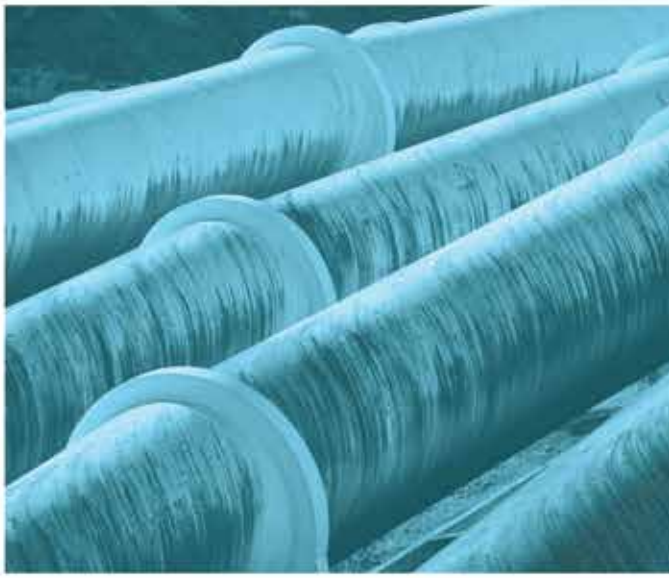
Appendix H

Visual impact assessment


APA East Coast Grid Expansion, Moomba to Wilton Pipeline - Modification Report 1

Visual Impact Assessment

Prepared for APA Group
July 2021

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APA East Coast Grid Expansion, Moomba to Wilton Pipeline - Modification Report 1

Visual Impact Assessment

Report Number

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Client

APA Group

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7 July 2021

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7 July 2021

Executive Summary

EMM Consulting Pty Limited (EMM) has completed a visual impact assessment (VIA) on behalf of APA Group (APA) to assess the potential visual impacts associated with the construction and operation of two gas compressor stations along the existing Moomba to Wilton Pipeline (MWP) as part of Modification 1 of the East Coast Grid Expansion.

The new gas compressor stations are proposed at the following locations:

- MW433 – Round Hill approximately 103 kilometres (km) north of Wilcannia; and
- MW880 – Milne approximately 35 km south-west of Condobolin.

The scope of this VIA is to determine the visual impact of the construction and operation of the project. This VIA has been prepared using the available information through desktop research in conjunction with geographic information systems (GIS) and site photography.

This VIA has been undertaken in accordance with Australian best practice, and has used a significance assessment to determine potential impacts based on the sensitivity of the visual receiver and the magnitude of the change in view.

The outcomes of the VIA indicate the following:

- The significance assessment has determined that there will be no significant visual impacts as a result of the project.
- At MW433, the majority of views of the project will be transient views from Wilcannia-Wanaaring Road where motorists will be travelling at speed, and there will only be glimpsed views of project elements through intervening vegetation and terrain.
- At MW880, elements of the project will be partially visible from five residences within 5 km of the site. The most impacted receiver will be receptor R1 from viewpoint 2, where the project will be visible from the driveway, however the distance of 2.5 km will reduce the scale and degree of contrast for visible elements of the compressor station. The visual impact is not considered significant, however vegetation can be planted to screen views in consultation with the landholder if requested. Mitigation measures incorporated into the design of the compressor station will further mitigate any impacts.

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1 Introduction

1.1 Background

East Australian Pipeline Pty Ltd, part of the APA Group (APA) currently operates an underground high pressure natural gas transmission pipeline, extending from Moomba (South Australia) to Wilton (New South Wales), a distance of approximately 1,299 kilometres (km). The Moomba to Wilton Pipeline (MWP) is the mainline part of the Moomba Sydney Pipeline (MSP) and was constructed in 1976.

Initially, the pipeline was owned and operated by the Pipeline Authority, a Commonwealth agency, and generally regulated under the *Pipeline Authority Act 1973*. The MWP is now owned and operated by APA; it was gazetted as State Significant Infrastructure (SSI) on 11 December 2020 and is authorised by Pipeline Licence No. 16 (PL16).

The MWP currently operates at a forward haul capacity of approximately 489 terajoules per day (TJ/day) (AEMC 2021).

1.2 Project overview and context

NSW imports the majority of its natural gas from other states, and a gas shortfall on Australia's east coast is predicted by Winter 2023, with demand for gas forecast to outstrip supply.

APA is proposing an expansion of gas transportation capacity on its East Coast Grid that links Queensland to southern markets ahead of projected potential 2023 supply risks. Expansion would be through the construction of additional compressions stations and associated works on both the South West Queensland Pipeline (SWQP) and MWP in NSW.

The expansion will be delivered in a number of stages. The first stage of expansion works includes the construction of a single site of compression on each of the SWQP and MWP and will increase Wallumbilla to Wilton capacity by 12%. The first stage is targeted for commissioning in the first quarter of 2023 ahead of forecast southern state winter supply risks identified in the 2021 Australian Energy Market Operator (AEMO) Gas Statement of Opportunities (AEMO 2021).

The second stage of expansion works (an additional site on the SWQP and on the MWP) will add a further 13% capacity and will be staged to meet customer demand.

APA is undertaking engineering and design works on a potential third stage (three additional compressor locations on the MWP) of the East Coast Grid to add a further 25% transportation capacity. All up, these proposed capacity expansions would mean that the entirety of NSW peak demand could be met by gas flowing from northern sources.

The proposed East Coast Grid Expansion (the project) presents an optimal opportunity to maximise gas supply via existing infrastructure with minimal impact.

The five compressor stations for the East Coast Grid Expansion will be constructed at the following locations on the MWP:

- Modification 1:
    - Stage 1:
        - MW880 – Milne approximately 35 km south-west of Condobolin.

- Stage 2:
    - MW433 – Round Hill approximately 103 km north of Wilcannia.

- Modification 2:
    - Stage 3:
        - MW162 – Binerah Downs approximately 68 km north-west of Tibooburra.
        - MW300 – Mecoola Creek approximately 70 km south-east of Tibooburra.
        - MW733 – Gilgunnia approximately 63 km south-west of Nymagee.

This report has been prepared to address the visual impacts for Stage 1 and 2 of the expansion works and to support Modification Report 1. As such, only the visual impacts at MW433 and MW880 have been assessed in this report. A separate report will be prepared to support Stage 3 in Modification Report 2.

