunications Networks

A mobile telecommunications network is made up of multiple base stations covering a geographic area. They work by sending and receiving radio signals from their antennas to mobile phones and other mobile devices such as tablet computers, wireless dongles etc. Base stations are designed to provide service to the area immediately surrounding the base station which can be up to several kilometers in distance. Depending on the technical objectives of a base station, the physical characteristics of each telecommunications facility; such as its height, number and size of antennas, equipment, cabling etc. will vary.

As a general rule, the higher the antennas of a base station the greater the range of coverage and the ability to relieve capacity issues. If this height is compromised then additional facilities, and thus more infrastructure, will be required for any given locality. The further a facility is located away from its technically optimum position the greater the compromise of the service. This may result in coverage gaps and require additional or taller base stations to provide adequate service.

Each base station transmits and receives signals to and from mobile devices in the area. As the mobile device users move around their devices will communicate with the nearest base station facility to them at all times. If the users cannot pick up a signal, or the nearest base station is congested because it is already handling the maximum number of phone calls or maximum level of data usage, then the users may not be able to place a call, they may experience call "drop outs" or they might experience a slow data rate while attempting to download content.

There are three main factors that can cause the above:

- You may be too far away from a facility to receive a signal, or there may be objects blocking the signal from the nearest facility; such as hills and large trees. To ensure optimum service the radio signals transmitted between the facility's antennas and mobile devices need to be unimpeded, maintaining a "line-of-sight" between them.

- The facility may be transmitting as much data and calls as it can handle. This can result in call drop-outs and slower data rates when too many users are connected to a facility at once.

- The depth of coverage, which affects the ability to make calls inside buildings, may be insufficient in some local areas.

The current proposal will form part of Telstra's 4GX network solution to the Pickering Brook locality and will deliver essential mobile services (voice calling, SMS), as well as live video calling, video-based content including; news, finance and sports highlights, and high-speed wireless internet – wireless broadband. With a coverage footprint of more than 2.1 million square kilometers and covering more than 99% of the Australian population. Telstra's 4GX is Australia's largest and fastest national mobile broadband network and as such requires more network facilities, located closer together to ensure a high-quality signal strength to achieve reliable service and the fastest possible data transfer rates.

6.0 Site Selection Process

Telstra commences the site selection process with a search of potential sites that meet the network's technical requirements, with a view to also having the least possible impact on the amenity of the surrounding locality. Telstra applies and evaluates a range of criteria as part of this site selection process.

Telstra assesses the technical viability of potential sites through the use of computer modelling tools that produce predictions of the coverage that may be expected from these sites as well as from the experience and knowledge of the radio engineers.

There are also a number of other important criteria that Telstra uses to assess options and select sites that may be suitable for a proposed new facility. These take into account factors other than the technical performance of the site, and include:

- The potential to co-locate on an existing telecommunications facility.
- The potential to locate on an existing building or structure.
- Visual impact and the potential to obtain relevant town planning approvals.
- Proximity to community sensitive locations and areas of environmental heritage.
- The potential to obtain tenure at the site.
- The cost of developing the site and the provision of utilities (power, access to the facility and transmission links).

In making the proposal for this site at 195 Forrest Road in Pickering Brook, Telstra has carefully weighed all of the aforementioned criteria. This analysis is detailed in the next section.

7.0 Candidate Sites

Telstra carefully examined a range of possible deployment options in the area before concluding that a new telecommunications facility at 195 Forrest Road in Pickering Brook would be the most appropriate solution to provide necessary mobile phone coverage to the Pickering Brook locality.

Accordingly, this section of the report will demonstrate the following:

- Colocation opportunities and existing telecommunications infrastructure within proximity to the proposed installation; and
- An analysis of the locations considered when determining an appropriate location for a new telecommunications installation within the required coverage area.

Colocation opportunities

The Communications Alliance Ltd. (formerly Australian Communications Industry Forum Ltd. - ACIF) *Industry Code C564:2011 – Mobile Phone Base Station Deployment* promotes the use of existing sites in order to mitigate the effects of the facilities on the landscape. It should also be noted that as a first preference Telstra attempts to utilise, where possible, any existing infrastructure or co-location opportunities.

Below is a map of existing and proposed telecommunications facilities surrounding the Pickering Brook locality – the blue marker indicates the location of the proposed telecommunications facility at 195 Forrest Road in Pickering Brook.

The grey marker to the North-West indicates where an existing Telstra facility is and the grey marker to the South-West indicates where another Telstra facility is. However, the sites are more than 2.21km and 3.71km away respectively and, therefore, do not meet the coverage objectives of the Mobile Black Spot Site. Furthermore, there are no other nearby telecommunications facilities within the locality that would be capable of meeting the needs of the facility. Accordingly, there is an identified lack of suitable telecommunications facilities within the vicinity of the proposed installation. As a result, there were no suitable colocation opportunities to provide the required radio frequency coverage objectives.

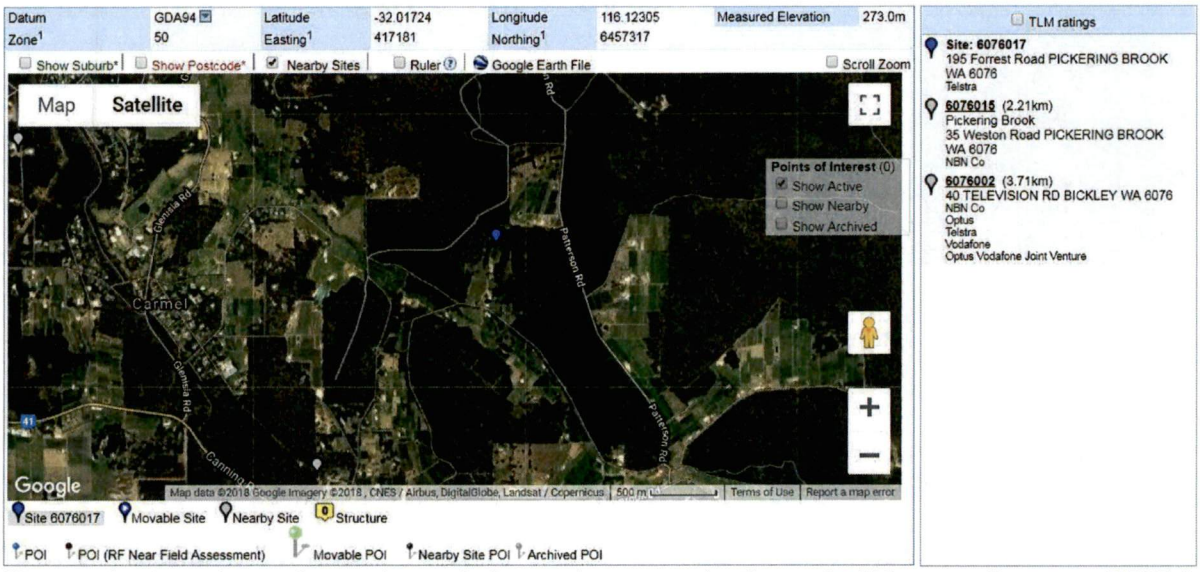


Figure 1: Location of nearby existing telecommunications facilities – Source: *RFNSA, www.rfnsa.com.au*

Candidates considered

The site selected is deemed to be the most optimal location to achieve the required coverage requirements and requires a 70.0m high telecommunications facility at 195 Forrest Road in Pickering Brook (Candidate B). This is further outlined below along with the balance of alternative candidates considered as part of the site selection process:

Candidate	Location	Proposal	Zoning	Description
Candidate A	205 Forrest Road, Pickering Brook, WA 6076 Lat: -32.017908 Long: 116.122041	Greenfield 70.0m lattice tower	Rural Agriculture	The geological features of this candidate mean that the cost to build the structure at this location is prohibitive and outside of the parameters of the Mobile Black Spot Program.
Candidate B	195 Forrest Road, Pickering Brook, WA 6076 Lat: -32.017241 Long: 116.123046	Greenfield 70.0m lattice tower	Rural Agriculture	Preferred Candidate and the subject of this application.
Candidate C	337 Walnut Road, Bickley, WA 6076 Lat: -32.008239 Long: 116.134615	Greenfield 70.0m lattice tower	State Forests Reserve	The location of this candidate does not meet the radio frequency parameters of the Mobile Black Spot Program.
Candidate D	467 Walnut Road, Bickley, WA 6076 Lat: -32.016543 Long: 116.134734	Greenfield 70.0m lattice tower	Rural Agriculture	Tenure was unable to be obtained at this location.
Candidate E	140 Patterson Road, Bickley, WA 6076 Lat: -32.014391 Long: 116.125609	Greenfield 70.0m lattice tower	Rural Agriculture	Tenure was unable to be obtained at this location.
Candidate F	120 Patterson Road, Bickley, WA 6076 Lat: -32.012381 Long: 116.128004	Greenfield 70.0m lattice tower	Rural Agriculture	Tenure was unable to be obtained at this location.

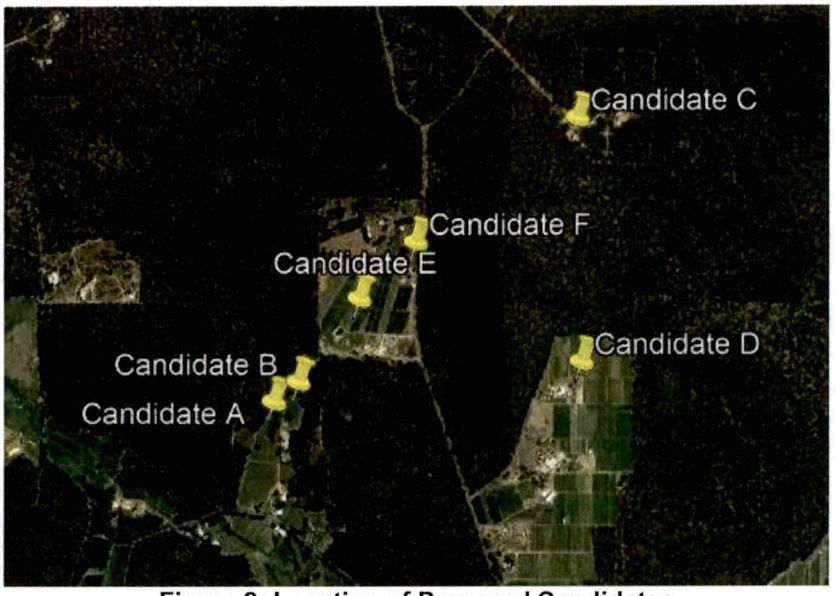


Figure 2: Location of Proposed Candidates

7.1 Nominated Candidate

A preferred nominated candidate was selected for the proposed facility based on the radiofrequency objectives, planning and environmental issues, potential community sensitive uses and engineering criteria as noted above. In this case, **Candidate B** (a new 70.0m lattice tower located at 195 Forrest Road) was considered the best option. This was based on the following:

- The site is appropriately located and sited to minimise visual and environmental impacts on the immediate and surrounding areas;
- Well setback from sensitive uses;
- The site will achieve the required coverage objectives for the area;
- The site will meet design and construction considerations; and
- The proposal operates within the regulatory framework of Commonwealth, State and Local Government.
- There is a willing land owner.

As stated above, the site selection process carefully considered environmental and visual constraints, existing and future land use characteristics, the orderly planning of the area and the design of the facility. On balance, it is considered that the location and height of the facility ensure optimal service provision to the area whilst minimizing any perceived impacts.
The proposed Telstra site has been sited and designed to minimise any adverse impact on the amenity of the surrounding locality. The site is located on cleared rural agricultural land away from sensitive sites such as Aboriginal heritage sites, schools and child care centres.

As a result of the aforementioned points it is considered that the siting and design effectively responds to the landscape setting in the area.

7.2 The Site

The subject site is located at 195 Forrest Road in Pickering Brook, WA 6076. The legal description of the property is Lot 61 on Diagram 53905. A copy of the Certificate of Title has been attached for information purposes (**Appendix 1 – Certificate of Title**).

The land is owned by David Simpson & Melissa Roberton.

The aforementioned land is zoned 'Rural Agriculture' under the provisions of the Shire of Kalamunda's *Local Planning Scheme No. 3* – refer to **Section 10.1** for additional information on planning schemes and map images.

