
Appendix L

Landscape and Visual Assessment

Jacks Gully Waste Management and Recycling Centre Proposed Alternative Waste Technology Facility

Visual Quality Assessment



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1. Introduction

1.1 Aims and objectives

This report has been commissioned by GHD to assist in the preparation of an Environmental Impact Statement for the development of a new alternative waste technology (AWT) facility at Jacks Gully Waste Management and Recycling Centre (WMRC) in Narellan NSW. This report focuses on the visual impacts of the proposed development.

The Jacks Gully WMRC site is currently owned and operated by WSN Environmental Solutions, which seeks to diversify its waste treatment operations on the existing site. The proposed development would occur on part of the site which has already been cleared as shown on Figure 1.

The purpose of this report is to identify issues with respect to the impact of visual qualities of the proposed future development on part of the site. To achieve this, this report will:

- describe and analyse the existing landscape character of the site and the area surrounding the site;
- analyse existing views into the site. This includes an assessment of the value and significance of these views;
- identify impacts on visual quality of the proposed future use of the site; and
- provide recommendations to mitigate adverse impacts.

The study area within which this development is considered is the visual catchment of the site which is shown on Figure 2.

1.2 Data and references

Information for this study was collected by:

- Visiting the site and surrounding areas from nearby vantage points and identifying significant views within the site and surrounding area;
- Reviewing topographical maps (Campbelltown 9029-1N, 1:25000 and Camden 9029-4N 1:25000);
- Reviewing the proposed draft master plan for the development of Spring Farm, prepared by HPA;
- Reviewing the proposed end filling plans for Jacks Gully WMRC prepared by GHD;
- Reviewing previous Environmental Impact Statement for extension of the landfill at Jacks Gully WMC by Woodward Clyde (May 1999).



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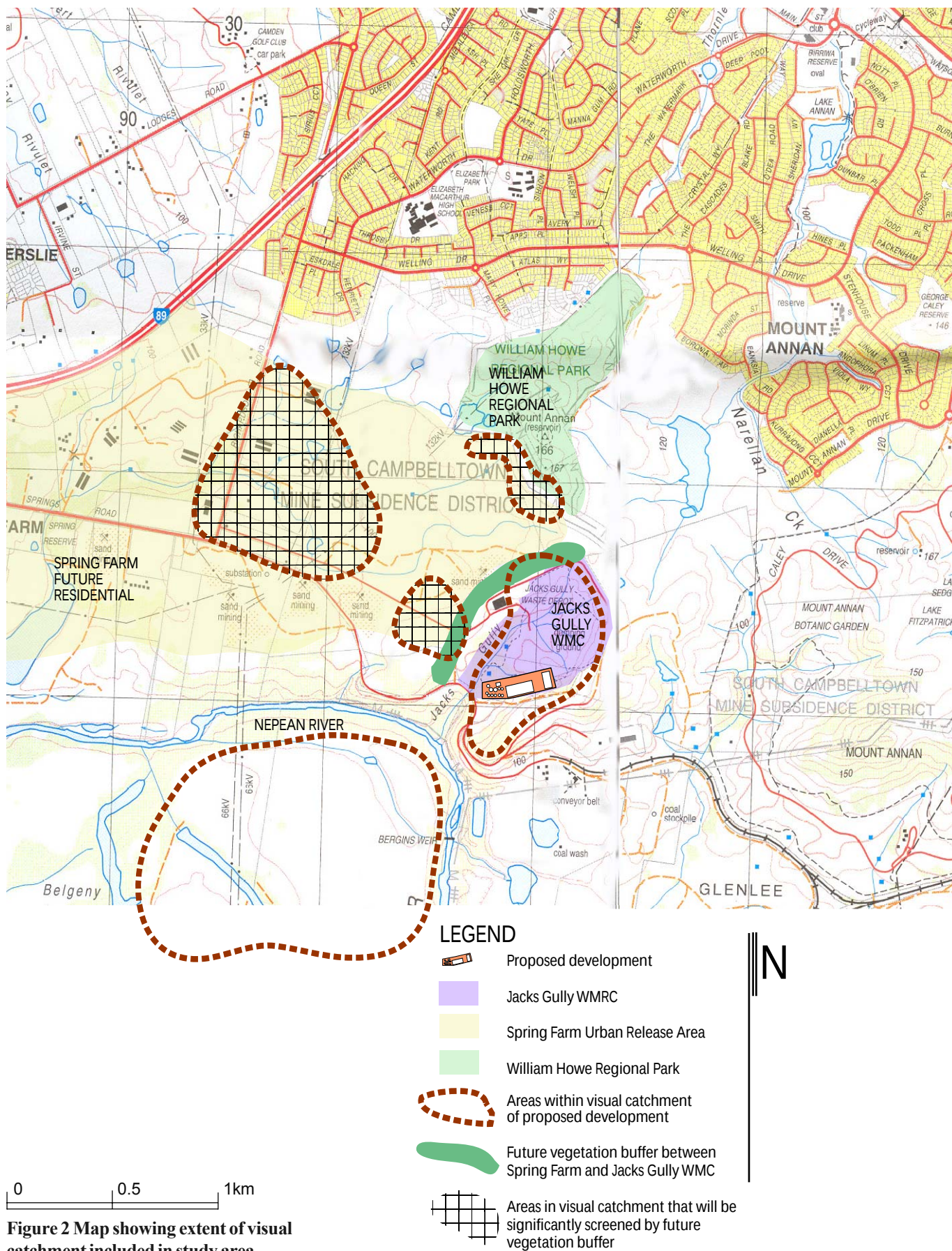
Proposed development