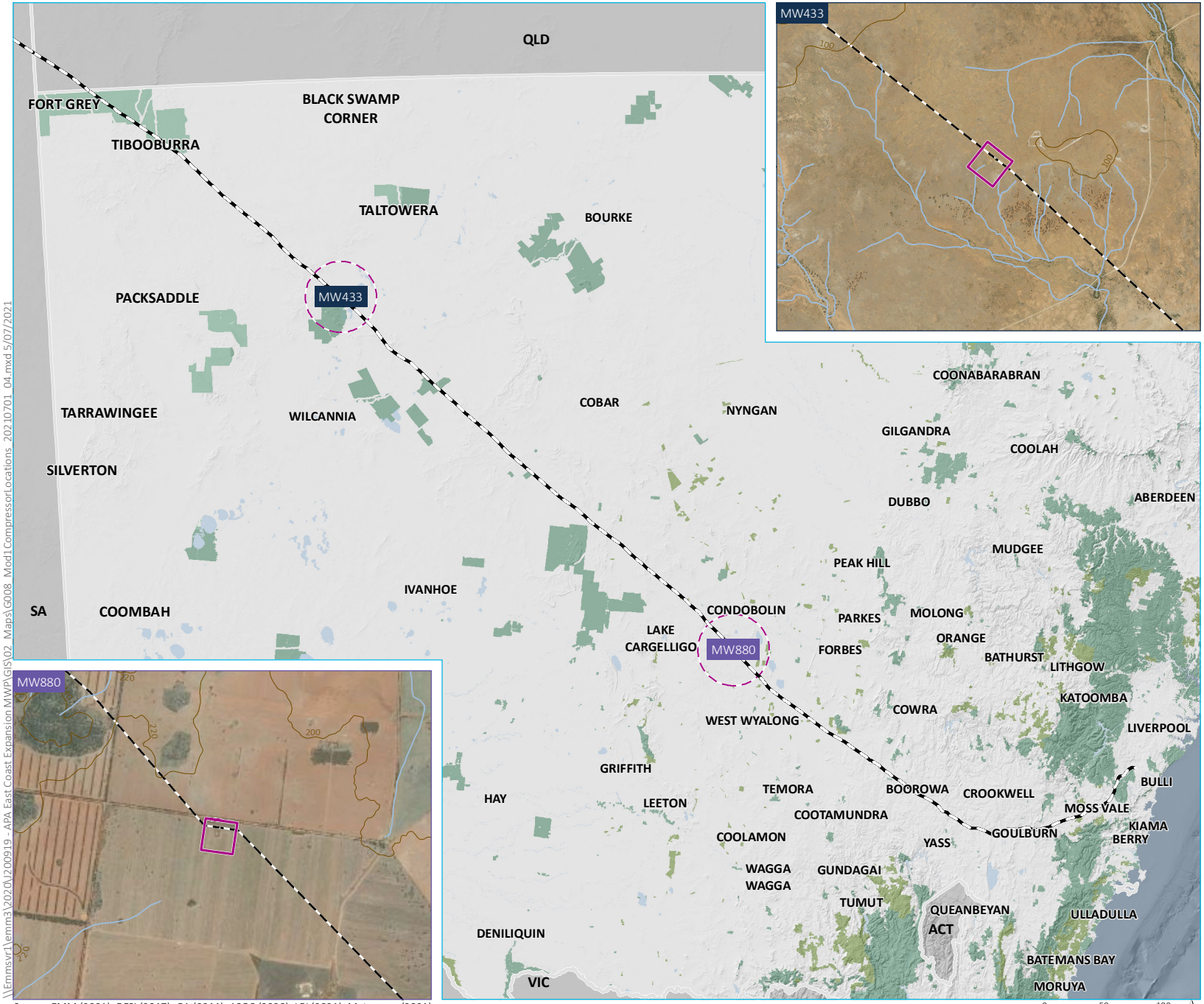
The proposed locations of compressor stations on the MWP are shown in Figure 1.1.

1.3 Report purpose

EMM Consulting Pty Limited (EMM) has been commissioned to prepare a visual impact assessment (VIA) to determine the visual impacts of the construction and operation of the project.

There are no Australian Federal, NSW State Government or Local Government Authority planning policies, guidelines or standards applicable to this assessment. This VIA was therefore assessed in accordance with Australian best practice guidance:

- Guidelines for Landscape and Visual Impact Assessment (GLVIA) (United Kingdom Landscape Institute of Environmental Management and Assessment 2013); and
- Guidance Note for Landscape and Visual Assessment (Australian Institute of Landscape Architects 2018).



KEY

- Compressor site 30 km buffer
- State boundary
- Moomba to Wilton pipeline
- NPWS reserve
- State forest

INSET KEY

- Compressor site boundary
- Contour (10 m)
- Watercourse

Source: EMM (2021); DFSI (2017); GA (2011); ASGC (2006); LPI (2021); Metromap (2021)

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Proposed location of compressor stations on the MWP

APA - East Coast Grid Expansion
Visual impact assessment
Modification report 1
Figure 1.1

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1.4 Assessment methodology

The methodology for this VIA has been prepared from a desktop review of information, consultation, fieldwork observations and photography, geographic information systems (GIS) processing and analysis, and subjective professional judgement.

The assessment has been undertaken in accordance with the following seven stages:

- **stage 1: view type and context** – the existing landscape is described noting its character and complexity;
- **stage 2: visibility assessment** – this is the baseline visibility assessment identifying the zone of visibility for the project and is established using GIS analysis to determine locations where views[1] of the project elements will be theoretically possible;
- **stage 3: view-point selection** – key public and private viewpoints[2] of the project area are selected;
- **stage 4: magnitude of change** – the magnitude of visual change as a result of the project is assessed;
- **stage 5: visual sensitivity** – the capacity of the landscape to absorb change without a loss of quality is determined;
- **stage 6: evaluation of significance** – the significance of visual change in the landscape is determined as a function of the magnitude of visual change and the sensitivity of a receptor[3]; and
- **stage 7: mitigation** – if the visual change is considered to be significant, visual aspects of the Project can be modified and mitigated, and residual visual impacts are determined. This can occur during the design phase.

1.4.1 Significance assessment

The significance of the visual impact (stage 6) has been determined by assessing the magnitude of the change in view against the sensitivity of the viewpoint.

i Visual sensitivity

Visual sensitivity is a measure of the landscape's ability to absorb development without a significant change in its character. It is a function of the view type and context.

Visual sensitivity is rated on a scale of high to low (see Table 1.1). The physical characteristics of the landscape, including existing development features, are integral components in determining the visual sensitivity.