The site will be accessed through the existing access gate off Forrest Road. The adjoining properties are characterised by a mixture of Rural Agricultural land uses as well as Parks and Recreation Reserve.

Figure 3: Proposed Telstra Site – 195 Forrest Road, Pickering Brook, WA 6076 (Source: Google Earth)

Appropriate setbacks to any identified sensitive sites such as national parks and heritage areas have been considered and achieved during the detailed siting of the facility.

The site is located outside of areas of environmental significance as defined by The *Telecommunications (Low-Impact Facilities) Determination 2018.*

In addition, the proposed base station will be surrounded by mature trees which will provide visual shielding which in turn will lessen potential impacts upon the visual amenity of the area and help to keep the facility hidden away from public view.

8.0 Federal Regulatory Framework

The following information provides a summary of the Federal legislation relevant to telecommunications development proposals.

8.1 Telecommunications Act 1997

The *Telecommunications Act 1997* (the Act) came into operation on 1st July 1997. The Act provides a system for regulating telecommunications and the activities of carriers and service providers.

Under the *Act*, telecommunications carriers are no longer exempt from State and Territory planning laws except in three limited instances:

1. There are exemptions for the inspection of land, maintenance of facilities, installation of "low impact facilities", subscriber connections and temporary defense facilities. These exemptions are detailed in the *Telecommunications (Low-impact Facilities) Determination 2018* and these exemptions are subject to the *Telecommunications Code of Practice 2018*;

2. A limited case-by-case appeals process exists to cover the installation of facilities in situations of national significance; and
3. There are some specific powers and immunities from the previous *Telecommunications Act 1991.*

8.2 Telecommunications (Low-impact Facilities) Determination 2018

The *Telecommunications (Low-impact Facilities) Determination 2018* came into effect in March 2018.

The *Determination* contains a list of Telecommunications Facilities that the Commonwealth will continue to regulate. These are facilities that are essential to maintaining telecommunications networks and are unlikely to cause significant community disruption during their installation or operation. These facilities are therefore considered to be 'Low-impact' and do not require planning approval under State or Territory laws.

The proposed facility at 195 Forrest Road in Pickering Brook does not fall under the *Determination* and, therefore, requires approval under State Planning Legislation.

8.3 Communications Alliance Ltd. Code C564: 2011 Industry Code – Mobile Phone Base Station Deployment

The new Communications Alliance Ltd. C564:2011 *Industry Code – Mobile Phone Base Station Deployment* (referred to as the Deployment Code) replaced the Australian Communications Industry Forum (ACIF) '*Industry Code - Deployment of Mobile Phone Network Infrastructure'* (more commonly referred to as the ACIF Code) in July 2012. The purpose of the revisions incorporated in the new Deployment Code is to provide certainty and clarity for all parties in the implementation of the Code. For example, with regard to the consultation process with councils and communities, and with regard to providing and updating RF EMR Health and Safety information, reports and signage in keeping with relevant standards.

Similar to the ACIF Code, the new Deployment Code can not change the existing regulatory regime for telecommunications at Local, State or Federal levels. However, it supplements the existing obligations on Carriers, particularly in relation to community consultation and the consideration of exposure to radio signals, sometimes known as electromagnetic energy (EME or EMR).

The *Code* imposes mandatory levels of notification and community consultation for sites complying with the *Telecommunications (Low-impact Facilities) Determination 2018.* It identifies varying levels of notification and/or consultation depending on the type and location of the proposed infrastructure.

The subject proposal, not being designated a 'Low-impact' Facility', is not subject to the notification or consultation requirements associated with the Deployment Code. These processes are handled within the relevant State and Local consent procedures.

Nevertheless, the intent of the *Code* is to ensure Carriers follow a 'precautionary approach' to the siting of infrastructure away from sensitive land uses and this approach has been followed in the selection of this site, as demonstrated in the *Deployment Code* section 4.1 Precautionary Approach Checklist. This checklist will be uploaded to the RFNSA website, reference number 6076017.

Included in the section 4.1 Checklist is a statement of how the public's exposure to EME from the site has been minimised. All emissions from the site will be well within the requirements of the relevant Australian Standard. Details of this standard are contained in the following section.

This site has been selected and designed to comply with the requirements of the *Deployment Code* in so much as the precautionary approach has been adhered to and, as a result, the best design solution has been achieved.

9.0 State Regulatory Framework

The following information provides a summary of the State legislation/guidelines relevant to telecommunications development proposals.

9.1 Planning and Development Act 2005

The Minister of Planning and Infrastructure has ultimate authority for town planning in Western Australia. Development within Western Australia is controlled by the *Planning and Development Act 2005* through the application of environmental planning instruments. Under the *Planning and Development Act 2005*, the Western Australian Planning Commission (WAPC) is the responsible authority for land use planning and development matters and this report seeks to demonstrate compliance with the WAPC and other items of relevant legislation which pertain to the subject application.

9.2 Statement of Planning Policy No. 5.2 – Telecommunications Infrastructures (WAPC)

The WAPC *Statement of Planning Policy No. 5.2 – Telecommunications Infrastructure* (SPP 5.2) provides a framework for the preparation, assessment and determination of applications for planning approval of telecommunications facilities within the context of the planning system of Western Australia. *Planning Policy 5.2* states that 'telecommunications infrastructure should be located, sited and designed in accordance with the following Guiding Principles'.

Principles	Comments	Complies
There should be a co-ordinated approach to the planning and development of telecommunications infrastructure, although changes in the location and demand for services require a flexible approach.	Telstra undertakes a carefully co-ordinated and planned approach to the development of their network.	✓
Telecommunications infrastructure should be strategically planned and co-ordinated, similar to planning for other essential infrastructure such as networks and energy supply.	The proposed facility is strategically planned and co-ordinated to ensure that the facility will provide high level coverage to the Pickering Brook locality.	✓
Telecommunications facilities should be located and designed to meet the communication needs of the community.	The proposed facility is strategically planned and co-ordinated to ensure that the facility will provide high level coverage to the Pickering Brook locality.	✓
Telecommunications facilities should be designed and sited to minimise any potential adverse visual impact on the character and amenity of the local environment, in particular, impacts on prominent landscape features, general views in the	The proposed 70.0m lattice tower has been sited to maintain the primary use of the land whilst considering the impact to the surrounding locality. The site carefully considered environmental and visual constraints, existing and future land use characteristics, the orderly planning of the area and the design of the facility. On balance, it is considered that the location and height of the	✓

locality and individual significant views.	facility ensure optimal service provision to the area whilst minimising any perceived impacts.	
Telecommunications facilities should be designed and sited to minimise impacts on areas of natural conservation value and places of heritage significance or where declared rare flora are located.	A desktop study of the proposed site indicated that it is not affected by any heritage listings nor is it in close proximity to any heritage listings. As the land is already cleared there will be no impact on the natural environment or its surrounds.	✓
Telecommunications facilities should be designed and sited with specific consideration of water catchment protection requirements and the need to minimise land degradation.	Prior to the commencement of work Telstra will undertake such measures as deemed necessary by Council to effectively protect water catchments within the immediate area.	✓
Telecommunications facilities should be designed and sited to minimise adverse impacts on the visual character and amenity of residential area.	Telstra has selected a site and location that seeks to minimise any perceived negative impacts on the visual amenity of the area, particularly when viewed from residential areas. The lattice tower will remain unpainted (dull grey in colour) which blends in with the sky. Furthermore, the proposed subject site maintains suitable separation distance from surrounding residential areas.	✓
Telecommunications cables should be placed underground, unless it is impractical to do so and there would be no significant effect on visual amenity or, in the case of regional areas, it can be demonstrated that there are long-term benefits to the community that outweigh the visual impact.	Overhead cabling is not proposed for this site.	✓
Telecommunications cables that are installed overhead with other infrastructure such as electricity cables should be removed and placed underground when it can be demonstrated and agreed by the carrier that it is technically feasible and practical to do so.	This principle does not apply to the subject of this application.	***N/A***
Unless it is impractical to do so telecommunications towers should be located within commercial, business, industrial and rural areas and areas outside identified conservation areas.	The proposed site is zoned 'Rural Agriculture' as identified by the Shire of Kalamunda's *Local Planning Scheme No. 3*. Given the rural nature of the land the proposed facility will be located in the desired zoning.	✓
The design and siting of telecommunications towers and ancillary facilities should be integrated with existing buildings and structures, unless it is	As per Section 7 of this report, no opportunities for co-location were identified in the area and it has been identified that the proposed Telstra site location is seen as the preferred site location. Colocation was investigated; however, the	✓

impractical to do so, in which case they should be sited and designed so as to minimise any adverse impact on the amenity of the surrounding area.	locations were existing Telstra sites which are too far from the subject area to meet the radio frequency objectives of the proposal.	
Co-location of telecommunications facilities should generally be sought, unless such an arrangement would detract from local amenities or where operation of the facilities would be significantly compromised as a result.	As per Section 7 of this report, no opportunities for co-location were identified in the area and it has been identified that the proposed Telstra site location is seen as the preferred site location. Colocation was investigated; however, the locations were existing Telstra sites which are too far from the subject area to meet the radio frequency objectives of the proposal.	✓
Measures such as surface mounting, concealment, colour co-ordination, camouflage and landscaping to screen at least the base of towers and ancillary structures, and to draw attention away from the tower, should be used, where appropriate, to minimise the visual impact of telecommunications facilities.	Telstra has selected a site and location that seeks to minimise any perceived negative impacts on the visual amenity of the area, particularly when viewed from residential areas. The lattice tower will remain unpainted (dull grey in colour) which blends in with the sky. Furthermore, the proposed subject site maintains suitable separation distance from surrounding residential areas.	✓
Design and operation of a telecommunications facility should accord with the licensing requirements of the Australian Communications Authority, with physical isolation and control of public access to emission hazard zones and use of minimum power levels consistent with quality services.	Telecommunications facilities include radio transmitters that radiate electromagnetic energy (EME) into the surrounding area. The levels of these electromagnetic fields must comply with safety limits imposed by the Australian Communications and Media Authority (ACMA, previously ACA). All Telstra installations are designed to operate within these limits.	✓
Construction of a telecommunications facility (including access to a facility) should be undertaken so as to minimise adverse effects on the natural environment and the amenity of users or occupiers of adjacent property and to ensure compliance with relevant health and safety standards.	During construction Telstra contractors will endeavour to minimise the impact of their works on the amenity of nearby residents and on the surrounding environment. As the proposed site is located in a rural agricultural area, adverse effects on nearby properties will be minimal. Following construction, maintenance (excluding emergency repair work) activities should not interfere with the amenity of users. All Health and Safety standards will be adhered to.	✓

Under section 5.1.1 of the *State Planning Policy 5.2: Telecommunications Infrastructure Policy* the West Australian Planning Commission provides a set of measures in assessing the visual impact of a proposed telecommunications facility.

An assessment of these guidelines below has found that the proposed Telstra Mobile Phone Base Station is compliant with the intent and requirements of the *State Planning Policy 5.2: Telecommunication Infrastructure Policy*.