Key to photographic figures in this report

0 0.5 1km

Figure 1 Aerial photo showing existing and proposed development near the existing WMRC site



1.3 Methodology

The methodology was undertaken as outlined below.

- Existing visual quality was established by identifying the visual catchment, its landscape character types and the landscape character of the site;
- The likely nature of future development on the site and within the visual catchment was identified;
- Significant views within the visual catchment were identified;
- The impact of proposed development was considered through an analysis of the significant views within the visual catchment;
- Consideration was given to the appropriateness of the proposed development, given the visual impacts; and
- Recommendations were developed based on the need to mitigate potential visual impact of the proposed use from the



Figure 3 Site area and proposed development

2. Landscape character

2.1 Visual catchment

The study area is located between Camden and Campbelltown Local Government Areas (LGAs) at the edge of the Nepean River valley.

Suburban development in the last 30 years has transformed the Campbelltown and Camden LGAs from predominantly rural / semi rural landscapes to residential suburbs. Numerous suburbs such as Narellan, and Mount Annan, to name but a few, have developed to the north and east of the study area. See figure 4. Due to the elevated topography of Mount Annan and other hills to the north, east and south of the site of the proposed development, none of these residential areas is within the visual catchment of the proposed development.



Figure 4
View of Cumberland Plain landscape with Narellan Vale residential area beyond.



Figure 5
View of Cumberland Plain rural landscape surrounding Jacks Gully

Mount Annan Botanic Gardens is also screened from the site by the topography to the east of the site.

At present areas to the west and south remain relatively undeveloped. Rural uses and remnant forests are dominant. However further expansion of the suburban network is currently planned to the north-west in Spring Farm. It will be within the visual catchment of the site in the short term. However, as part of the Spring Farm draft Master Plan a 60m wide southern perimeter zone of mounded vegetation is proposed that will, in the long term, screen the proposed development from the future Spring Farm population.

Some areas to the south - west near Nepean River may take in views of the roofs of the proposed buildings, but for the most part these will be distant views (>2km). Many areas to the west and south-west are beyond the visual catchment of the site because they are screened by the vegetated ridge to the west of Jacks Gully. Camden, a highly significant residential area and heritage estate, is about 3km from the site, but is screened by intervening vegetation. It is therefore beyond the visual catchment of the site.



Figure 6 Natural vegetation systems (from *Taken for Granted –the Bushland of Sydney and its Suburbs* by Doug Benson and Jocelyn Howell 1990)

2.2 Landscape types

The landscape of the study area is Cumberland Plain.

The bedrock geology of the area is the Bringelly group of Wianamatta Shales. Bedrock is reasonably deep.

