Visual Impact Assessment

SIMTA

SYDNEY INTERMODAL TERMINAL ALLIANCE

Part 3A Concept Plan Application

16 / JUNE / 2011

REIDCAMPBELL

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INFORMATION PROVIDED BY OTHERS:

Viewshed Analysis	Hyder Consulting Engineers
Raw Viewpoint Photography	Hyder Consulting Engineers
Lightspill Study Report	Hyder Consulting Engineers
Landscape Planning	Hassell

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executive summary

Reid Campbell in conjunction with Hyder Consulting Engineers were appointed by SIMTA to undertake a Visual Impact Assessment, including a Light Spill Study of the proposed Moorebank Intermodal Terminal Facility Development.

This report has been compiled in accordance with the Director General's Requirements issued under Section 75F of the *Environmental Planning and Assessment Act 1979* dated 24 December 2010 (Application MP10_0193), specifically responding to the item *Visual and Urban Design* noted under *Key Issues* of the proposal.

This report seeks to identify and evaluate the visual impacts of the project including an analysis of views from key vantage points and proposed management/mitigation measures to address the visual impact of the proposal.

It should be read in conjunction with the Urban Design and Landscape Report which provides a design analysis and justification of the key built form elements of the proposal.

Although a detailed site layout plan is yet to be developed, the Visual Impact Assessment and Light Spill modelling are based on the SIMTA Site Precint Plan at Figure 1 which describes the likely maximum development envelope of built-form typologies within each Land Use Zone on the site.

Using the siting, setback, height, landscaping and general design principles described in the Urban Design and Landscape Report for all built-form, streetscape, urban and operating elements, a 3-dimensional massing model was generated to inform the likely maximum and realistic visual impact at key view points identified through a digital viewshed analysis.

In addition to the main Intermodal Terminal Facility Development, a Visual Impact Assessment was conducted on the proposed Rail Link connecting the SIMTA site with the Southern Sydney Freight Line (SSFL). Although the detail design of this Rail Link is yet to be determined, a notional model of the rail line within the proposed Rail Corridor (noted on Figure 1) was developed assuming the Rail Link area would be approximately 30m wide.

Modelling suggests that there will be minimal visual impact due to the proposed Rail Link. It will be visible from some view points, however generally these are in locations where the viewing period is very short (i.e. from a road bridge) and the proposed Rail Link runs adjacent to existing rail infrastructure.

All simluated Rail Link view points fall within a precedent boundary formed by the development of the SSFL.

The Light Spill Study undertaken by Hyder Consulting Engineers examines the potential lighting requirements for the operation of the SIMTA site and investigates through the modelling of a concept lighting design, its compliance with the Australian Standard AS4282 - 1997 *Control of Obtrusive Effects of Outdoor Lighting*.

The light spill modelling shows that the luminous intensity from lighting within the SIMTA site can be easily designed to be below the prescribed maximum value of 500cd (for curfew hours: 11.00pm to 6.00am) at the nearest residences.

The resultant findings of the Visual Impact Assessment and Light Spill Study are:

- that the proposal is consistent with general industry and existing development in close proximity to the site and as such the visual amenity at these locations is generally unchanged;

- modelling suggests that there is highly limited visual impact to residential areas due to distance, existing visual barriers and undulating topography;