Measures	Comments	Complies
Be located where it will not be prominently visible from significant viewing locations such as scenic routes, lookouts and recreation sites;	The proposed 70.0m lattice tower has been sited to maintain the primary use of the land whilst considering the impact to the surrounding locality. The site carefully considered environmental and visual constraints, existing and future land use characteristics, the orderly planning of the area and the design of the facility. On balance, it is considered that the location and height of the facility ensure optimal service provision to the area whilst minimizing any perceived impacts.	✓
Be located to avoid detracting from a significant view of a heritage item or place, a landmark, a streetscape, vista or a panorama, whether viewed from public or private land;	Telstra has selected a site and location that seeks to minimise any perceived negative impacts on the visual amenity of the area, particularly when viewed from residential areas. The lattice tower will remain unpainted (dull grey in colour) which blends in with the sky. Furthermore, the proposed subject site maintains suitable separation distance from surrounding residential areas.	✓
Not be located on sites where environmental, cultural heritage, social and visual landscape values may be compromised;	There are no known items of environmental, cultural or social significance located on the proposed site. Any visual impact has been mitigated through a variety of design elements.	✓
Display design features, including scale, materials, external colours and finishes that are sympathetic to the surrounding landscape;	The proposed 70.0m lattice tower has been sited to maintain the primary use of the land whilst considering the impact to the surrounding locality. The site carefully considered environmental and visual constraints, existing and future land use characteristics, the orderly planning of the area and the design of the facility. On balance, it is considered that the location and height of the facility ensure optimal service provision to the area whilst minimizing any perceived impacts	✓
Be located where it will facilitate continuous network coverage and/or improved telecommunications services to the community;	Telstra has identified mobile phone coverage blackspots in the Pickering Brook locality. The proposed location 195 Forrest Road in Pickering Brook will provide improved and continuous coverage to the locality and will also provide other carriers with the opportunity to co-locate their infrastructure in the future.	✓
Telecommunications infrastructure should be co-located and whenever possible: Cables and lines should be located within an existing underground conduit or duct; and Overhead lines and towers should be co-located with existing infrastructure and/or within an existing infrastructure corridor and/or mounted on existing or proposed buildings.	As per Section 7 of this report, no opportunities for co-location were identified in the area and it has been identified that the proposed Telstra site location is seen as the preferred site location. Colocation was investigated; however, the locations were existing Telstra sites which are too far from the subject area to meet the radio frequency objectives of the proposal. Therefore, it has been identified that the proposed Telstra site location is seen as the preferred site location. As mentioned previously, the proposed Telstra lattice tower will also provide other carriers with the opportunity to co-locate their	✓

	infrastructure in the future. As this is a greenfield site there is no option to utilise existing underground conduit or ducts. Overhead lines are not applicable to this application.	

10.0 Local Regulatory Framework

The following information provides a summary of the local provisions relevant to telecommunications development proposals.

10.1 The Shire of Kalamunda Local Planning Scheme No. 3

The *Shire of Kalamunda Local Planning Scheme No. 3* provides the legal basis for planning in the Shire of Kalamunda's local government area.

The proposed site and the surrounding area have a large portion which is zoned 'Rural Agriculture' as well as a large amount which is reserved as Parks and Recreation *as* shown in **Figure 4** below.

For the purposes of this proposal the Principal Designated Use of the property is 'Rural'.

Telecommunications infrastructure is listed as an activity in the Shire of Kalamunda's *Local Planning Scheme* text; however, the use will not be permitted unless Council has exercised its discretion by granting development approval. Nonetheless, the proposed telecommunications facility at 195 Forrest Road in Pickering Brook generally complies with the objectives of the Scheme. Moreover, the proposed facility will be sited in an ideal zone (Rural Agriculture) which limits negative impacts on the amenity of the area.

Furthermore, the proposed telecommunications facility will assist with the vision of the Shire's "Kalamunda Advancing 2027 Strategic Community Plan" which aims to have the locality well connected by telecommunications technologies so that "people are prepared and enabled to live and prosper in the technological age".

This is further highlighted in the Strategic Community Plan by the Shire's community who want the Shire's leadership to be effective advocates on important local issues, such as infrastructure, security, the NBN and telecommunications.

In addition, community member priorities included lobbying for better telecommunications and better telecommunications reception.

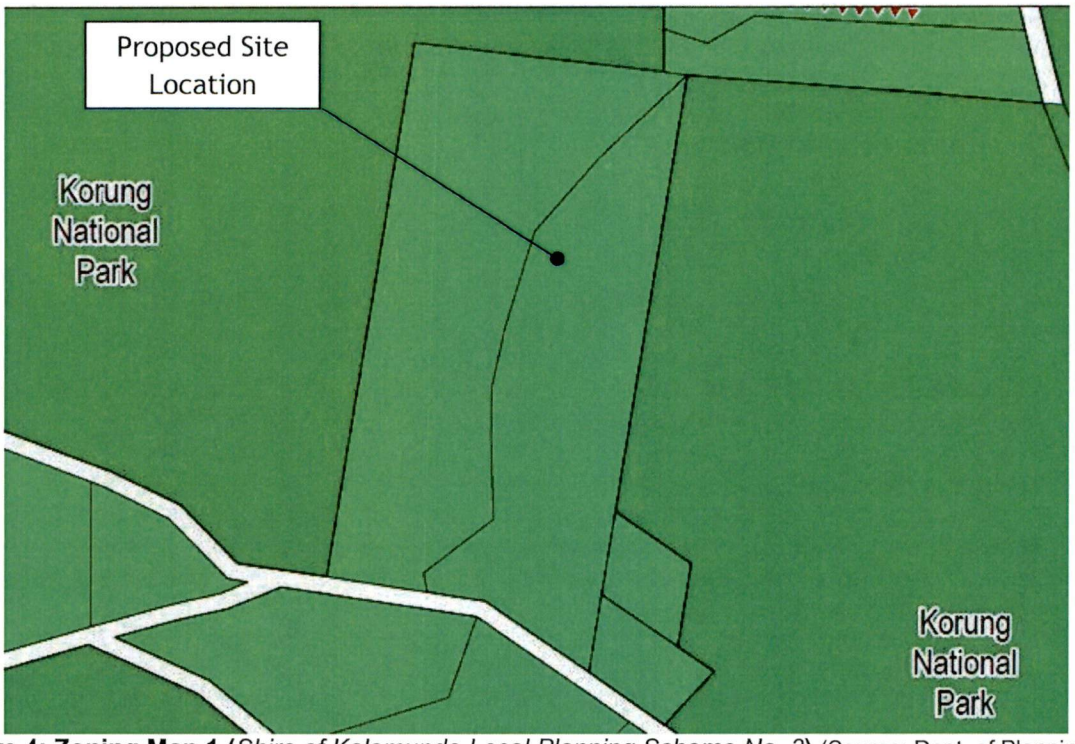


Figure 4: Zoning Map 1 (*Shire of Kalamunda Local Planning Scheme No. 3***)** (Source: Dept. of Planning)

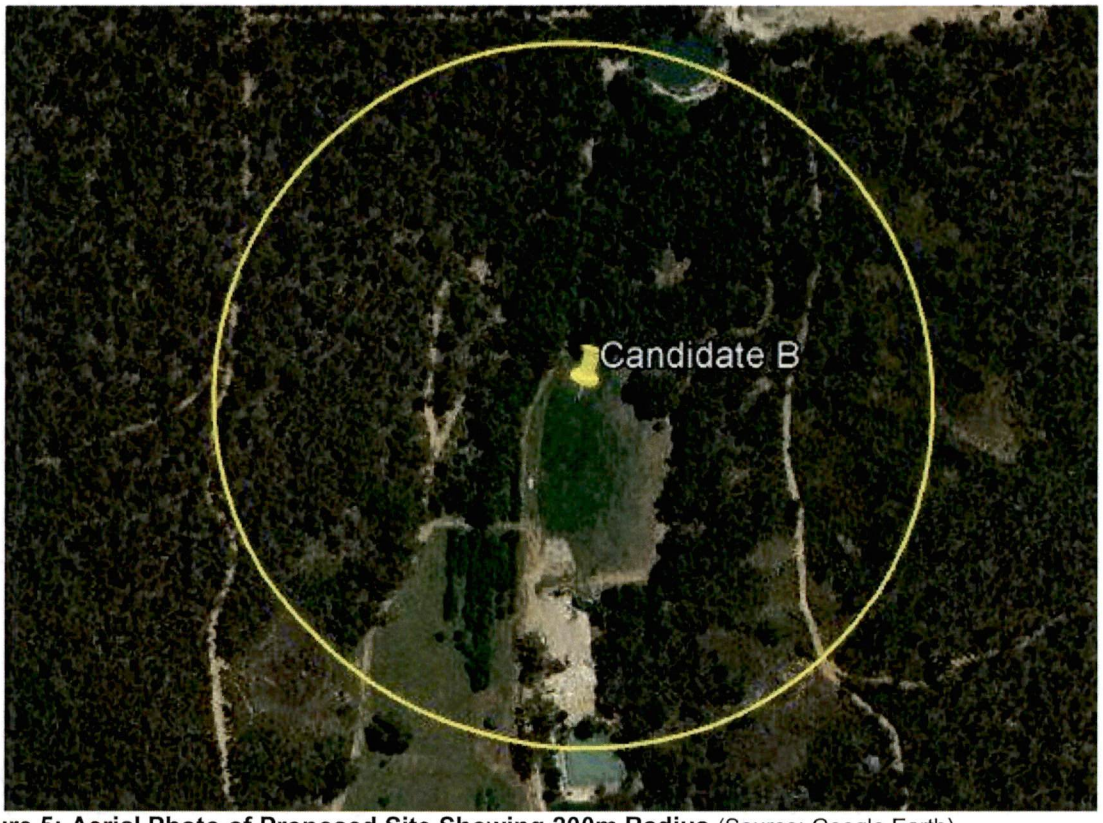


Figure 5: Aerial Photo of Proposed Site Showing 200m Radius (Source: Google Earth)

The proposal has been sited to retain the land for its current use and minimises visual impacts upon the amenity of the area by being placed towards the rear of the property where it is surrounded by mature vegetation. The detailed siting has been undertaken to ensure the primary use of the land and any potential future use of surrounding land is not negatively impacted upon.

Overall the proposed development application is consistent with the intent and requirements of the *Western Australian Planning Commission SSP 5.2* and the *Shire of Kalamunda's Local Planning Scheme No. 3.*

11.0 General Provisions

This proposal is for the establishment of a Telstra Mobile Base Station Facility in the Pickering Brook area.

Telstra considers that the proposal is appropriate for the locality given the 'Rural Agriculture' zoning of the proposed site and the nature of existing and anticipated uses of the surrounding land.

Environmental considerations such as visual impact, heritage, flora and fauna, traffic, flooding, bushfire, social and economic aspects, health and safety have been discussed within the below sub sections.

11.1 Visual Impacts

The site has been identified as being located within the 'Rural Agriculture' zone. In this regard, the detailed siting and design of the proposed facility has been taken this into consideration in conjunction with the aims of the Shire's *Local Planning Scheme No. 3.*

Telstra has selected a site and location that seeks to minimise any perceived negative impacts on the visual amenity of the area. The proposed subject site maintains suitable separation distance to surrounding residential areas and takes advantage of the shielding provided by nearby mature vegetation which limits the structure's visibility from the residential dwellings and thoroughfares.

The site selection carefully considered environmental and visual constraints, existing and future land use characteristics, the orderly planning of the area and the design of the facility. On balance, it is considered that the location and height of the facility ensure optimal service provision to the area whilst minimising any perceived visual impact. Moreover, as previously mentioned the site will also provide other carriers with the opportunity to co-locate their infrastructure in the future.

11.2 Heritage

In order to determine any possible natural or cultural values of state or national significance associated with the site a search was conducted through the relevant Heritage Registers.

No heritage sites, including Aboriginal heritage sites, of significance were identified within the subject land holding or within close proximity.

11.3 Flora and Fauna

In order to determine any possible natural Flora and Fauna significance associated with the site, a search was conducted through the relevant environmental searches.

Searches identified the potential of 18 threatened species and 9 migratory species of Flora and Fauna significance located in the vicinity of the proposed site. See **Appendix G** – Environment Analysis Report for further information.

As per the drawings, no trees will be removed as part of this proposal.

The site is not located in an area of environmental significance as defined by The *Telecommunications (Low-Impact Facilities) Determination 2018.*

11.4 Traffic

Mobile phone base stations are not a significant generator of pedestrian or vehicular traffic.

The site will be visited on a quarterly basis throughout the year for maintenance purposes.

During the construction phase various vehicles will be used to deliver equipment and construct the Telstra Mobile Base Station Facility. Any traffic impacts associated with construction and establishment will be of a short-term duration (i.e. approximately five weeks over non-consecutive periods) and are not anticipated to adversely impact on the surrounding road network.

Adequate parking will be available on site for these vehicles and these movements would not impact the local traffic.

Traffic from this construction would only occur from the hours of 7am to 6pm. If a road closure is required for the erection and installation of equipment, the appropriate approvals will be obtained from the Department of Transport (DOT).

The mobile base station facility is unmanned would require maintenance checks approximately 3-4 times per year as required. Routine maintenance would involve one vehicle per visit and parking would be available close to the proposed site for this purpose.