In accordance with the GLVIA, the visual sensitivity of a receptor has been assessed based on the following criteria:

- importance of the view – changes to views from private residences or main tourist roads are considered more sensitive than from secondary or local roads;
- length of view – transient nature of a view by motorists from roads is considered less sensitive compared to a long-term view from a private residence;

[1] Views in the context are considered to be any sight, prospect or field of vision as seen from a place, and may be wide or narrow, partial or full, pleasant or unattractive, distinctive or nondescript, and may include background, mid ground and/or foreground elements or features.

[2] Viewpoints are the specific location of a view, typically used for assessment purposes

[3] Receptors are a place, route, viewer, viewer audience or interest group which may experience an effect and require assessment; the people who will be affected by changes in views or visual amenity

- receptor viewer expectation – communities where development results in changes in the landscape setting or valued views; and

- location and context of the viewpoint – natural and modified elements that make up the visual landscape and contribute to the composition, and hence sensitivity of a view.

The visibility analysis has been undertaken using GIS to show where the most visible project elements will be theoretically visible from, taking into account screening by terrain. It should be noted that the visibility analysis does not take into account the screening effects of vegetation, so project elements will not be visible at some locations, even if the visibility analysis demonstrates that project elements will be theoretically visible.

Table 1.1 Visual sensitivity determination

Landscape receptor and / or land use	**Visual sensitivity levels**		
	Visible project elements less than 1 km from receptor	***Visible project elements 1 - 5 km from receptor***	***Visible project elements >5 km from receptor***
Scenic outlooks, walking trails in wilderness areas and conservation reserves	**High**	**Moderate**	**Low**
Commonwealth and State heritage areas	**High**	**Moderate**	**Low**
Rural residential	**High**	**Moderate**	**Low**
Local heritage	**Moderate**	**Low**	**Low**
Public vantage points	**Moderate**	**Low**	**Low**
Highways, main roads, tourist routes	**Moderate**	**Low**	**Low**
Urban areas	**Moderate**	**Low**	**Low**
Recreation areas	**Moderate**	**Low**	**Low**
Sub regional roads	**Moderate**	**Low**	**Low**
Local roads	**Low**	**Low**	**Low**
Rural lands	**Low**	**Low**	**Low**
Industrial and mining	**Low**	**Low**	**Low**

ii Magnitude of change

This VIA has considered the following criteria in determining the magnitude of change on a receptor, and magnitude is rated on a scale of high to low (see Table 1.2):

- whether the impact is temporary or permanent – impacts that are for a limited duration are considered less significant;

- scale of change – the loss or addition of features in the view and changes in the proportion of the view affected by the visible project elements;

- degree of contrast – level of integration of new features with existing or remaining landscape elements, having regard to form, scale, height, colour, and texture;

- distance of the viewer from the altered elements in the landscape – proximity to an impacted landscape will increase the significance for private residences. In the case of motorists, mid-ground changes can be greater than foreground elements as they can result in longer viewing times;
- viewing direction – whether the change is to the primary view from the location;
- extent of view affected – impacts that are visible over a greater portion of a view are more significant than those where only a part of the view is impacted. Intervening topography and vegetation will also affect the magnitude of change; and
- length of viewing time – views from a residence are constant, whereas some views from roadways as experienced by motorists may be brief dependent upon speed and viewing direction.

Table 1.2 Visual effects matrix

Contrast	Integration		
	Lacking visual integration with setting	Some visual integration with setting	Integration with setting is high
Does not borrow from features in the visual setting	High	High/Moderate	Moderate
Some features of the setting have been borrowed	High/Moderate	Moderate	Low
Extensive borrowing of elements	Moderate	Low	Negligible

iii Evaluation of significance

The evaluation of significance assesses the significance of a change in the landscape based on the magnitude of that change and the sensitivity of the landscape. Typically, a noticeable change in the landscape in an unmodified rural or natural setting would be considered significant, whereas a smaller change in an already modified landscape could be considered slight or moderate.

The overall visual impact of a new development is a subjective, quantitative determination, assessing the interaction between:

- visual sensitivity – the context and importance that views of the landscape may be to viewers in the area surrounding the development (Table 1.1); and
- magnitude of change – the effect individual project elements have in relation to the level of contrast, mass and scale and integration with existing elements of the immediately surrounding landscape (Table 1.2).

The primary assessment tools for determining the significance of impact have been site inspections and photography of views from selected viewpoints. These have been used to assess visibility in the landscape, to determine the level of change to assess visual impacts taking into consideration the nature of the landscape, topography, the distance between the viewpoint and the project elements, as well as the type of view experienced.

Table 1.3 illustrates how change in the landscape is assessed, and significance rated against the sensitivity of a receptor.

Table 1.3 Evaluation of significance matrix (visual impact)

Magnitude of change	Visual sensitivity		
	High	Moderate	Low
High	Substantial	Moderate/Substantial	Moderate
Moderate	Moderate/Substantial	Moderate	Slight/Moderate
Low	Moderate	Slight/Moderate	Slight
Negligible	Slight	Slight	Negligible

Key		Significant		Not significant

If visual impact is determined to be significant, mitigation measures can be implemented to eliminate or reduce the visual impact of project elements. Mitigation measures can include infrastructure design to reduce contrast with the surrounding environment or use of landscape integration practices such as planting of screening vegetation.

2 Project description

2.1 Compressor station details

The East Coast Grid Expansion in NSW will be facilitated by the construction of five compressor stations along the length of the MWP. This modification report addresses the construction and operation of two compressor stations: Stage 1 (MW880) and Stage 2 (MW433).

Each compressor station will include:

- an enclosed gas turbine driven compressor unit;
- microturbine;
- compressor inlet/scrubber;
- a control equipment building;
- two fuel gas skids;
- air compressors and receivers;
- associated piping, electrical equipment, instrumentation, and controls;
- a station vent; and
- small accommodation and maintenance buildings for operations.

All facilities will be installed on driven piles or supported on structural steel skids over gravel sheeting, with the exception of the accommodation and maintenance buildings which will be constructed on concrete slab.

Both of the proposed sites for the compressor stations are on land owned by APA, with MW433 being approximately 380 m x 400 m with an area of 15.5 hectares (ha), and MW880 being approximately 400 m x 400 m with an area of 16 ha. The compressor station will have a final footprint of approximately 1.5 ha.

2.1.1 Construction

Each compressor station will require a construction footprint of approximately 3.5 ha, which will be reduced to approximately 1.5 ha for operations.