This geology distinctively produces a topography of rolling or undulating hills, with knolls rather than ridges, and meandering creeks and watercourses. It also produces heavy clayey soils, which promotes a park-like vegetation structure of trees and grasses.

The soils formed on the shales tend to be dark coloured, light textured topsoils, such as sandy loams, underlain by brown clay loams and light clays. The subsoil is made up of medium clays. There are high levels of salinity and sodicity in these soils. With improvement, and with techniques to adjust salinity and sodicity, they will form good soils for planting in future development.

The endemic pre-European vegetation of the region would have been Cumberland Plain Woodland. Remnants of the region's vegetation still exist today and include the *Eucalyptus moluccana* (Grey Box) and *E. crebra* (Narrow Leaved Ironbark). *E. tereticornis* (River Red Gum) are common in the low lying areas. These trees are generally 10-15m high on the hills and up to 25m high in the gullies. They are accompanied by a grassland or shrub understorey.

There are three distinctive landscape types in the visual catchment.

- Remnant Grey Box - Forest Red Gum woodland, with an understorey of grasses, is dominant within William Howe Regional Park to the north. Similar remnant forests exist in Jacks Gully to the west of the site. Weed infestations of olive are common in these areas. This landscape type provides a distinctive natural character to the visual quality of the study area. Patches of this landscape type can be seen in Figure 7.
- Undulating hills to the north-west have been cleared for agricultural purposes and now contain both non-native and native grasses. Spring Farm is sited on cleared rolling low-relief landform in an agricultural setting typical of Cumberland Plain landscapes. See Figure 5.
- The waste management centre is a distinctive landscape type, being predominantly cleared of vegetation and subject to major earthworks, with the exception of the vegetation within the gully area of the WMRC, some of which is likely to be removed as landfilling proceeds. Such landscape modification is common in the vicinity, for example in adjoining quarries. See Figures 7 and 8.

2.3 Site character

The site for the proposed development is located in the cleared area on the southern perimeter of the existing waste management facility. It predominantly faces north and west.

The Jacks Gully WMRC forms a large industrial expanse that contrasts with the predominantly natural landscape of the surrounding areas.

Expansive, flat topography and steep slopes have been artificially formed in an otherwise undulating landscape.

The main part of the WMRC has been cleared of vegetation and is surrounded by high ridges in an arc that extends along the south-eastern, eastern and north-eastern boundaries. The WMC is dominated by heavy earth-moving activities with extensive hardstand areas for stockpiling. Built form comprises large industrial-like sheds.

The site for the proposed building development sits on the north-facing side slope of a steep embankments that rises to the south and the east, and falls to the west and the north. See figure 8. Landfilling will continue within the WMRC, ultimately forming an even gradient to the immediate north of the proposed development.



Figure 7
View of WMRC site - entry buildings screened by trees in Jacks Gully View of Cumberland Plain remnant vegetation in gullies and on Nepean river beyond site

Some existing endemic vegetation occurs at the top of the embankment to the south of the site. To the west, within Jacks Gully large and dense vegetation occurs within the creek line.

The side slopes within the WMRC are generally unvegetated.

The site has a number of buildings that reflect an industrial character, clustered at the northern and western end of the WMRC. They are primarily one and two storey buildings with a broad footprint.



Figure 8
Embankment on east and south of site for proposed development.

3. Visual quality assessment

3.1 Visual qualities of proposed development

The proposed development entails:

- Earthworks to form a large flat platform on the north facing sideslope of existing hill. The platform would be approximately 350m x 100m. The platform for the proposed development will have a local elevation of about RL 105 and would be mainly hardstand, with some buildings.
- A Municipal Waste Receiving building which would have a footprint of 50x20m. Height would be 15m above proposed platform;
- A green waste processing building, of approximate 10m height, with multiple composting tunnels of 5m height;
- Main Building housing process areas of Separation, Baled Product Storage and Primary refining, which would have a footprint of 120mx50m. Height would be 15m.
- Tank farm comprising 11 tanks including digester tanks, water tanks and a biogas storage tank; and
- Biogas Power station generators, transformers and switchrooms. Part of this is to be housed in buildings with a 30mx10m footprint.