11.5 Access

Access to the proposed site will be through the existing cross over off Forrest Road. In this regard, there is no requirement for special access to the site. (Refer to **Appendix B** – Proposal Plans (S1) for more information)

The proposed site access is considered to be appropriate given the Telstra facility will not be a significant generator of traffic. Once operational, the facility will require maintenance visits approximately 3-4 times per year as required but will remain unattended at all other times. As the facility generates minimal visits per year it is considered that traffic interference will be negligible.

During the construction phase various vehicles will be used to deliver equipment and construct the Telstra Mobile Base Station Facility. Any traffic impacts associated with construction and establishment will be of a short-term duration (i.e. approximately five weeks over non-consecutive periods) and are not anticipated to adversely impact on the surrounding road network. Adequate parking would be available in the vicinity for vehicles used during construction and these movements would not impact local traffic. In the unlikely event that road closure is required Telstra will apply to the relevant authorities for permission.

11.6 Utilities

An application has been made to the local utility company confirming route and availability of power supply for this site. The proposed site does not require any additional permits for the connection of a sewer/roadway.

11.7 Construction

The construction of the mobile base station will take approximately five weeks over non-consecutive periods, subject to weather.

Noise and vibration emissions associated with the Telstra Mobile Base Station Facility will be limited to the construction phase. Noise generated during the construction phase will be of short duration and will be in accordance with the standards outlined in the Environmental Protection (Noise) Regulations 1997. Construction works will only occur between the hours of 7am and 6pm.

There will be some low-level noise from the ongoing operation of air conditioning equipment associated with the equipment shelter once it is installed. Noise emanating from the air conditioning equipment is at

a comparable level to a domestic air conditioning installation and will generally accord with the background noise levels prescribed by Australian Standard AS1055.

The proposed site is appropriately setback from residential properties so that the noise related impacts will be negligible.

11.8 Bushfire

The specific site location is identified as being in a Bush Fire Prone Area by the Fire and Emergency Services Commissioner (See **Figure 6**).

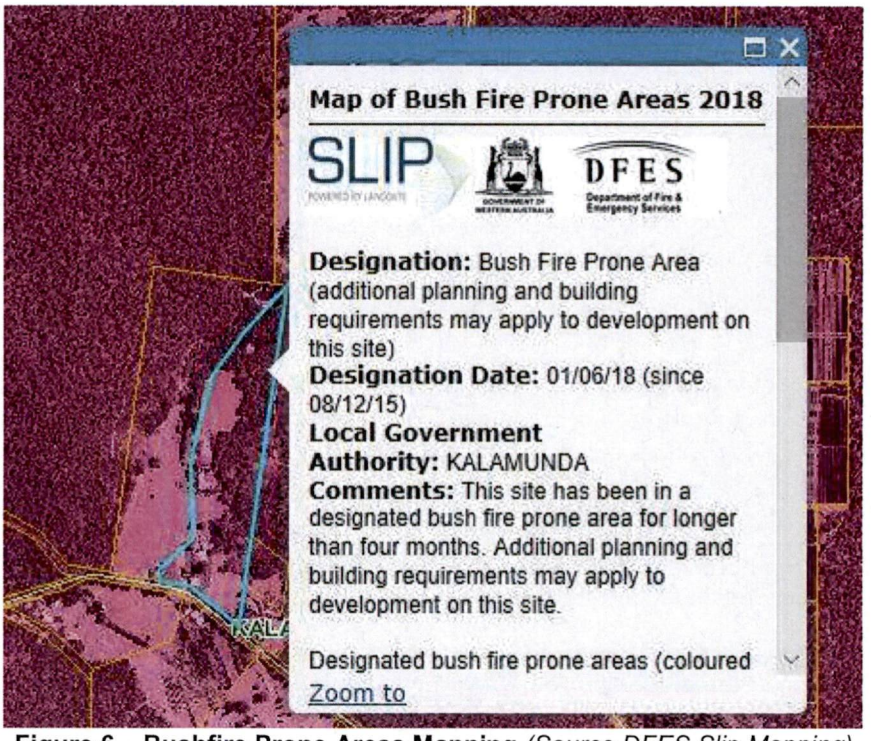


Figure 6 – Bushfire Prone Areas Mapping *(Source DFES Slip Mapping)*

Natural disasters, including the continuing threat of bushfires, have served to highlight the critical importance of effective telecommunications. Previous bushfire incident reviews have demonstrated effective telecommunications networks are essential for disaster response management, allowing emergency services providers to be alerted to medical or fire emergencies.

In its *Communications Report 2014-2015* the Australian Communications and Media Authority reported that in 2014 -15, 66.9% of calls to the 000 emergency number were made from mobile phones. Therefore, in addition to day-to-day personal and business applications, effective telecommunications networks can be the difference between life and death in disaster situations.

The entirety of the facility will be earthed in accordance with the Australian Standard. Earthing draws any lightning strike underground away from combustible material. It is submitted that contrary to being a risk factor for fires, the site in this case could reduce the risk of lightning strike causing fires, by attracting the strike and earthing it underground.

The *State Planning Policy 3.7* provides the foundation for land use planning to address bushfire risk management in Western Australia. Notwithstanding the Department of Planning updated *Planning Bulletin 111/2016* to clarify that for telecommunications infrastructure, *SPP 3.7* should be applied pragmatically.

The Planning Bulletin states:

"Exemptions from the requirements of SPP 3.7 and the deemed provisions should be applied pragmatically by the decision maker. If the proposal does not result in the intensification of development (or land use), does not result in an increase of residents or employees; or does not involve the occupation of employees on site for any considerable amount of time, then there may not be any practicable reason to require a BAL Assessment. Exemptions may apply to infrastructure including roads, telecommunications and dams; and to rural activities, including piggeries and chicken farms which do not involve employees on site for a considerable amount of time."

With respect to the above, Visionstream on behalf of Telstra believes that all necessary design measures have been undertaken to ensure the facility does not increase or affect the bushfire risk to the area.

11.9 Health and Safety

Telstra acknowledges some people are genuinely concerned about the possible health effects of electromagnetic energy (EME) from mobile phone base stations and is committed to addressing these concerns responsibly.

Telstra, along with the other mobile phone carriers, must strictly adhere to Commonwealth Legislation and regulations regarding mobile phone facilities and equipment administered by the Australian Communications and Media Authority (ACMA).

In 2003 the ACMA adopted a technical standard for continuous exposure of the general public to RF EME from mobile base stations. The standard, known as the *Radiocommunications (Electromagnetic Radiation – Human Exposure) Standard 2003*, was prepared by the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) and is the same as that recommended by ICNIRP (International Commission for Non- Ionising Radiation Protection), an agency associated with the World Health Organisation (WHO). Mobile carriers must comply with the Australian Standard on exposure to EME set by the ACMA.

The Standard operates by placing a limit on the strength of the signal (or RF EME) that Telstra can transmit to and from any network base station. The general public health standard is not based on distance limitations or the creation of "buffer zones". The environmental standard restricts the signal strength to a level low enough to protect everyone at all times. It has a significant safety margin, or precautionary approach, built into it.

In order to demonstrate compliance with the standard, the ARPANSA created a prediction report using a standard methodology to analyse the maximum potential impact of any new telecommunications facility. Carriers are obliged to undertake this analysis for each new facility and make it publicly available.

Importantly, the ARPANSA-created compliance report demonstrates the maximum signal strength of a proposed facility, assuming that it is handling the maximum number of users 24-hours a day.

In this way, the ARPANSA requires network carriers to demonstrate the greatest possible impact that a new telecommunications facility could have on the environment to give the community greater peace of mind. In reality, base stations are designed to operate at the lowest possible power level to accommodate only the number of customers using the facility at any one time. This design function is called "adaptive power control" and ensures that the base station operates at minimum, not maximum, power levels at all times.

Using the ARPANSA standard methodology, Telstra is required to complete and make available an EME report which predicts the maximum environmental EME level the facility will emit. Telstra has undertaken a compliance report that predicts the maximum levels of radiofrequency EME from the proposed installation at 195 Forrest Road in Pickering Brook to be 0.12% of the public exposure limit. The maximum environmental EME level predicted from this proposed facility is substantially within the allowable limit under the ARPANSA standard.

Refer to the EME Report attached at Appendix C.

Telstra relies on the expert advice of national and international health authorities such as the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) and the World Health Organisation (WHO) for overall assessments of health and safety impacts.

The WHO advises that all expert reviews on the health effects of exposure to radiofrequency fields have concluded that no adverse health effects have been established from exposure to radiofrequency fields at levels below the international safety guidelines that have been adopted in Australia.

Telstra has strict procedures in place to ensure its mobile phones and base stations comply with these guidelines. Compliance with all applicable EME standards is part of Telstra's responsible approach to EME and mobile phone technology.

11.10 Erosion, Sediment Control and Waste Management

All erosion and sediment control mitigation measures will be detailed in construction plans and will comply with the *Building Code of Australia* and Local Council Standards. On completion of the installation, the site will be restored and reinstated to an appropriate standard. No waste which requires collection or disposal will be generated by the operation of the facility.

11.11 Social and Economic Impact

Reliable mobile phone coverage is important to ensure the economic growth of communities. It is not expected to have any adverse social or economic impacts as a result of the development. Indeed, it is anticipated that there would be positive impacts because of the mobile telephone coverage, and the proposed facility could also be utilised in the event of an emergency with reference to mobile phone and internet use.

The proposed development is essential to enable Carriers to remain competitive and increase the choice of mobile telephone services to consumers. Additional competition in the market will have economic benefits for individual consumers and the community as a whole. The development is consistent, with the objectives of the *Telecommunications Act 1997*, namely:

- To promote "the efficiency and international competitiveness of the Australian telecommunications industry" (s.3 (1)); and
- To ensure that telecommunications services "are supplied as efficiently and economically as practicable" (s.3 (2) (a) (ii).

12.0 Conclusion

This application is a direct result of the community's requests for reliable telecommunications to be provided to the Pickering Brook area. There is strong State policy support for telecommunications facilities if, when balancing improved telecommunications services with environmental impacts; including for example, visual impact and flood or fire hazard, a particular proposal provides a net community benefit.

The proposed works provide the community with reliable 4G access which in turn supports the various rural, residential and tourist industries in the region and form part of a wider plan to ensure reliable and accessible coverage during emergency situations such as in the event of bush fires.

The proposed telecommunications facility will form an integral component in Telstra's national 4GX network. This 4G service brings higher speeds and extra 4G coverage to a range of communities across the nation. 4GX will include services provided over Telstra's new 700MHz spectrum and deliver higher typical mobile speeds on compatible devices, allowing more Australians to experience more reliable connections and ultra-fast mobile internet.

Telstra has undertaken an assessment of the relevant matters as required by the *Telecommunications Act 1997*, State Legislation and the Shire of Kalamunda's *Local Planning Scheme No. 3*. The proposal is

considered appropriate in light of the relevant legislative, environmental, technical, radio coverage and public safety requirements.

The proposed facility is considered appropriate for the subject site for the following reasons:

- The facility is located as part of the Mobile Blackspot Program to provide reliable mobile phone service to the Pickering Brook area. It will deliver mobile coverage to regional and remote communities who, for the first time, will be able to access fast mobile voice and data services. The improved coverage is increasing access to new technologies for key regional sectors and communities, which rely on a fast, reliable and affordable mobile network.

- Public views to the facility are adequately contained due to the presence of mature vegetation and the undulating topography.

- The proposed location of the facility will ensure that it will not impact on the vistas from these public viewpoints or the valued landscape qualities in the region.

- The proposal is consistent with the relevant provisions of the *Shire of Kalamunda Local Planning Scheme No. 3*.

- The proposal will improve Telstra 4GX communications services to the area, including voice calls, video calling and Wireless Broadband – a high speed wireless internet service via the 3G/4G phone network.

- The proposed facility is appropriately located on Rural Agricultural land, providing good separation from residential properties and roads.

- Overall it is considered that the proposed facility is acceptable and will not cause a considerable loss of visual amenity to the surrounding area due to the facility's design and extensive mature vegetation present on the subject property. It is submitted that a reasonable balance has been struck between the technical requirements for a new facility in this area, the need to deliver an optimum level of service based on the level of coverage delivered by a facility of this height and the need to minimise visual and other environmental impacts.

- The proposed installation will provide possible opportunities for future co-location on the lattice tower by other carriers.

- Emissions from the proposed facility will be significantly below the Australian Radiation Protection and Nuclear Safety Agency standards adopted by the Australian Communications and Media Authority.