At MW433, the temporary construction workforce required to build the compressor station will be accommodated in a temporary accommodation camp, with mobilisation and demobilisation of the workforce to and from Broken Hill airport for each roster. The temporary accommodation camp will measure approximately 100 m x 100 m, with an additional 100 m x 100 m for waste water treatment. A smaller accommodation unit for operations will be included within the operational footprint on the compressor station.

At MW880, there are two options for the accommodation of the construction workforce. The preferred option is to house the workforce in short-term accommodation in Condobolin (42 km by road from the site), with potential overflow accommodation in West Wyalong (85 km by road from the site), if required. Workers will be driven to and from site each day, with between one and four buses and between five and eight cars required per day, depending on workforce numbers. The alternative option is to use a temporary accommodation camp on site (as per MW433), where mobilisation and demobilisation of the workforce will be to and from Dubbo airport for each roster.

Waste water from the construction camp (if used) will be treated and disposed of via spray irrigation on site.

Construction materials and supplies (including food and services for the temporary accommodation camps) will be sourced from relevant suppliers and transported to site. APA will use local suppliers where practicable.

At MW880, water will likely be purchased under a commercial arrangement from Lachlan Shire Council, or another local provider and transported to site by 25 kilolitre (kL) water truck. At MW433, there are two options for water supply – accessing groundwater on site, and/or purchasing water under a commercial arrangement from a local water provider and transporting it to site by 25 kL water truck. APA is investigating options to access groundwater under the relevant water sharing plans and regulations. If accessing groundwater at MW433 is feasible, then all regulatory requirements for water licences will be met, and any further assessments and approvals will be undertaken and applied for prior to water abstraction. If accessing groundwater is not feasible for all or part of the project, then the commercial purchase and transport will become the default water supply option.

The majority of construction activities will take place between 7:00 am and 6:00 pm, seven days per week. During the commissioning phase, activities will also take place between 7:00 am and 6:00 pm, seven days per week, however for the final two weeks, commissioning activities will be 24-hours per day.

The most visible element of the compressor station will be the exhaust stack, which will have a maximum height of 17.25 m above ground level. Indicative layouts are presented in Figure 2.1 and Figure 2.2, and an example view in Plate 2.1.

Figure 2.1 Indicative compressor station layout

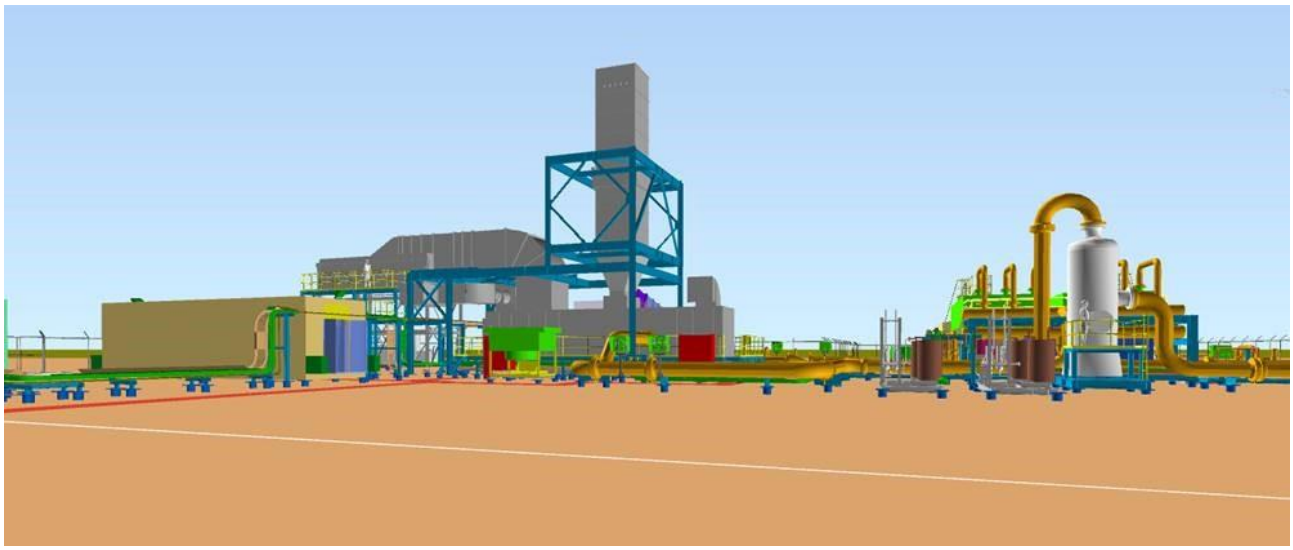


Figure 2.2 Indicative compressor station view showing vent stack

Plate 2.1 Example compressor station view showing vent stack and muted colour scheme

i Construction activities

Construction of the compressor stations will include the following activities:

- mobilisation of construction equipment;
- establishment of access (where required);
- establishment of construction camp accommodation and associated facilities;
- establishment of access to water supply;
- site bulk earthworks including build up to match existing levels;
- installation of steel piles;
- installation of all equipment items, skids and buildings;
- installation of associated steel structures, prefabricated piping, electrical equipment, instrumentation and controls;
- supply and install communication and controls infrastructure;
- demobilisation of construction equipment;
- rehabilitation of temporary disturbance areas; and
- pre-commissioning and commissioning of compressor station.

ii Workforce

The construction of the compressor stations will require an average workforce of 40 with a peak of 80 personnel over the 12-month period. All roles are likely to be drive-in-drive-out (DIDO) or fly-in-fly-out (FIFO) and based at the construction camp when on site. The anticipated roster is three weeks on followed by one week off on a rotational basis.

There are expected to be five contracts put out to tender for the construction and commissioning of the compressor stations:

- earthworks and civil works;
- establishment of the construction camp and associated waste water treatment system;
- piling;
- structural, mechanical, piping, electrical and instrumentation construction (SMPEI); and
- compressor station pre-commissioning and commissioning.

In addition to the contractor workforce, APA will have a project team on site to manage the works.

The anticipated workforce associated with each contract is outlined in Table 2.1 below.

Table 2.1 Construction and commissioning workforce

Entity	Average workforce	Peak workforce
APA Project Team	4	10
Earthworks	10	15
Piling	6	6
SMPEI Construction	30	50
Construction Camp	8	16
Pre-commissioning and Commissioning	10	14

The anticipated workforce distribution over the 12-month construction and commissioning program is presented in Table 2.2.