The proposed development would utilise the artificial topography of the existing site that would further contrast the natural low relief landform of the surrounding areas.

Notably, when landfilling is complete, all proposed built form, with the exception of part of the western most building, would be surrounded on two sides by ridge landforms that will be higher than the proposed development.

The proposed land use would result in a continuation of the existing industrial landscape type on the site. The form of the development would entail construction of new and extensive industrial type buildings, with much larger footprints than existing buildings and re-use of large areas of hardstand for stockpiling and vehicle movements.

The existing access road, through the WMRC would be retained as the main access to the proposed development.

3.2 Significant view corridors

Natural landscape and topography and the absence of urban form through the rolling hills dominate the visual quality of the visual catchment. This is considered to be of high visual value.

The significance of the visual quality is determined by the importance of the view corridors from public and private land within the visual catchment. View corridors occur throughout the open landscape of the catchment, interrupted only by the undulating hills. The most significant views of the site are considered to be from Spring Farm to the north-west, from William Howe Regional Park to the north of the site, and from the Nepean River area to the south-west.

In considering these view corridors, proximity to the development and the viewing angle play important roles in defining the visibility of a development. Distant, upward or flat viewing angles tend to render a development less conspicuous, except when development breaks the skyline. Close (< 1000m) or downward viewing angles tend to be more conspicuous and thus of greater potential impact to visual quality.

3.2.1 Spring Farm

Spring Farm has views to the south-west, which includes views of the waste management facility. It is at the same level or lower than the proposed development, and thus has the potential to be screened by boundary vegetation and proposed mounding. The backdrop behind the industrial facility is unvegetated embankments, which visually contrast the natural landscape on the ridge.

Figure 9
View from William Howe Regional Park to site



The current use of Spring Farm has very few affected visual receivers. The future residential subdivision of Spring Farm will introduce a large population of highly sensitive receivers. They would have the WMRC and the proposed development within their visual catchment.

However the draft master plan for Spring Farm Release area includes a 60m mounded vegetation corridor along the boundary between Spring Farm and Jacks Gully WMC. Assuming that this corridor would be mounded to RL 118 and heavily planted with trees that would reach heights of 15m+, these trees would screen the proposed development within 5 years of planting.

This will ensure that an incoming population will be significantly screened from the proposed development. Any visual impact would be of low significance, given the presence of other industrial land in the vicinity.

3.2.2 William Howe Regional Park

The proposed development would not be visible from the main formal paths within William Howe Regional Park. Importantly it would be screened by topography from the main look out on Mount Annan. The proposed development will be only seen by a few off-track park users, and would be seen in the context of an existing WMRC, and other quarries.

These receivers will be few in number but highly sensitive. Some would have some downward viewing angles to the proposed development, and thus may see over the proposed trees and landfill.

The proposed 60m mounded vegetation corridor along the boundary between Spring Farm and Jacks Gully WMC will mostly screen the proposed development from the low number of receivers in the Park. Only fragments of roofs would be visible.

Any visual impact would be of low significance, given the low user numbers and significant screening from the proposed facility.

The embankments to the south of the proposed facility should be planted with vegetation if practicable. This would ensure that the roofs of the proposed buildings would be seen against a backdrop of greenery.

3.2.3 Nepean River

The proposed development would be visible in fragments from clearings near the River. Mostly these areas would be screened by vegetation, both on the River and within Jacks Gully. It is unlikely that any highly used areas will be exposed to anything but insignificant views of the proposed development. Fractured upward-angled views of the proposed development would occur from mostly low-use areas. If seen, only parts of the proposed buildings would be seen below the ridge line behind, and would thus not be prominent.

The low user numbers will be significantly screened from the proposed facility with a visual impact of low significance.

3.3 Visual quality assessment

The most significantly adverse impact of the proposed land use would occur to views from the north, north-west and south-west. The composition of views over the existing site activities would be sustained with the proposed development.

The impact is considered to be low because

- All views to the site are currently distinguished by the existing earthmoving activities and industrial buildings of the site and the adjoining sites, which would be sustained;
- The proposed development of Spring Farm would, in the long term, be accompanied by significant mounding and screen planting, which would screen the proposed development from Spring Farm views; and
- Views from the Nepean River have very few sensitive receivers. They will only have their view compositions altered in a very minor manner.