The assessment of the proposal demonstrates that the proposal represents sound and proper town planning and it is respectively requested that consent is granted for this development application.

Should Council have any further queries regarding the subject application, please do not hesitate to contact the nominated representative outlined within this document.

Appendix B – Plans of the Proposal

TN

FOREST AREA

EXISTING POND.

PROPOSED TELSTRA SITE. REFER TO SHEET S1-1 FOR SITE LAYOUT DETAILS.

EXISTING TREES TO BE REMOVED FOR SITE CONSTRUCTION.

PROPOSED TELSTRA ACCESS TRACK .

EXISTING TREES

EXISTING SOLID ROCK PATCH

FOREST AREA

PROPOSED POWER AND FIBRE IN THE SAME TRENCH (APPROX. 590.0m).

FOREST AREA

EXISTING NEIGHBOUR PROPERTY BOUNDARY FENCE

EXISTING GATE.

CONSTRUCTION ACCESS (APPROX 580.0m) - SOME UPGRADE REQUIRED.

EXISTING SHED

PROPOSED TELSTRA ACCESS GATE

EXISTING HOUSE

PROPOSED COMMON METERS BOARD.

PROPOSED COMMON METER PANEL TO BE INSTALLED ADJACENT TO WP NEW MINI PILLAR TO ACCOMMODATE OWNER AND TELSTRA METERS.

EXISTING O/H CONSUMER MAIN CABLE TO BE RECOVERED AND NEW MINI PILLAR TO BE INSTALLED BY WESTERN POWER.

VALENTO RD

REPATRIATION RD

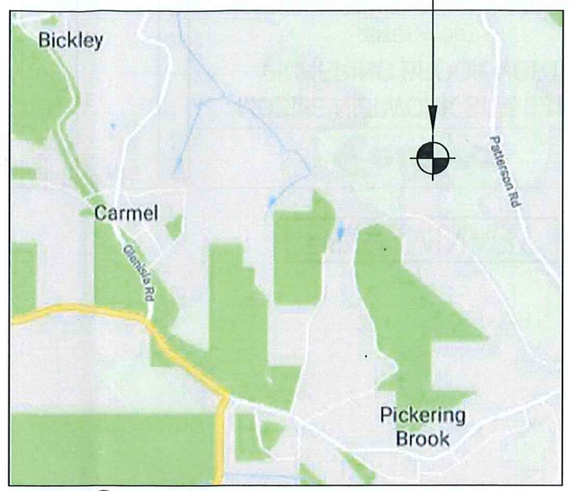
FORREST RD

SITE ACCESS

SCALE 1:2000

20m 0 20m 40m 60m 80m 100m SCALE 1:2000

RFNSA SITE NO. 6076017



LOCALITY PLAN

NOT TO SCALE

COMPLIANCE BOX

COMPLETED AS PER DESIGN ☐

ALTERATIONS IN RED ☐

NAME (PRINT)

SIGNATURE DATE

UNAPPROVED DRAWING

PRELIMINARY

PROPERTY DESCRIPTION

LOT 61 ON DIAGRAM 53905
CITY OF KALAMUNDA

SITE STRUCTURE CO-ORDINATES (GDA94) GPS READING ACCURACY: ±10m CENTRE OF TOWER	
LATITUDE	-32.01686° (GDA94)
LONGITUDE	116.12368° (GDA94)

visionstream

TO BE READ IN CONJUNCTION WITH SHEETS S1-1, S1-2, S3 & S3-1.

ORDER	DRAWN	CHKD	AMENDMENT	EXAM	APPD	DATE	ISS
WA09880.01	FA	MT	PRELIMINARY - 30075530W0001 VPL - LTE700 / LTE1800 / WCDMA850	AS	RO	30.08.18	1

Telstra

MOBILE NETWORK SITE 321008
PICKERING BROOK NORTH
SITE ACCESS AND LOCALITY PLAN
195 FORREST RD, PICKERING BROOK, WA 6076

DWG NO. W108994 SHT NO. S1

Cad file: W108994_PD.DWG A3

TN

EXISTING TREES IN THE PROPOSED COMPOUND AND AROUNDS TO BE REMOVED FOR CONSTRUCTION

PROPOSED TELSTRA 450W NEMA 20B CABLE LADDER (APPROX. 2.0m) TO ACCOMMODATE PROPOSED TELSTRA FEEDERS.

PROPOSED TELSTRA POWER DISTRIBUTION BOARD.

PROPOSED TELSTRA LTE700 GPS ANTENNA (1 OFF) TO BE INSTALLED ON PROPOSED STANDARD MOUNT.

PROPOSED TELSTRA ICS BS-TYPE 1B EQUIPMENT SHELTER (3.0m x 2.5m) TO ACCOMMODATE PROPOSED EQUIPMENT.

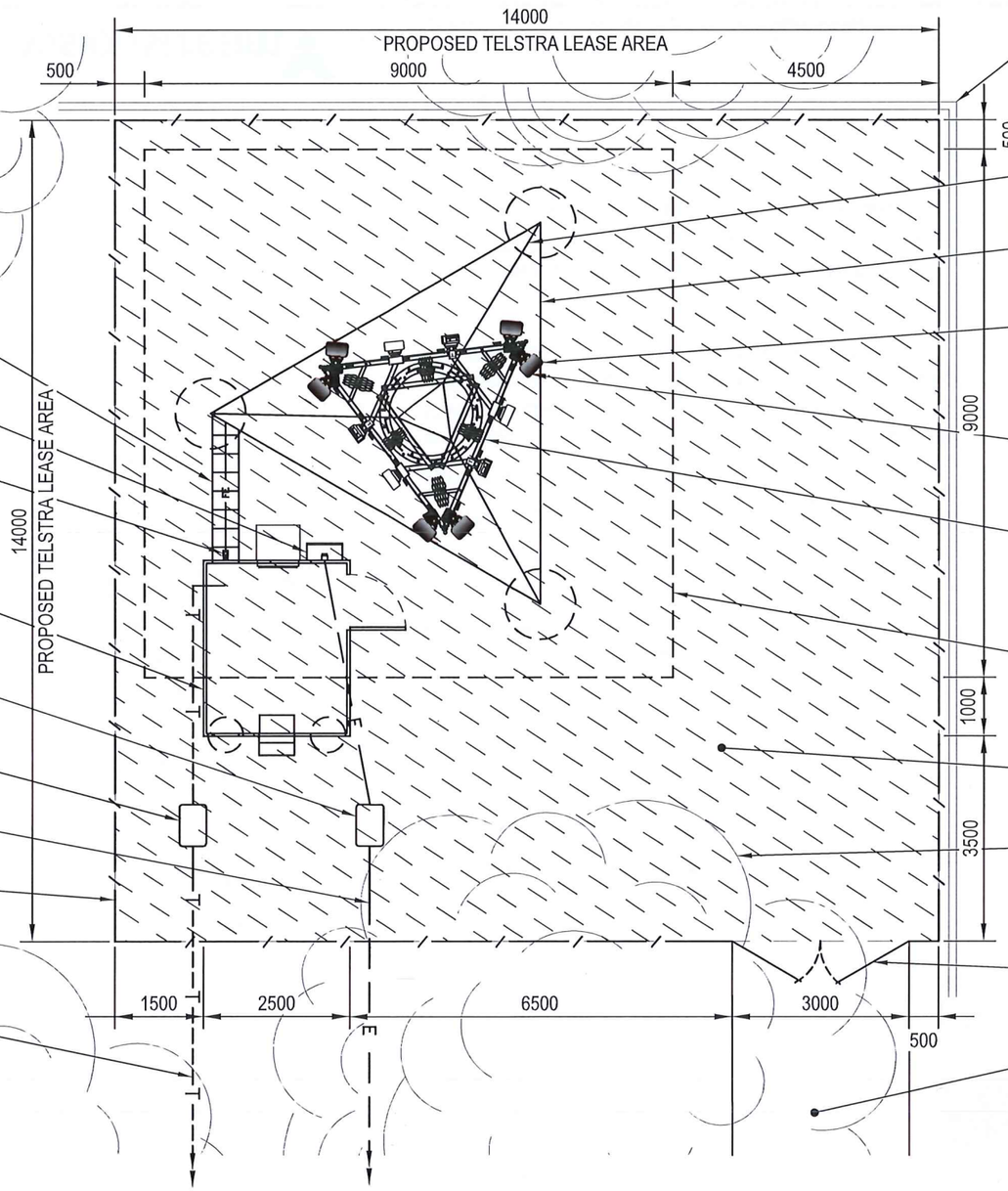
PROPOSED TELSTRA P5 ELECTRICAL PIT

PROPOSED TELSTRA P5 FIBRE PIT

PROPOSED TELSTRA U/G POWER ROUTE. REFER TO NOTE 5.

PROPOSED TELSTRA COMPOUND STANDARD SECURITY FENCE (14.0m x 14.0m) WITH 3.0m WIDE ACCESS GATES.

PROPOSED TELSTRA U/G FIBRE ROUTE. REFER TO NOTE 5.



PROPOSED 1.0m HIGH RETAINING WALL ON THE NORTH AND EAST BOUNDARY

#6 PROPOSED SIGN TO BE SECURED AT 1.5m AGL TO TOWER LEG

PROPOSED TELSTRA 60.0m HIGH LATTICE TOWER WITH 10.0m EXTENSION.

PROPOSED TELSTRA PANEL ANTENNAS & TMA'S. REFER TO SHEETS S1-2 & S3 FOR DETAILS.

#2 PROPOSED SIGNS TO BE UV STABLE STICKERS AND FIXED TO REAR OF ALL TELSTRA PANEL ANTENNAS (6 OFF)

PROPOSED TELSTRA TRIANGULAR HEADFRAME TO ACCOMMODATE PROPOSED ANTENNAS AND TMA'S. REFER TO DWG. T05-2-AM02 REV. 1 FOR DETAILS.

PROPOSED TELSTRA TOWER FOOTING (9.0m x 9.0m) (INDICATIVE ONLY).

PROPOSED TELSTRA COMPOUND AREA (14.0m x 14.0m)

EXISTING TREES TO BE REMOVED FOR SITE CONSTRUCTION.

#13 PROPOSED SIGN TO BE SECURED TO COMPOUND ACCESS GATE

PROPOSED TELSTRA 3.0m WIDE ACCESS TRACK

UNAPPROVED DRAWING

COMPLIANCE BOX
COMPLETED AS PER DESIGN ☐
ALTERATIONS IN RED ☐
NAME (PRINT)
SIGNATURE DATE

SITE LAYOUT

SCALE 1:100

1m 0 1m 2m 3m 4m 5m SCALE 1:100

PRELIMINARY

TO BE READ IN CONJUNCTION WITH SHEETS S1, S1-2, S3 & S3-1.

NOTES :

1. ALL EXTERNAL FEEDERS AND TAILS MUST BE BIRD PROOFED AS PER EXTERNAL PLANT POLICY 003615.
2. FOR EME SIGNS NOTED AS #X REFER TO 005486 DOCUMENTS FOR DETAILS.
3. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
4. ▨ PROPOSED TELSTRA LEASE AREA.
5. PROPOSED POWER & FIBRE ROUTE IN SAME TRENCH.