Table 2.2 Monthly construction and commissioning workforce distribution

1	2	3	4	5	6	7	8	9	10	11	12
20	28	28	37	47	65	68	59	49	39	18	18

2.1.2 Operation

i Activities

The compressor stations are designed to operate remotely without onsite staff for most of their working life. They will be operated remotely from APA's control centre in Brisbane, and can operate up to 24 hours per day, seven days per week.

Typical operations activities will involve minor maintenance, calibrations, inspections, equipment performance checks, or equipment repair if needed. Operation activities will be typically carried out during daylight hours, unless an emergency requires urgent works at night. Site personnel will carry out inspections ranging from daily inspections to more rigorous inspections that may vary from one month to 4 years apart, dependent on the works. Detailed maintenance plans will be prepared for all sites.

Regulatory compliance checks will be carried out on different equipment as prescribed in applicable standards but will typically vary from one to four-year intervals subject to the equipment types. Compliance checks may include emissions testing, hazardous area compliance assessments, pressure vessel inspections, and electrical safety checks.

Major services and engine overhauls will be carried out at five-to-ten-year intervals subject to equipment condition, manufacturer's recommendations and run hours.

Once complete, the compressor stations will have an average design life of approximately 25 years. APA will continue to monitor the condition of equipment up to and beyond the end of life to ensure equipment is sound and fit for further service. Continued operation beyond the nominal design life will be subject to specific equipment condition and plant fitness assessments. The compressor station will be decommissioned when there is no further economic potential to continued use.

ii Workforce

The compressor stations are designed to operate as unmanned facilities. The typical site workforce for operation activities is expected to be one to two people.

Larger groups of up to five people associated with major services or overhauls will be required to minimise the time the compressor station is offline.

The operations workforce will comprise existing APA employees, who are unlikely to be resident locally. Additional specialist servicing will be carried out by a mix of local contractors and interstate/international based depending on the complexity of the task.

3 Visual assessment

3.1 MW433 – Round Hill

3.1.1 Existing environment

MW433 is located in far north-west NSW approximately 103 km north of Wilcannia in Central Darling Shire. The site is surrounded on three sides by the Paroo-Darling National Park. The site is located at Lot 3/DP593787, and is zoned as RU1, primary production under the Central Darling Local Environmental Plan (LEP) (Central Darling Shire Council 2012).

i Natural environment

The site measures approximately 380 m by 400 m, and has an area of 15.5 ha. Site topography generally slopes gently from north-east to south-west at a slope of 0.5–1.5% (DTA 2021), with a small hill ("Round Hill") located immediately to the west of the site.

The site is located within the Mulga Lands bioregion and the White Cliffs Plateau subregion. The bioregion is characterised by flat to undulating plains with strips of low hills. The dominant vegetation types are mulga and eucalypt woodlands. The alluvial floodplains of the Warrego River run through the middle in a widening north to-south wedge. Tenure is a mix of leasehold and freehold land grazed by sheep and cattle (DAWE 2021c). The historical annual mean rainfall at the site is less than 250 mm, with generally a wet summer and dry winter (BOM 2020). Poloko Lake and Peery Lake, ephemeral lakes fed by the Darling River, are located 5 km to the south and south-east of the site.

MW433 is located within the White Cliffs Tablelands and Downs (Mitchell 2002). Described as extensive gently undulating stony plateau escarpment, slopes and drainage lines on horizontal Cretaceous sandstone, mudstone and Tertiary silcrete, relief more than 30 m. Partly obscured by sandplain and associated floodplains with extensive scalded areas, relief to 2 m. Mainly shallow acidic reddish-brown lithosols and reddish-brown sandy earths. Small areas of deeper desert loams with shallow gilgai. Contour bands of stone-free red cracking clays and stony red desert loams with hardpans. Floodplains with grey cracking clays and large areas of yellow and red-brown texture-contrast soils.

ii Built features

MW433 hosts existing infrastructure related to the construction and operation of the MWP and the Moomba to Sydney Ethane Pipeline (MSEP), including the following:

- infrastructure to remain after the modification:
    - pig catcher and launcher for the MWP;
    - pig catcher and launcher for the MSEP;
    - small amenities building with water tank; and
    - 3 m high wire fencing (will be replaced with similar fencing around whole compressor station site);
- infrastructure to be removed during construction:
    - water retention structure.

There is a communications tower located 30 m north-east of the site boundary that will remain. This tower is approximately 100 m high, of steel lattice construction, and is operated by Telstra.

Wilcannia-Wanaaring Road is an unsealed local road located 1.85 km to the south-east of the site boundary, and approximately 2.1 km from the site of the proposed compressor station.

iii Landscape character

With the exception of the existing pipeline infrastructure on site, the communications tower and the pipeline easement, the landscape surrounding MW433 is not significantly modified, and retains its open, natural features. There is evidence of an historical structure and airstrip to the north of the site, however these are only visible from the air. The terrain is generally flat with some sparse vegetation that acts to break up the uniformity of the view.

The view towards the existing infrastructure from the communications tower is presented in Plate 3.1.

Plate 3.1 View of existing infrastructure and landscape character at MW433 from communications tower looking south-west

3.1.2 Visibility and visual sensitivity

There are no residences within 5 km, but the compressor station will be visible to motorists on Wilcannia-Wanaaring Road, which runs in a south-west to north-east direction 2.1 km to the south of the site of the proposed compressor station. Wilcannia-Wanaaring Road is a local road which carries local and regional traffic, with a posted speed limit of 100 km/h (EMM 2021).

The only sensitive receptors for visual impacts at MW433 will be motorists driving along Wilcannia-Wanaaring Road. Therefore, viewpoint VP1 has been selected for the visibility analysis at MW433 as it is representative of views experienced by motorists travelling on Wilcannia-Wanaaring Road.