In the short term and especially in the long term, the proposed development would have minimal impact on sensitive receivers.

3.4 Mitigation of impacts

The proposed development is considered to be acceptable. However, some strategic tree planting, both on the periphery of the development and within the body of the site could enhance its visual quality.

Tree planting on the south-western edge of the development, if practicable, would provide an endemic planting of eucalypts that

could achieve the height of original Nepean River flat vegetation. Further to the east low planting would ensure the proposed development is seen from William Howe Regional Park amongst a backdrop of natural vegetation .

This vegetation should follow the southern boundary of the waste management centre and provide a visual, physical and ecological link between Mount Annan and the Nepean River. Controls should define the floral mix to ensure endemic systems are promoted. Ideally, the embankment should meander like existing topography, rather than following a consistently engineered alignment.

The proposed AWT site layout should allow for some tree planting within the large hardstand area of the works areas, if practicable. This would reduce the potential visual impact from Spring Farm. Again this should ideally be tree planting using endemic species to ensure that the vegetation colour is consistent with the remnant bush in the background.

3.5 Impact of Construction Activities

Construction activities would entail large earthmoving works.

Drainage and hydrological impacts would be contained by effective construction practices.

The landscape impacts need to be managed so that the existing buffers around the site are kept in place and the new landscape treatments are undertaken as soon as possible.

The period would entail no additional adverse impact, as the whole of the WMRC is currently operational with heavy plant and earthmoving equipment.

3.6 Cumulative impacts

Landscape and visual impacts are not generally quantifiable, so it is not possible to assess the cumulative impacts in anything but a qualitative manner. As the development is specifically restricted to land that is already cleared, and as the development will be undertaken in land that is already used for waste management, it is unlikely that the proposed development will form a precedence for further development or extension of the waste management facility.

3.7 Ecologically Sustainable Development

The proposed development has been considered, in terms of visual amenity, according to the four principles of ecologically sustainable development listed in Schedule 2 of the Environmental Planning and Assessment Regulation 2000.

The precautionary principle

The proposed works would not result in high visual impacts. The visual qualities are well understood as a result of various studies that have taken place.

Given the fact that most of the proposed development is sited on cleared areas, the potential for adverse impacts to the visual quality of the region is minimal.

Intergenerational equity

The works would improve employment potential and economic growth and provide an important facility with a minor impact only on the local visual environment. With the implementation of safeguards the proposed development is not anticipated to result in significant impacts on the visual environment or compromise the principle of intergenerational equity.

Conservation of diversity and integrity

Significant visual qualities within the landscape would be maintained by minimising the extent of earthworks and employing minimal impact construction techniques.

Planting and revegetation in the long term on the site should aim to provide improved faunal corridors, and enhance biodiversity in the woodland revegetation. Techniques to be used will include collection of seeds of local provenance, large scale planting projects of tubestock planting and fencing of woodland areas to minimise intrusion.

Improved valuation and pricing of visual resources

Requirements imposed in terms of minimisation of impacts on views and the implementation of appropriate safeguards would result in an economic cost to the proposed project. This signifies that the visual resources have been given appropriate valuation.

4. Conclusion

The existing uses of the existing site contrast the high visual quality of the natural landscape areas of the Cumberland plain.

The potential impact of the proposed development would be insignificant on vistas from within the catchment.

The most important views affected are those from Spring Farm, William Howe Regional Park and from agricultural areas beside the Nepean River. Irrespective of the proposed development, these views however will be marred by waste facility activities and quarrying on adjoining sites.

The future development of Spring Farm includes a 60m wide buffer zone which will screen most of the proposed development from north and north-west views, while the topography limits the visibility of the site from sensitive receivers to the east and south.

The proposed development is therefore considered to have low visual impact.

Mitigation is not required, but to enhance the general quality of the site it would be appropriate to revegetate the embankment around the east and the south of the site. Some trees should be established around the proposed buildings where possible to provide scale and backdrop to the proposed buildings, and soften their visual appearance.