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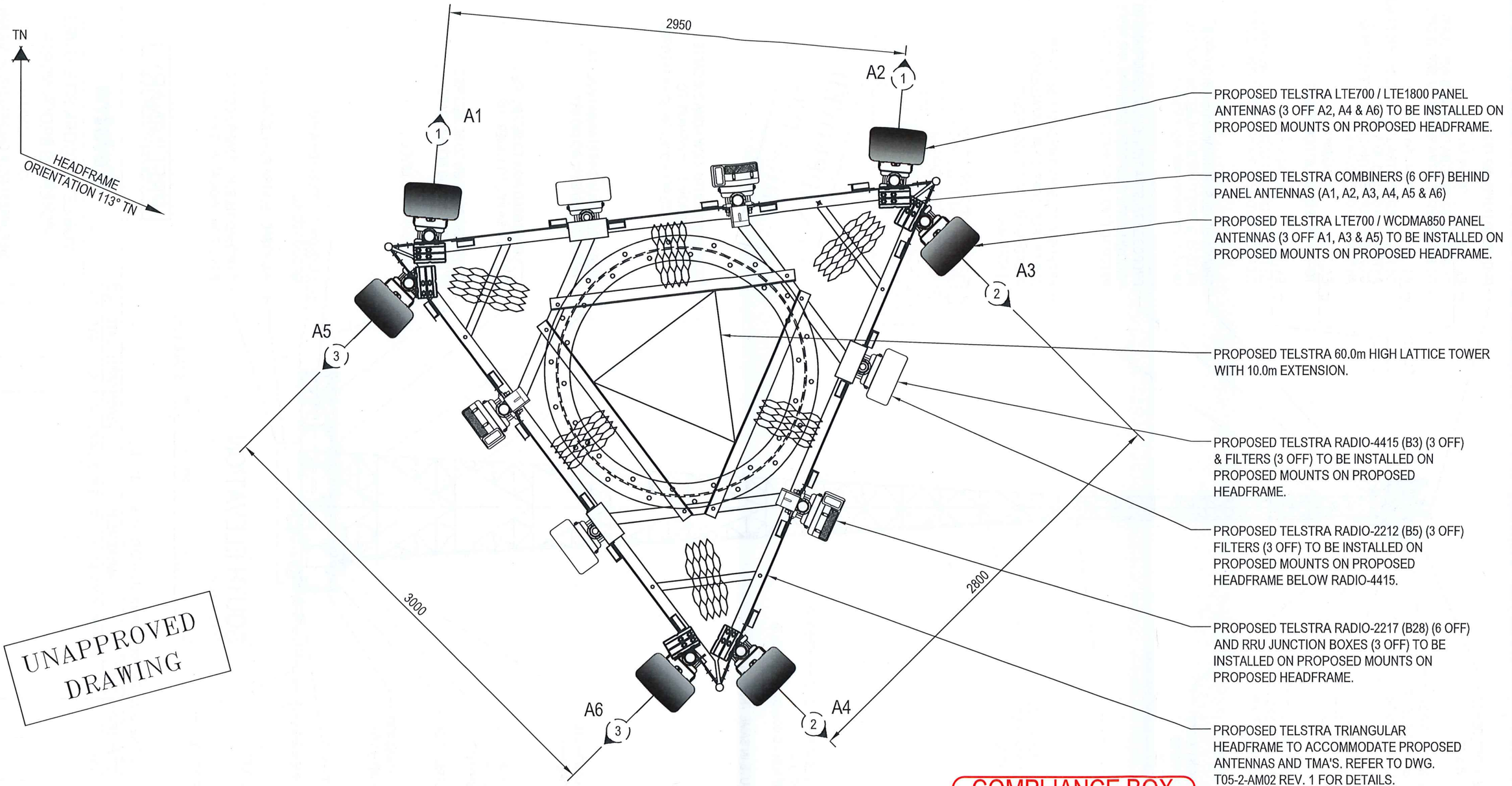
ORDER	DRAWN	CHKD	AMENDMENT	EXAM	APPD	DATE	ISS
WA08880.01	FA	MT	PRELIMINARY - 30075530W0001 VPL - LTE700 / LTE1800 / WCDMA850	AS	RO	30.08.18	1

Telstra

MOBILE NETWORK SITE 321008
PICKERING BROOK NORTH
SITE LAYOUT
195 FORREST RD, PICKERING BROOK, WA 6076

DWG NO. W108994 SHT NO. S1-1

Cad file: W108994_PD.DWG A3



PROPOSED TELSTRA LTE700 / LTE1800 PANEL ANTENNAS (3 OFF A2, A4 & A6) TO BE INSTALLED ON PROPOSED MOUNTS ON PROPOSED HEADFRAME.

PROPOSED TELSTRA COMBINERS (6 OFF) BEHIND PANEL ANTENNAS (A1, A2, A3, A4, A5 & A6)

PROPOSED TELSTRA LTE700 / WCDMA850 PANEL ANTENNAS (3 OFF A1, A3 & A5) TO BE INSTALLED ON PROPOSED MOUNTS ON PROPOSED HEADFRAME.

PROPOSED TELSTRA 60.0m HIGH LATTICE TOWER WITH 10.0m EXTENSION.

PROPOSED TELSTRA RADIO-4415 (B3) (3 OFF) & FILTERS (3 OFF) TO BE INSTALLED ON PROPOSED MOUNTS ON PROPOSED HEADFRAME.

PROPOSED TELSTRA RADIO-2212 (B5) (3 OFF) FILTERS (3 OFF) TO BE INSTALLED ON PROPOSED MOUNTS ON PROPOSED HEADFRAME BELOW RADIO-4415.

PROPOSED TELSTRA RADIO-2217 (B28) (6 OFF) AND RRU JUNCTION BOXES (3 OFF) TO BE INSTALLED ON PROPOSED MOUNTS ON PROPOSED HEADFRAME.

PROPOSED TELSTRA TRIANGULAR HEADFRAME TO ACCOMMODATE PROPOSED ANTENNAS AND TMA'S. REFER TO DWG. T05-2-AM02 REV. 1 FOR DETAILS.

UNAPPROVED DRAWING

ANTENNA LAYOUT AT EL 71.1m & RRU LAYOUT AT EL 71.6m

SCALE 1:25

250 0 250 500 750 1000 1250 SCALE 1:25

COMPLIANCE BOX
COMPLETED AS PER DESIGN ☐
ALTERATIONS IN RED ☐
NAME (PRINT)
SIGNATURE DATE

PRELIMINARY

TO BE READ IN CONJUNCTION WITH SHEETS S1, S1-1, S3 & S3-1.

ORDER	DRAWN	CHKD	AMENDMENT	EXAM	APPD	DATE	ISS
WA09880.01	FA	MT	PRELIMINARY - 30075530W0001 VPL - LTE700 / LTE1800 / WCDMA850	AS	RO	30.08.18	1

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Telstra

MOBILE NETWORK SITE 321008
PICKERING BROOK NORTH
ANTENNA LAYOUT
195 FORREST RD, PICKERING BROOK, WA 6076

DWG NO. W108994 SHT NO. S1-2

Cad file: W108994_PD.DWG 6 A3

PROPOSED TELSTRA COMBINERS (6 OFF) BEHIND PANEL ANTENNAS (A1, A2, A3, A4, A5 & A6)

PROPOSED TELSTRA LTE700 / WCDMA850 PANEL ANTENNAS (3 OFF A1, A3 & A5) TO BE INSTALLED ON PROPOSED MOUNTS ON PROPOSED HEADFRAME.

PROPOSED SIGNS TO BE UV STABLE STICKERS AND FIXED TO REAR OF ALL TELSTRA PANEL ANTENNAS (6 OFF) [# 2]

PROPOSED TELSTRA LTE700 / LTE1800 PANEL ANTENNAS (3 OFF A2, A4 & A6) TO BE INSTALLED ON PROPOSED MOUNTS ON PROPOSED HEADFRAME.

PROPOSED TELSTRA RADIO-2217 (B28) (6 OFF) AND RRU JUNCTION BOXES (3 OFF) TO BE INSTALLED ON PROPOSED MOUNTS ON PROPOSED HEADFRAME.

PROPOSED TELSTRA 60.0m HIGH LATTICE TOWER WITH 10.0m EXTENSION.

PROPOSED TELSTRA 7/8 " HYBRID CABLES (3 OFF) TO RUN ALONG TOWER LEG USING PROPOSED STANDARD LEBLANC FEEDER BRACKETS.

PROPOSED LIGHTNING FINIAL

▽ E.L. 71.6m RL 344.6m A.H.D.
C/L PROPOSED TELSTRA RADIO-4415 (B3) (3 OFF)
C/L PROPOSED TELSTRA RADIO-2217 (B28) (3 OFF)

▽ E.L. 71.1m RL 344.1m A.H.D.
C/L PROPOSED TELSTRA LTE700 / WCDMA850 PANEL ANTENNAS (3 OFF, A1, A3 & A5)
C/L PROPOSED TELSTRA LTE700 / LTE1800 PANEL ANTENNAS (3 OFF, A2, A4 & A6)

▽ E.L. 70.0m RL 343.0m A.H.D.
TOP OF PROPOSED LATTICE TOWER

▽ E.L. 69.1m RL 342.1m A.H.D.
C/L PROPOSED TELSTRA RADIO-2212 (B5) (3 OFF)
C/L PROPOSED TELSTRA RADIO-2217 (B28) (3 OFF)

PROPOSED TELSTRA RADIO-4415 (B3) (3 OFF) & FILTERS (3 OFF) TO BE INSTALLED ON PROPOSED MOUNTS ON PROPOSED HEADFRAME.

PROPOSED TELSTRA TRIANGULAR HEADFRAME TO ACCOMMODATE PROPOSED ANTENNAS AND TMA'S. REFER TO DWG. T05-2-AM02 REV. 1 FOR DETAILS.

PROPOSED TELSTRA RADIO-2212 (B5) (3 OFF) AND FILTERS (3 OFF) TO BE INSTALLED ON PROPOSED MOUNTS ON PROPOSED HEADFRAME .

COMPLIANCE BOX
COMPLETED AS PER DESIGN ☐
ALTERATIONS IN RED ☐
NAME (PRINT)
SIGNATURE DATE

UNAPPROVED DRAWING

NOTES :

1. ALL EXTERNAL FEEDERS AND TAILS MUST BE BIRD PROOFED AS PER EXTERNAL PLANT POLICY 003615.
2. FOR EME SIGNS NOTED AS [#X] REFER TO 005486 DOCUMENTS FOR DETAILS.
3. PROPOSED POWER & FIBRE ROUTE IN SAME TRENCH.

PROPOSED TELSTRA 450W NEMA 20B CABLE LADDER (APPROX. 2.0m) (BEHIND) TO ACCOMMODATE PROPOSED TELSTRA FEEDERS.

PROPOSED TELSTRA LTE700 GPS ANTENNA (1 OFF) TO BE INSTALLED ON PROPOSED STANDARD MOUNT.

PROPOSED TELSTRA ICS BS-TYPE 1B EQUIPMENT SHELTER (3.0m x 2.5m) TO ACCOMMODATE PROPOSED EQUIPMENT.

PROPOSED TELSTRA POWER DISTRIBUTION BOARD (BEHIND).

PROPOSED TELSTRA COMPOUND STANDARD SECURITY FENCE (14.0m x 14.0m) WITH 3.0m WIDE ACCESS GATES.

PROPOSED TELSTRA P5 FIBRE PIT

PROPOSED 1.0m HIGH RETAINING WALL ON THE NORTH AND EAST BOUNDARY

[# 6] PROPOSED SIGN TO BE SECURED AT 1.5m AGL TO TOWER LEG

[#13] PROPOSED SIGN TO BE SECURED TO COMPOUND ACCESS GATE

EXISTING GROUND LEVEL

▽ E.L. 00.0m RL 273.0m A.H.D.
GROUND LEVEL

PROPOSED TELSTRA P5 ELECTRICAL PIT.

PROPOSED TELSTRA TOWER FOOTING (9.0m x 9.0m) (INDICATIVE ONLY).

PROPOSED TELSTRA U/G FIBRE ROUTE. REFER TO NOTE 3.

PROPOSED TELSTRA U/G POWER ROUTE. REFER TO NOTE 3.

SOUTH ELEVATION

SCALE 1:250

5m 0 5m 10m SCALE 1:250

PRELIMINARY

TO BE READ IN CONJUNCTION WITH SHEETS S1, S1-1, S1-2 & S3-1.