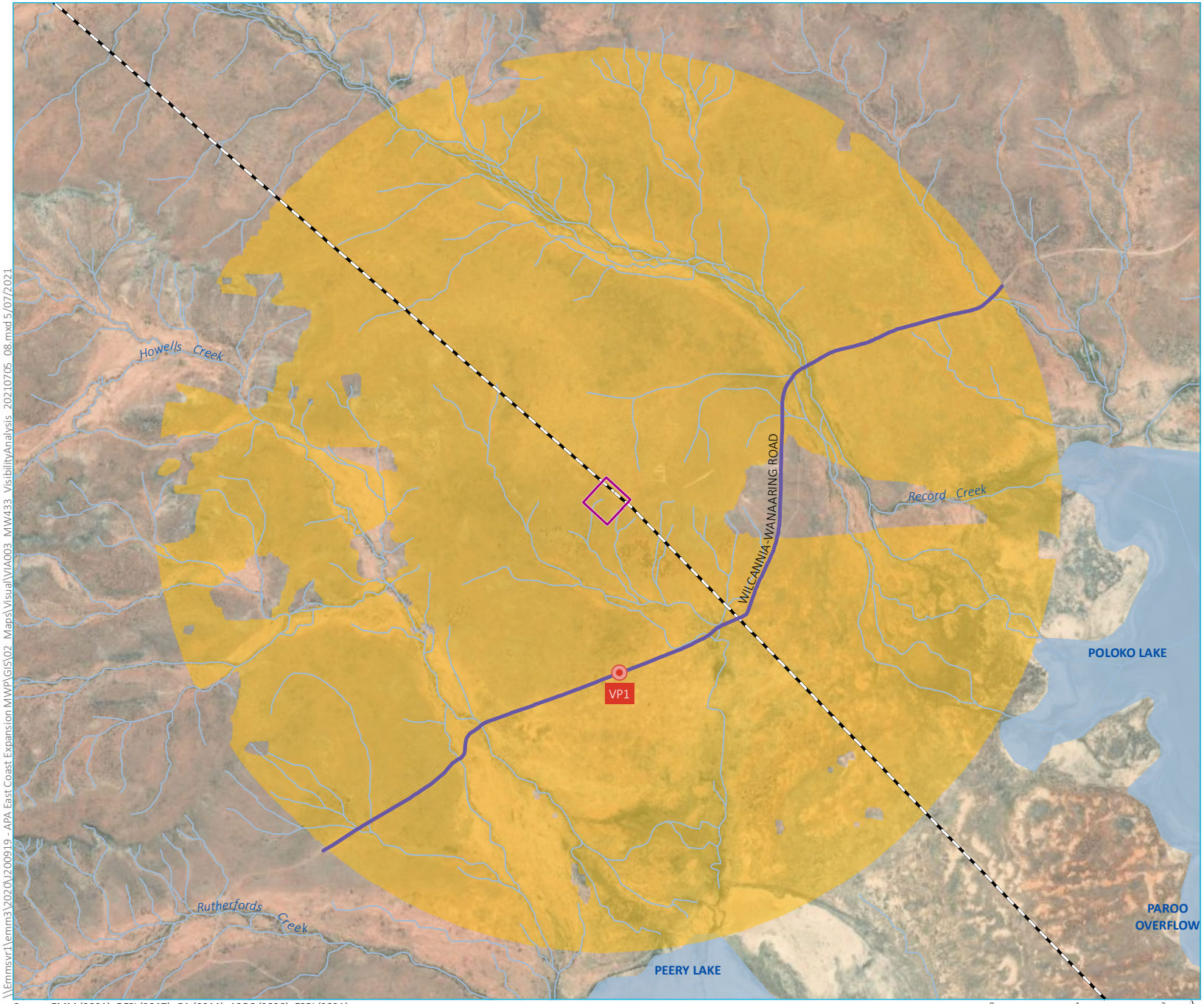
The visibility analysis of MW433 is presented in Figure 3.3. The analysis demonstrates the visibility of the tallest part of the compressor station (the vent stack) from locations within 5 km of the site. The visibility analysis for MW433 is presented in Figure 3.1.

3.1.3 Visual impact

While the landscape surrounding MW433 is predominantly natural, there are existing industrial and infrastructure elements on and adjacent to the site, such as the Telstra communications tower that allow the landscape to absorb similar development without a significant change in its character. The flat terrain and sparse vegetation allow the site to be visible from further away, however the lack of high and moderate sensitive receptors means that the visual sensitivity of the view from VP1 remains as **low** sensitivity.

Visible elements of the compressor station will have low levels of contrast and scale and will integrate moderately well with the existing natural and built features of the landscape. The magnitude of change in the view that will occur as a result of the construction and operation of the compressor station will be **moderate**.

Most motorists will experience a transient view of the compressor station from VP1 while travelling in a north-easterly direction along Wilcannia-Wanaaring Road at the posted speed limit of 100 km/h. Due to the flat terrain and limited vegetation, the site will experience limited screening, however the distance from VP1 to the site will reduce the scale and degree of contrast for of the compressor station, and it will be difficult to discern the change in landscape while travelling at speed. Therefore, the visual impact of the project from VP1 will be slight/moderate and is considered **not significant**.



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Source: EMM (2021); DFSI (2017); GA (2011); ASGC (2006); ESRI (2021)

MW433 Round Hill - visibility analysis

APA - East Coast Grid Expansion
Visual impact assessment
Modification 1
Figure 3.1

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3.2 MW880 – Milne

3.2.1 Existing environment

MW880 – Milne is located in central NSW approximately 35 km south-west of Condobolin, and in Lachlan Shire. The site is located at Lot 1/DP580284, and is zoned as RU1, primary production under the Lachlan LEP (Lachlan Shire Council 2012). The southern part of the site is used by a local farmer for dryland cropping.

i Natural environment

The site measures approximately 400 m long by 400 m wide, and has an area of 16 ha. Site topography slopes gently from west to east at 0.5–2%. Slopes to the north of the site can reach approximately 6% (DTA 2021).

The site is located within the South Western Slopes bioregion and Lower Slopes subregion. The bioregion is characterised by undulating and hilly ranges and isolated peaks set in wide valleys at the apices of the Riverina alluvial fans. Dominant vegetation is grey box woodlands with yellow box, white cypress pine and belah on lower areas (DPIE 2021). The historical annual mean rainfall at the site is less than 450 mm, with generally a wet summer and dry winter (BOM 2020).

MW880 is located within the Bimbi Plains landscape (Mitchell 2002). Described as Quaternary alluvial plains from bedrock hills and ridges of the Gobondery/Gillenbine and the Belmont/Brooklyn land systems. General elevation is 200 to 250 m, local relief 30 m. Gravelly clay loams and red brown clays, red-brown texture-contrast soils on higher slopes grading to red-brown gradational and uniform profiles of clay loams and clays along creeks. Mostly cleared and cultivated.

ii Built features

MW880 hosts existing infrastructure related to the construction and operation of the MWP and the MSEP, including the following:

- infrastructure to remain after the modification:
    - pig catcher and launcher for the MWP;
    - pig catcher and launcher for the MSEP;
    - small amenities building;
    - 3 m high wire fencing (will be replaced with similar fencing around whole compressor station site); and
    - communications tower, approximately 100 m high of steel lattice construction, operated by Telstra;
- infrastructure to be removed during construction:
    - water retention structure.