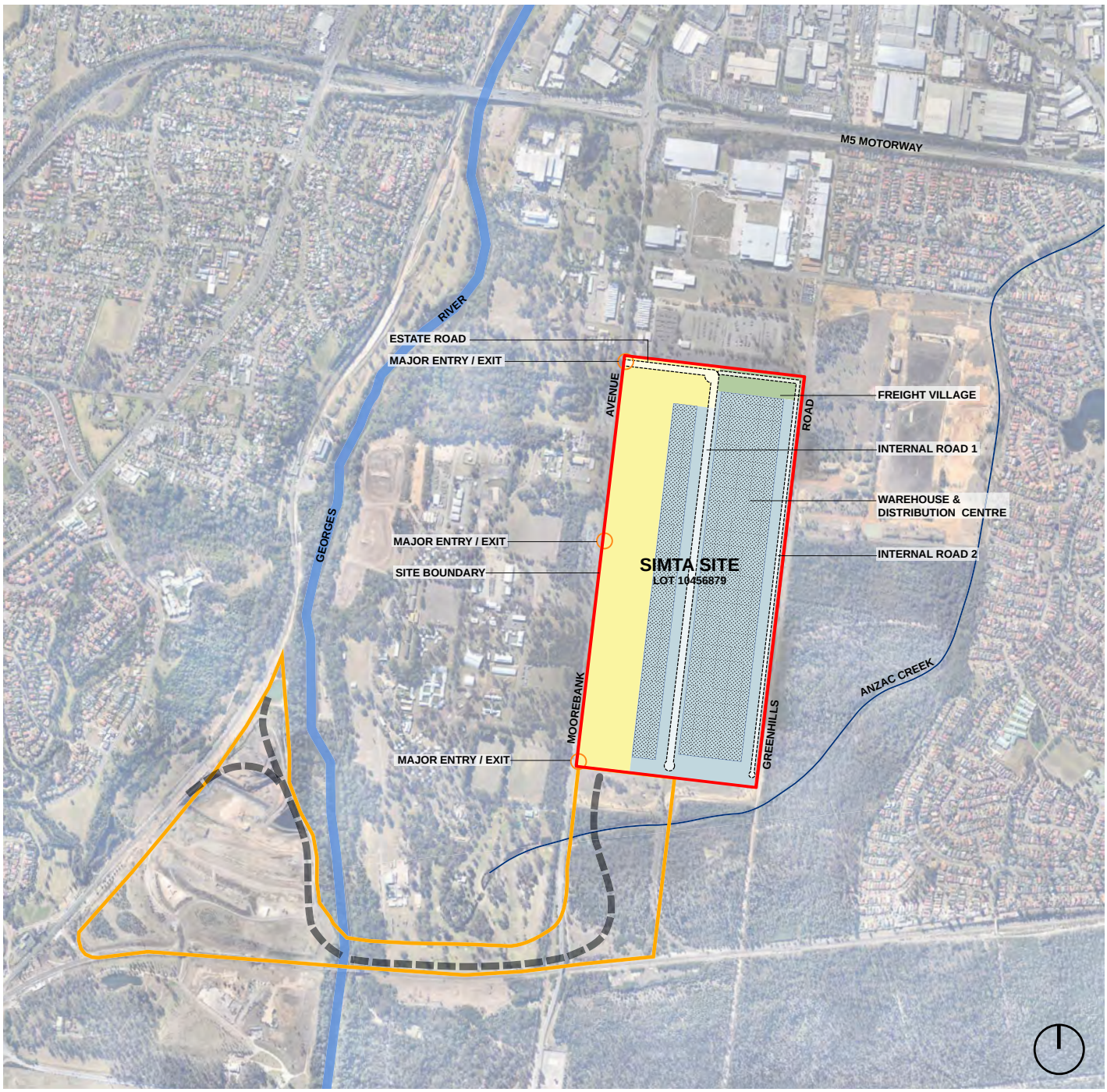
- in most instances, it was found that there was either no visual impact or no change to the general overall visual amenity at simulated view locations in residential areas;

- the most prominent views of the proposed development will be at localised site boundary points, however the visual amenity at these locations is likely to be improved through mitigation measures such as significant and intesive landscaping, screening and architectural elements that do not currently exist or shield the current site operations;

- the impact of light spill to residential properties will be well within the required criteria as specified in Australian Standard AS4282 - 1997 *Control of Obtrusive Effects of Outdoor Lighting*.

figures

tables



LEGEND

SIMTA SITE BOUNDARY

RAIL CORRIDOR

INDICATIVE RAIL LINK
APPROX. 30 M WIDE

SCALE BAR

0 m 150 300 450 600

Figure 1 - SIMTA Site Precinct Plan

01 introduction

The Sydney Intermodal Terminal Alliance (SIMTA) propose to develop an intermodal terminal facility at the site known as the Defence National Storage and Distribution Centre (DNSDC).

The SIMTA development will provide container freight distribution and warehousing to service Western and south western Sydney industrial areas. The SIMTA site will be linked to the Southern Sydney Freight Line. The Concept Plan proposal comprises the following key components:

- **Rail Link**: the Concept Plan includes a rail link that will connect the SIMTA site with the Southern Sydney Freight Line. The detailed design of the rail infrastructure comprising the rail link will be subject to a further Project Application, however for the purpose of evaluation a notional rail line within the proposed rail corridor area has been included in this report to determine the likely visual impact.
- **Intermodal Terminal**: the on-site terminal facilities including up to 1,200 metres of rail. Freight will arrive by rail and be transported to the warehouse and distribution facilities within the SIMTA site, or be directly loaded on to trucks for transport to warehouses and nearby logistics centres. Exports and empty freight containers will be transported to the facility by truck and then loaded onto rail for transport. It is proposed that the terminal will have capacity for four rail sidings, with areas for container handling and storage and anticipated to have the capacity to handle up to 1 million TEUs per annum.
- **Warehouse and Distribution Facilities**: warehouses with ancillary offices will be constructed to the east of the intermodal terminal. These buildings are proposed to be constructed in stages in response to site servicing availability and market demands. It is expected that warehouses will range in size, depending on tenant needs.
- **Freight Village**: a dedictaed area known as the ‘Freight Village’ zone has been assumed to provide appropriate support services on site. These may include site management and security offices, meeting rooms, driver facilities and convenience retail and business services.