ORDER	DRAWN	CHKD	AMENDMENT	EXAM	APPD	DATE	ISS
WA09880.01	FA	MT	PRELIMINARY - 30075530W0001 VPL - LTE700 / LTE1800 / WCDMA850	AS	RO	30.08.18	1

Telstra

MOBILE NETWORK SITE 321008
PICKERING BROOK NORTH
SOUTH ELEVATION
195 FORREST RD, PICKERING BROOK, WA 6076

DWG NO. W108994 SHT NO. S3

visionstream

Cad file: W108994_PD.DWG A3V

Plot date: 22 October 2018 - 6:51 PM

TELSTRA ANTENNA CONFIGURATION TABLE

ANTENNA No	ANTENNA TYPE & SIZE H x W x D	ANTENNA ACTION REQUIRED	ANTENNA HEIGHT C/L A.G.L.	ANTENNA BEARING (x°T)	SECTOR NO. & TECHNOLOGY
A1	ARGUS RVVPX310.11B-T2 PANEL 2533 x 350 x 208mm	INSTALL	71.1m	5°	S1: LTE700 / S1: WCDMA850 S1: LTE700 / S1: WCDMA850 SPARE SPARE SPARE SPARE
A2	ARGUS RVVPX310.11B-T2 PANEL 2533 x 350 x 208mm	INSTALL	71.1m	5°	S1: LTE700 S1: LTE700 S1: LTE1800 S1: LTE1800 S1: LTE1800 S1: LTE1800
A3	ARGUS RVVPX310.11B-T2 PANEL 2533 x 350 x 208mm	INSTALL	71.1m	135°	S2: LTE700 / S2: WCDMA850 S2: LTE700 / S2: WCDMA850 SPARE SPARE SPARE SPARE
A4	ARGUS RVVPX310.11B-T2 PANEL 2533 x 350 x 208mm	INSTALL	71.1m	135°	S2: LTE700 S2: LTE700 S2: LTE1800 S2: LTE1800 S2: LTE1800 S2: LTE1800
A5	ARGUS RVVPX310.11B-T2 PANEL 2533 x 350 x 208mm	INSTALL	71.1m	225°	S3: LTE700 / S3: WCDMA850 S3: LTE700 / S3: WCDMA850 SPARE SPARE SPARE SPARE
A6	ARGUS RVVPX310.11B-T2 PANEL 2533 x 350 x 208mm	INSTALL	71.1m	225°	S3: LTE700 S3: LTE700 S3: LTE1800 S3: LTE1800 S3: LTE1800 S3: LTE1800
A200	GPS ANTENNA KRE 101 2082/1 Ø68 x 96	INSTALL	BASE OF GPS 3.0m	0°	-

COMPLIANCE BOX
COMPLETED AS PER DESIGN ☐
ALTERATIONS IN RED ☐
NAME (PRINT)
SIGNATURE DATE

UNAPPROVED DRAWING

PRELIMINARY

TO BE READ IN CONJUNCTION WITH SHEETS S1, S1-1, S1-2 & S3.

ORDER	DRAWN	CHKD	AMENDMENT	EXAM	APPD	DATE	ISS
WA09880.01	FA	MT	PRELIMINARY - 30075530W0001 VPL - LTE700 / LTE1800 / WCDMA850	AS	RO	30.08.18	1

visionstream

Telstra

MOBILE NETWORK SITE 321008
PICKERING BROOK NORTH
ANTENNA CONFIGURATION TABLE
195 FORREST RD, PICKERING BROOK, WA 6076

DWG NO. W108994 SHT NO. S3-1

Cad file: W108994_PD.DWG A3V

Telstra Networks Wireless Program Delivery Template - 017666P02 issue 12.11.04.2016

visionstream

Appendix C – Environmental EME Report

visionstream

Environmental EME Report

Location	195 Forrest Road, PICKERING BROOK WA 6076		
Date	20/09/2018	**RFNSA No.**	6076017

How does this report work?

This report provides a summary of levels of radiofrequency (RF) electromagnetic energy (EME) around the wireless base station at 195 Forrest Road, PICKERING BROOK WA 6076. These levels have been calculated by Visionstream using methodology developed by the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA).
A document describing how to interpret this report is available at ARPANSA's website:
A Guide to the Environmental Report.

A snapshot of calculated EME levels at this site

There are currently no existing radio systems for this site.

The maximum EME level calculated for the **proposed** changes at this site is

0.12%

out of 100% of the public exposure limit, 438.24m from the location.

EME levels with the proposed changes

Distance from the site	Percentage of the public exposure limit
0-50 m	0.04%
50-100 m	0.05%
100-200 m	0.017%
200-300 m	0.066%
300-400 m	0.12%
400-500 m	0.12%

For additional information please refer to the EME ARPANSA Report annexure for this site which can be found at http://www.rfnsa.com.au/6076017.

Radio systems at the site

This base station currently has equipment for transmitting the services listed under the existing configuration. The proposal would modify the base station to include all the services listed under the proposed configuration.

	Existing		Proposed	
Carrier	Systems	Configuration	Systems	Configuration
Telstra			3G, 4G, 4GX	LTE700 (proposed), WCDMA850 (proposed), LTE1800 (proposed)

An in-depth look at calculated EME levels at this site

This table provides calculations of RF EME at different distances from the base station for emissions from existing equipment alone and for emissions from existing equipment and proposed equipment combined. All EME levels are relative to 1.5 m above ground and all distances from the site are in 360° circular bands.

	Existing configuration			Proposed configuration		
Distance from the site	Electric field (V/m)	Power density (mW/m^2)	Percentage of the public exposure limit	Electric field (V/m)	Power density (mW/m^2)	Percentage of the public exposure limit
0-50m				1.15	3.53	0.04%
50-100m				1.26	4.18	0.05%
100-200m				0.55	0.81	0.017%
200-300m				1.044	2.89	0.066%
300-400m				1.52	6.13	0.12%
400-500m				1.55	6.38	0.12%

Calculated EME levels at other areas of interest

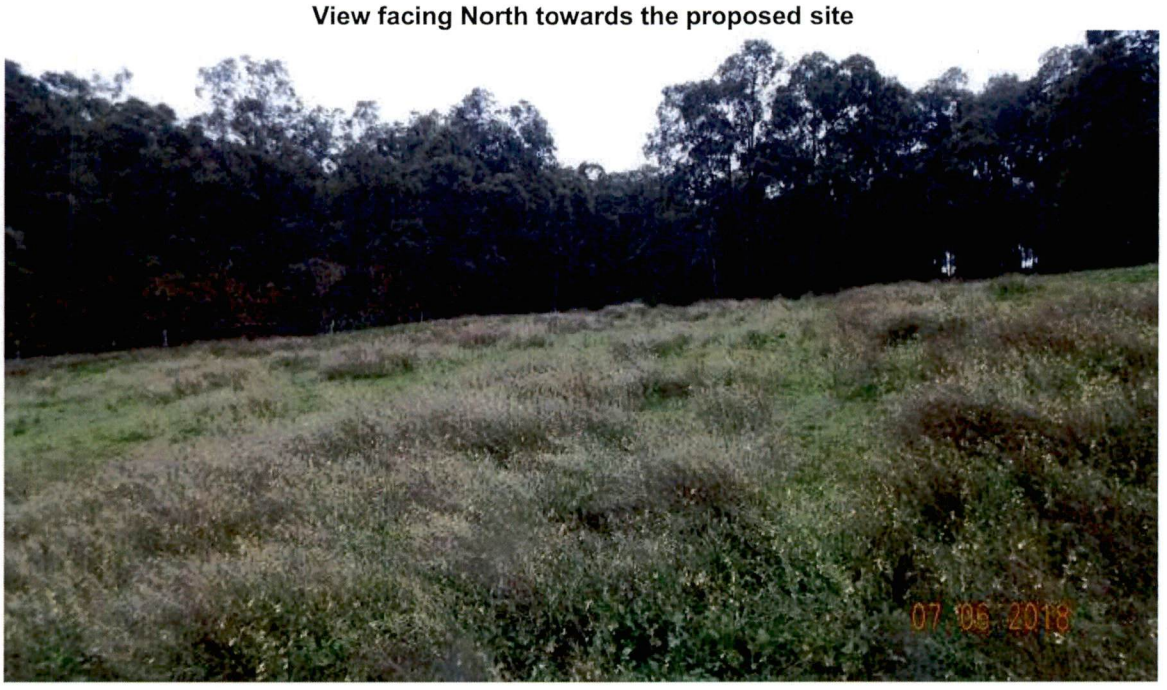
This table contains calculations of the maximum EME levels at selected areas of interest, identified through consultation requirements of the Communications Alliance Ltd Deployment Code C564:2011 or other means. Calculations are performed over the indicated height range and include all existing and any proposed radio systems for this site.

Maximum cumulative EME level for the proposed configuration

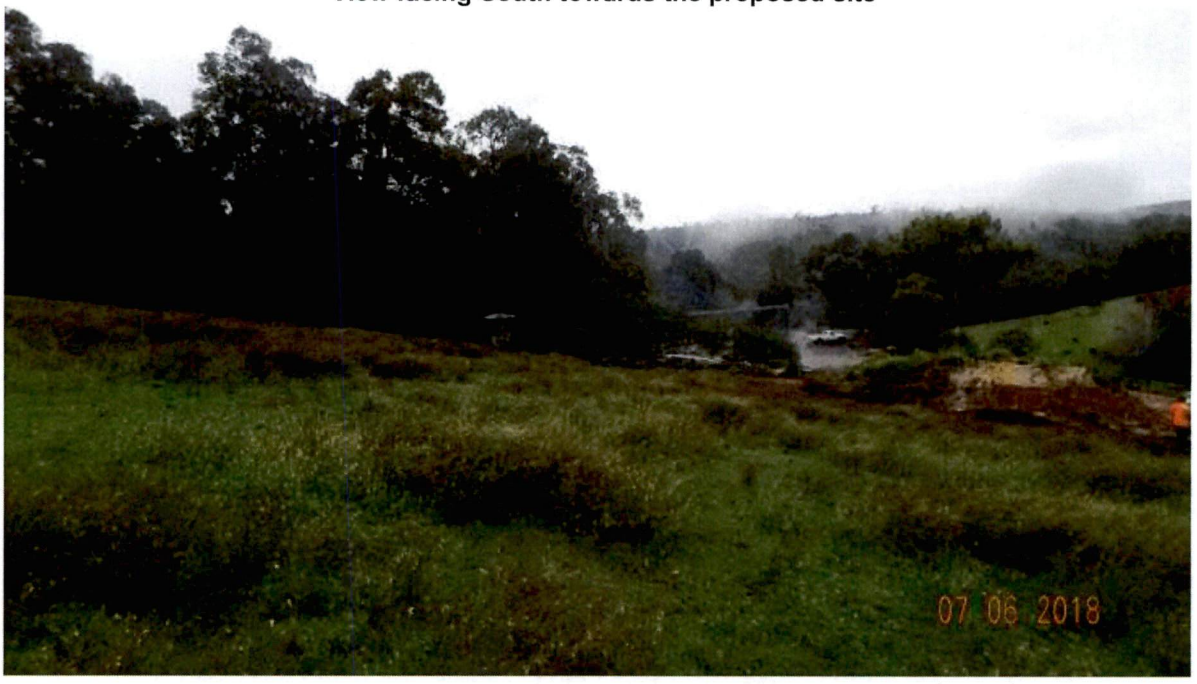
Location	Height range	Electric field (V/m)	Power density (mW/m^2)	Percentage of the public exposure limit
No locations identified				

Appendix D – Site Photographs

View facing North towards the proposed site



View facing South towards the proposed site



View facing East towards the proposed site

View facing West towards proposed site

Appendix E – Fact Sheets

MCF Fact Sheets

Reading the Australian radiation protection and nuclear safety agency EME report

The ARPANSA EME Report has been developed by the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) to ensure that information about wireless base stations and levels of electromagnetic energy (EME) are clearly provided to interested stakeholders.

An ARPANSA EME Report must be prepared for all new wireless base station installations and for upgrades of existing sites where the Mobile Phone Base Station Deployment Code 2011requires an ARPANSA EME report. The ARPANSA EME Reports are prepared by the carrier or a consultant on the carrier's behalf. This report is publically accessible via the mobile carrier's national database of all mobile phone sites, the Radio Frequency National site Archive(RFNSA- see www.rfnsa.com.au).

Mobile phone networks operate by sending radio signals from wireless base station antennas placed in strategic locations to and from mobile phones. These antennas are radio transceivers that transmit and receive electromagnetic energy in a specific surrounding area, much like other two-way radio signals.

For more information on electromagnetic energy, please refer to the ARPANSA fact sheet "Electromagnetic energy and its effects" found at
http://www.arpansa.gov.au/eme/index.cfm

EME is estimated using the mandated ARPANSA EME Report methodology. This methodology produces a predictive report based on site specific information and then adopting uniform assessment criteria. The report provides estimates based on the maximum predicted levels of EME.