Crown Camp Road is an unsealed local road located adjacent to the northern site boundary.

iii Landscape character

In addition to the existing pipeline infrastructure on site, the communications tower and the pipeline easement, the landscape surrounding MW880 has been significantly modified by vegetation clearance and grazing. The terrain is generally flat with vegetation along roads and fence lines that acts to break up the uniformity of the view.

The view towards the existing infrastructure from the access to the site, west of the proposed compressor station location is presented in Plate 3.2.

Plate 3.2 View of existing infrastructure and landscape character at MW880 showing line of trees along Crown Camp Road and existing Telstra tower

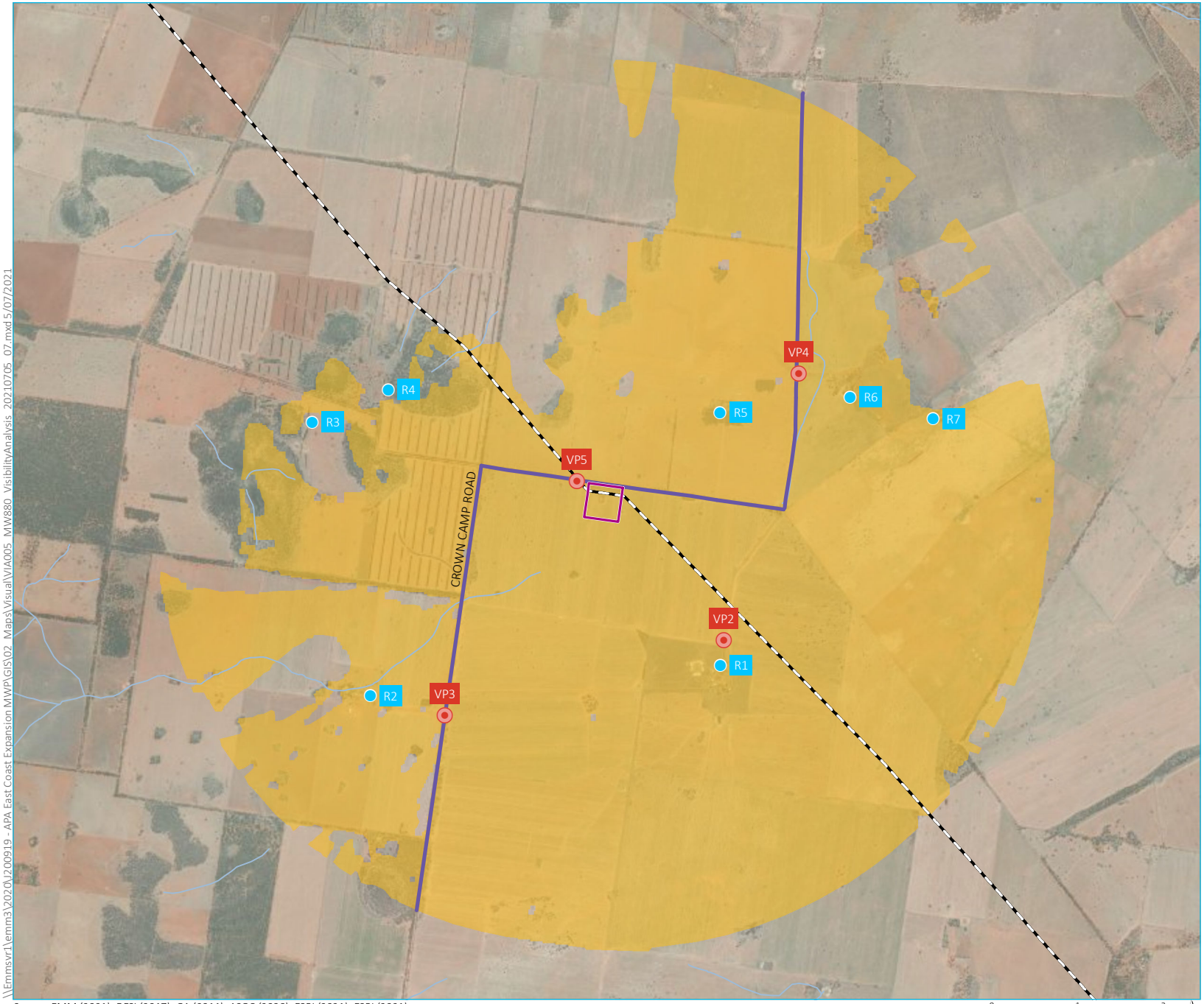
3.2.2 Visibility and visual sensitivity

There are seven residences located within 5 km of MW880, and built elements of the site may be visible or partly visible from five of these residences (R1, R2, R5, R6 and R7). Views from all residences will be partly screened by vegetation. Built elements will also be visible to motorists travelling along Crown Camp Road, which runs in an east-west direction adjacent to the northern boundary of the site. Crown Camp Road is a local road with a posted speed limit of 100 km/h (EMM 2021).

Viewpoints VP2 to VP5 have been selected for the visibility analysis at MW880 as it they are representative of views likely to be experienced by local residents, or experienced by motorists travelling on Crown Camp Road. These are presented in Table 3.1 and Figure 3.2.

Table 3.1 Selected viewpoints for MW880

Viewpoint	Address	Reason for selection
VP2	3208 Crown Camp Road	This viewpoint is from sensitive receptor MW880-R1 located 2.5 km south-east of the proposed compressor station location. This view is representative of that experienced by residents at MW880-R1.
VP3	2557 Crown Camp Road	This viewpoint is from sensitive receptor MW880-R2 located 3.6 km south-west of the proposed compressor station location. This view is representative of that experienced by residents at MW880-R2.
VP4	3368 Crown Camp Road	This viewpoint is from sensitive receptor MW880-R6 located 3.1 km north-east of the proposed compressor station location. This view is representative of that experienced by residents at MW880-R6.
VP5	Crown Camp Road	This viewpoint is from Crown Camp Road located adjacent to MW880. This view is representative of that experienced by motorists travelling along Crown Camp Road.