The first two headings of the report provide introductory information about how the report is prepared and the EME regulations in relation to wireless base stations.
For more information about the EME exposure limits, please refer to the Australian Communications and Media Authority (ACMA) fact sheet "Mobile base stations and EME" found at
http://www.acma.gov.au/WEB/STANDARD/pc=PC_1750

Existing Site Radio Systems
This section of the ARPANSA EME Report provides information about any existing mobile telephone or other known wireless systems already operating at the specific location. This would include other carriers' operating systems.

The ARPANSA EME Report predictions take in to account the EME levels of operating systems able to be identified by the carrier at that specific location, so that the EME information provided in the Table of Predicted EME Levels is cumulative information.

Table of Predicted EME Levels – Existing
This table shows the predicted levels of electromagnetic energy from the existing site. Information about the levels of EME are predicted from beneath the proposed antennas to distances of 500m from the site.

The left side of the table shows the levels calculated in circular "bands" from the site, i.e. from the base to 5m distance, 5m to 50 m distance and so on. For example, if you were interested in the maximum predicted level of EME at a distance of 90m from the site, you would refer to the level in the 50m – 100m band. The level reported in each band is the maximum level that will occur in that band.

The right side of the table provides information about the predicted levels of EME. The information is expressed as a percentage of the Australian Government's mandated ARPANSA Standard (RPS3). This Standard provides protection for all people (including children, the infirm and the elderly) for assumed exposure 24 hours a day, 7 days a week.

The levels are predicted at interval distances from the mobile phone base station at a height of 1.5m above the ground. This table assumes that the ground level is flat. Appendix A of the EME Report may provide further information if there is a significant variation in the ground level from the site.

MCF Fact Sheets

Existing and proposed radio systems
This section details the existing radio systems and provides further detail about the proposed radio systems. It should be noted that this section is used when there are existing systems, rather than new facilities where there are no existing base station equipment.

Proposed radio systems
This section provides details about the operating systems that the carrier intends to install at the site. It should be noted that this section is used when there is no existing base station equipment at the site.

This information is usually expressed in terms of the identified frequency band at which the systems will operate. (E.g.) Wideband CDMA 2100 – WCDMA2100

For more information on radio frequencies and systems, please refer to the ARPANSA fact sheet "About mobile phone networks" found at http://www.arpansa.gov.au/eme/index.cfm

Table of predicted EME levels – proposed
This table provides calculations of the predicted levels of electromagnetic energy from the proposed site. This includes both the existing and the proposed installations.

The left side of the table shows levels calculated in circular "bands" from the site, i.e. from the base to 5m distance, 5m to 50 m distance and so on. For example, if you were interested in the maximum predicted level of EME at a distance of 90m from the site, you would refer to the level in the 50m – 100m band. The level reported in each band is the maximum level that will occur in that band, at a height of 1.5m above ground level

The right side of the table provides information about the predicted levels of EME from any existing radio transceiver equipment and the proposed equipment. The information is expressed as a percentage of the Australian Government mandated ARPANSA Standard (RPS3). This Standard provides protection for all people (including children, the infirm and the elderly) for assumed exposure 24 hours a day, 7 days a week.

The levels are calculated uniformly out to a distance of 500m from the base station at a height of 1.5m above the ground. This table assumes that the ground level is flat. Appendix A of the EME Report may provide further information if there is a significant variation in the ground level from the site.

The bottom of the table highlights the maximum predicted **cumulative** EME level from the site. It provides information about the maximum predicted level and the actual distance from the site at which it occurs.

The predicted cumulative levels of EME do not include any predictions from other equipment on the site other than wireless base station antennas.

Summary – Proposed Radio Systems
This section provides a statement about the maximum level of EME for the proposed site expressed as a percentage of the mandatory public exposure limits.

Appendix A: Other areas of interest
This section of the report provides information on specific locations which may be considered as an "area of interest" in relation to the proposed facility. This would include areas identified as community sensitive locations as defined in the Deployment Code consultation plan, and any other specific locations of interest to stakeholders and could be areas which may be affected by differing topography i.e. when the land is not flat.

Mobile phone carriers are required to consider areas of interest as part of their planning and consultation process. The ARPANSA EME Report can provide information about predicted levels of EME at certain identified locations such as schools, child care centres and residential addresses. Appendix A allows for up to 5 locations to be included in the report.

This section of the report can also provide predictions for situations such as land sloping upward away from the base station or for differing building heights.

For example, a primary school may be located 205m away from the base station. The report can be prepared so that the location of the school is expressed by its distance from the base station, and the predicted level of EME at that specific location is calculated and shown in Appendix A.

Similarly, if a 3 storey building is located 50m from the base station, the maximum EME levels can be predicted at an estimated height on the façade of the building, such as the balcony on the second floor. If the building was on ground level higher than the mobile phone base station, the calculations can be adjusted accordingly.

Summary
The ARPANSA EME Report is an important tool for providing the community with information about estimated levels of EME from wireless base stations. It is prepared by mobile phone carriers as part of the process for deploying mobile phone base stations.

Each report is prepared on a site specific basis following a methodology developed by ARPANSA. For more information about the methodology, please refer to the ARPANSA Fact sheet "Understanding the ARPANSA EME Report" found at http://www.arpansa.gov.au/emereports/explanation.cfm

If you have any questions about site specific reports, please refer them directly to the relevant carrier.

For more information about EME, the Australian Communications and Media Authority have a web site specifically focussing on this issue "Mobile phone towers and EME: information for Communities and Councils" which can be found at http://emr.acma.gov.au/

Revised April 2013

Appendix F – Environment Analysis Report (EPBC)

Australian Government
Department of the Environment and Energy

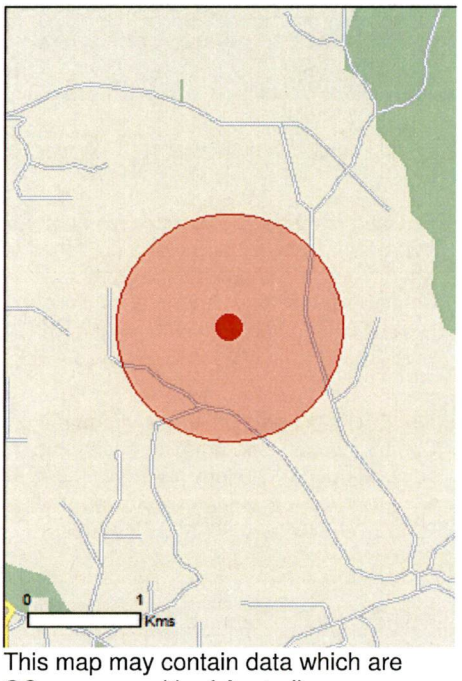
EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about Environment Assessments and the EPBC Act including significance guidelines, forms and application process details.

Report created: 31/05/18 13:08:04



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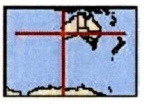

Summary

Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	18
Listed Migratory Species:	9

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at http://www.environment.gov.au/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Land:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	14
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Commonwealth Reserves Marine:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

State and Territory Reserves:	1
Regional Forest Agreements:	1
Invasive Species:	29
Nationally Important Wetlands:	None
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Listed Threatened Species		[Resource Information]
Name	Status	Type of Presence
Birds		
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calyptorhynchus banksii naso Forest Red-tailed Black-Cockatoo, Karrak [67034]	Vulnerable	Species or species habitat likely to occur within area
Calyptorhynchus baudinii Baudin's Cockatoo, Long-billed Black-Cockatoo [769]	Endangered	Roosting known to occur within area
Calyptorhynchus latirostris Carnaby's Cockatoo, Short-billed Black-Cockatoo [59523]	Endangered	Species or species habitat known to occur within area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area
Mammals		
Dasyurus geoffroii Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat likely to occur within area
Pseudocheirus occidentalis Western Ringtail Possum, Ngwayir, Womp, Woder, Ngoor, Ngoolangit [25911]	Critically Endangered	Species or species habitat may occur within area
Setonix brachyurus Quokka [229]	Vulnerable	Species or species habitat likely to occur within area
Other		
Westralunio carteri Carter's Freshwater Mussel, Freshwater Mussel [86266]	Vulnerable	Species or species habitat may occur within area
Plants		
Acacia anomala Grass Wattle, Chittering Grass Wattle [8153]	Vulnerable	Species or species habitat known to occur within area

Name	Status	Type of Presence
Anthocercis gracilis Slender Tailflower [11103]	Vulnerable	Species or species habitat may occur within area
Diplolaena andrewsii [6601]	Endangered	Species or species habitat may occur within area
Diuris micrantha Dwarf Bee-orchid [55082]	Vulnerable	Species or species habitat likely to occur within area
Diuris purdiei Purdie's Donkey-orchid [12950]	Endangered	Species or species habitat likely to occur within area
Thelymitra dedmaniarum Cinnamon Sun Orchid [65105]	Endangered	Species or species habitat may occur within area
Thelymitra stellata Star Sun-orchid [7060]	Endangered	Species or species habitat likely to occur within area

Listed Migratory Species [Resource Information]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Migratory Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Species or species habitat may occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species		[Resource Information]
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.		
Name	Threatened	Type of Presence
Birds		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea alba Great Egret, White Egret [59541]		Species or species habitat likely to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat may occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Species or species habitat may occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat may occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area

Extra Information

State and Territory Reserves [Resource Information]

Name	State
Korung	WA

Regional Forest Agreements [Resource Information]

Note that all areas with completed RFAs have been included.

Name	State
South West WA RFA	Western Australia

Invasive Species [Resource Information]

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resouces Audit, 2001.

Name	Status	Type of Presence
Birds		
Carduelis carduelis European Goldfinch [403]		Species or species habitat likely to occur within area
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Passer domesticus House Sparrow [405]		Species or species habitat likely to occur within area
Passer montanus Eurasian Tree Sparrow [406]		Species or species habitat likely to occur within area
Streptopelia chinensis Spotted Turtle-Dove [780]		Species or species habitat likely to occur within area
Streptopelia senegalensis Laughing Turtle-dove, Laughing Dove [781]		Species or species habitat likely to occur within area
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area
Mammals		
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Capra hircus Goat [2]		Species or species

Name	Status	Type of Presence
		habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Funambulus pennantii Northern Palm Squirrel, Five-striped Palm Squirrel [129]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Sus scrofa Pig [6]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Anredera cordifolia Madeira Vine, Jalap, Lamb's-tail, Mignonette Vine, Anredera, Gulf Madeiravine, Heartleaf Madeiravine, Potato Vine [2643]		Species or species habitat likely to occur within area
Asparagus asparagoides Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473]		Species or species habitat likely to occur within area
Chrysanthemoides monilifera Bitou Bush, Boneseed [18983]		Species or species habitat may occur within area
Chrysanthemoides monilifera subsp. monilifera Boneseed [16905]		Species or species habitat likely to occur within area
Genista linifolia Flax-leaved Broom, Mediterranean Broom, Flax Broom [2800]		Species or species habitat likely to occur within area
Genista monspessulana Montpellier Broom, Cape Broom, Canary Broom, Common Broom, French Broom, Soft Broom [20126]		Species or species habitat likely to occur within area
Genista sp. X Genista monspessulana Broom [67538]		Species or species habitat may occur within area
Lantana camara Lantana, Common Lantana, Kamara Lantana, Large-leaf Lantana, Pink Flowered Lantana, Red Flowered Lantana, Red-Flowered Sage, White Sage, Wild Sage [10892]		Species or species habitat likely to occur within area
Lycium ferocissimum African Boxthorn, Boxthorn [19235]		Species or species habitat likely to occur within area
Pinus radiata Radiata Pine Monterey Pine, Insignis Pine, Wilding Pine [20780]		Species or species habitat may occur within area

Name	Status	Type of Presence
Rubus fruticosus aggregate		
Blackberry, European Blackberry [68406]		Species or species habitat likely to occur within area
Salix spp. except S.babylonica, S.x calodendron & S.x reichardtii		
Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497]		Species or species habitat likely to occur within area
Salvinia molesta		
Salvinia, Giant Salvinia, Aquarium Watermoss, Kariba Weed [13665]		Species or species habitat likely to occur within area

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species distributions have been derived through a variety of methods. Where distributions are well known and if time permits, maps are derived using either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc) together with point locations and described habitat; or environmental modelling (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where very little information is available for species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc). In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Coordinates

-32.01567 116.12216

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

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Please feel free to provide feedback via the Contact Us page.

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