KEY

- Compressor site
- Moomba to Wilton pipeline
- Viewpoint
- Sensitive receptor
- Sensitive receptor road
- Watercourse
- Waterbody
- Visibility analysis (5 km)

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Source: EMM (2021); DFSI (2017); GA (2011); ASGC (2006); ESRI (2021); ESRI (2021)

0 1 2 km

GDA 1994 MGA Zone 55

N

MW880 Milne - visibility analysis

APA - East Coast Grid Expansion
Visual impact assessment
Modification 1
Figure 3.2

EMM
creating opportunities

3.2.3 Visual impact

The landscape surrounding MW880 has been significantly modified, and there are existing industrial and infrastructure elements on and adjacent to the site, such as the Telstra communications tower that allow the landscape to absorb similar development without a significant change in its character. Views of the site will also be partially screened by terrain and vegetation, and distance from viewpoints will reduce the scale and degree of contrast for visible elements of the compressor station.

Visible elements of the compressor station will have moderate levels of contrast and scale and there will be some level of integration with the existing natural and built features of the landscape.

The visual sensitivity, magnitude of change and significance assessment for each viewpoint at MW880 is presented in Table 3.2. Existing views from VP2, VP3, VP4 and VP5 are presented in Plates 3.3, 3.4, 3.5 and 3.6 respectively.

Table 3.2 Visual impact assessment at MW880

Viewpoint	Visual sensitivity	Magnitude of change	Significance assessment
VP2	Moderate	Moderate	This viewpoint represents a rural residential property, and is located 2.5 km from the proposed compressor station location. There is vegetation screening present that will screen the development from most locations at property R1, however viewpoint VP2 has been selected to show a worst-case unscreened viewpoint from the driveway looking north-west towards the compressor station. The visible elements of the compressor station will make up a small extent of the view from VP2, and the distance from VP2 to the site, and the presence of trees along Crown Camp Road will reduce the scale and degree of contrast for visible elements of the compressor station. The proposed compressor station will have some degree of visual integration due to the muted colour scheme of the vent stack, and the presence of existing built elements at the site, particularly the Telstra communications tower. The visual impact of the project from VP2 will be moderate and is considered **not significant**.
VP3	Moderate	Moderate	This viewpoint represents a rural residential property, and is located 3.6 km from the proposed compressor station location. The presence of roadside vegetation along Crown Camp Road will act to screen the compressor station from VP3, and the distance from VP3 to the site will reduce the scale and degree of contrast for visible elements of the compressor station. The proposed compressor station will have some degree of visual integration due to the muted colour scheme of the vent stack, and the presence of existing built elements at the site, particularly the Telstra communications tower. The visual impact of the project from VP3 will be slight/moderate and is considered **not significant**.

Table 3.2 Visual impact assessment at MW880

Viewpoint	Visual sensitivity	Magnitude of change	Significance assessment
VP4	Moderate	Moderate	This viewpoint represents a rural residential property, and is located 3.1 km from the proposed compressor station location. The presence of roadside vegetation along Crown Camp Road will act to screen the compressor station from VP4, and the distance from VP4 to the site will reduce the scale and degree of contrast for visible elements of the compressor station. The proposed compressor station will have some degree of visual integration due to the muted colour scheme of the vent stack, and the presence of existing built elements at the site, particularly the Telstra communications tower. The visual impact of the project from VP4 will be slight/moderate and is considered **not significant**.
VP5	Low	Moderate	Most motorists will experience a transient view of the compressor station from VP5 while travelling along Crown Camp Road at the posted speed limit of 100 km/h, and it will be difficult to discern the change in landscape from glimpsed views through vegetation while travelling at speed. The visual impact of the project from VP5 will be slight/moderate and is considered **not significant**.

Plate 3.3 View of MW880 from VP2

Plate 3.4 View of MW880 from VP3

Plate 3.5 View of MW880 from VP4

Plate 3.6 View of MW880 from VP5 (Crown Camp Road)

3.3 Night-time lighting

The majority of project construction activities will be undertaken during daylight hours, and it is not anticipated that construction lighting will be required. However, there will be some lighting impacts as a result of the temporary construction camp, particularly at MW880 where lighting will be visible by nearby residents for the duration of the construction period. During commissioning, some activities will take place at night, and night-time lighting will be required during those activities. No night-time lighting will be required for the operational phase.

Australian Standard 4282 (AS4282) Control of Obtrusive Effects of Outdoor Lighting sets out guidelines for control of the obtrusive effects of outdoor lighting and gives recommended limits for relevant lighting levels to contain these effects within tolerable levels.

Light generated during construction and commissioning will be managed in accordance with AS4282, therefore the visual impacts of night time lighting will not be significant.

3.4 Mitigation measures

While the views from VP1 to VP5 have been assessed as not significant, mitigation measures can be implemented to reduce the potential impacts further. The following commitments will minimise visual impacts associated with the project.

Table 3.3 Summary of commitments – visual

Stage	Commitment ID	Commitment
Construction Operation	GE-06	Nearby landholders will be provided a dedicated point of contact for the duration of the project.
Design	VI-01	The design of the compressor station and associated infrastructure will include colour tones and material finishes that are sympathetic to existing buildings, background vegetation or landscape;
Construction	VI-02	Light generated during construction will be managed in general accordance with the requirements in Australian Standard AS 4282-1997 Control of the Obtrusive Effects of Outdoor Lighting.
Construction	VI-03	Vegetation can be used to screen views of visible elements of the compressor station at MW880 if requested by, and in consultation with the landholder at sensitive receptor R1.
Design Construction Operation	SE-01	The existing stakeholder engagement plan will continue to be implemented to facilitate ongoing consultation with relevant stakeholders, including local businesses, throughout the project so that stakeholders have access to information regarding the nature of the proposed project activities and their likely impacts.

4 Conclusion

EMM has completed a VIA to assess the potential visual impacts associated with the construction and operation of two compressor stations along the MWP as part of Modification 1 of the East Coast Grid Expansion.

This VIA has been undertaken in accordance with Australian best practice, and it uses a significance assessment to determine potential impacts based on the sensitivity of the visual receiver and the magnitude of the change in view.

The significance assessment has determined that there will be no significant visual impacts as a result of the project.

At MW433, the majority of views of the project will be transient views from Wilcannia-Wanaaring Road where motorists will be travelling at speed, and there will only be glimpsed views of project elements through intervening vegetation and terrain.

At MW880, elements of the project will be partially visible from five residences within 5 km of the site. The most impacted receiver will be R1 from VP2, where the project will be visible from the driveway, however the distance of 2.5 km will reduce the scale and degree of contrast for visible elements of the compressor station. The visual impact is not considered significant, however vegetation can be planted in consultation with the landholder if requested. Mitigation measures incorporated into the design of the compressor station will further mitigate any impacts.

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