The proposed development will be staged to respond to demand for infrastructure and warehousing facilities, however for the purposes of evaluation, the visual impact study is based on the indicative SIMTA site precinct plan at Figure 1 demonstrating the likely maximum exposure of building and facility frontages and site operating elements based on the typical design principles for elements described in the Urban Design and Landscape report forming part of this application .

This report includes the following:

- a description of the methods used to undertake the visual assessment and the light spill assessment;
- a description of the criteria used to determine the likely level of impact;
- an evaluation of the existing visual character of the surrounding area;
- an evaluation of the visual character of the proposal;
- a description of measures being incorporated into the site planning and landscape design to reduce potential visual impacts;
- an assessment of the visual impact of the proposal focussing on an evaluation of specific views and taking into account measures to reduce the level of visual impact; and
- an assessment of the likely impacts of light spill.

02 assessment methods

02.1 visual impact assessment

The following steps were undertaken in the assessment of visual impacts of the proposal.

preliminary viewshed analysis

A viewshed analysis was undertaken for the site in Geographical Information System (ArcGIS - Spatial Analyst Extension) by Hyder Consulting Engineers to provide an initial indication of which parts of the surrounding area could potentially view some part of the site (in its existing form). The three dimensional ground surface data used for this analysis included the natural terrain as well as buildings and major areas of vegetation (see Figures 4 & 6).

site inspection

Hyder Consulting Engineers and Reid Campbell carried out a site inspection to verify the results of the viewshed analysis and to evaluate the existing visual character of the area and specifically identify locations that would potentially be subject to visual impacts from the proposed development. Photographs were taken by Hyder Consulting Engineers from key viewpoints using a GPS Camera for later use in visual simulations of the development.

visualisation of the development

Based on the precinct plan in Figure 1 and the built form and urban design principles in the Urban Design and Landscape report (in particular maximum height and scale), Reid Campbell developed a digital three-dimensional model using AutoDesk REVIT that included the likely components of the development that would potentially be visible beyond the site. Views were generated of the model that matched the camera positions of photographs taken by Hyder Consulting Engineers from the key viewpoints and combined with the photographs to create simulated views of the proposal from each of these key viewpoints.

assessment of visual impact

The visual impact from the key viewpoints was then assessed qualitatively on the basis of the criteria described in Section 3. Views at a variety of distances from the site were considered, however it is noted that the SIMTA site is primarily surrounded by vast amounts of vegetation to the west and the School of Military Engineering to the east currently occupied by the Department of Defence (see Figure 2 & 6) providing an extensive buffer to local residential areas and other existing developments.

The proposed rail connection has also been assessed from key viewpoints identified by Hyder Consulting Engineers on the basis of a notional rail line being constructed within the proposed rail corridor area.

02.2 light spill assessment

A preliminary lighting concept for the proposal was developed by Hyder Consulting Engineers, based on the operational requirements of SIMTA to be compliant with Australian Standard AS4282- 1997, ‘Control of Obtrusive Effects of Outdoor Lighting’ for the floodlighting system. The light spill was then modelled in using agi32: version 2.02 and Visual lighting design software, provided by light lab international software.

03 assessment criteria

03.1 visual impact assessment criteria

The visual impact of the selected viewpoints in this study have been evaluated on a qualitative basis. The visual impact of the proposal has been assessed using a range of criteria against which the relative importance of each observer location can be described, including: context, setting, site elements, site character, adjacent development, distance to view (foreground, middleground and background), land use, visual prominence of the development, and potential changes to the view setting. For each observer location, these criteria have been addressed under three catgory headings: 'visual adaptation', 'visual sensitivity' and the resulting 'visual impact'. A comparative description of each category used in the visual impact evaluation process is summarised below:

visual adaptation

Visual adaptation describes any significant changes to the landscape and visual amenity that is likely to occur as a result of the proposed development from a particular view point, including:

- the prominence of the proposed development and its individual components with regard to scale, form, colour and texture in contrast with the surrounding landscape.
- the compatibility of the development within the context of the particular landscape zoning/primary use (such as residential, parklands and other non-industrial related uses) on the basis that integration of the proposed development is likely to incur a higher visual impact in those zones which are inhabited by non-industrial related activity. To this extent, 'compatability' relates only to the specific viewpoint locations and not the degree to which the development can be seen as described under 'prominence' above.

visual sensitivity

Visual sensitivity refers to the likely duration of views and number of observers from a given viewpoint and is independent of the 'prominence' of the proposed development. In locations where visual amenity has a higher perceived importance, and the duration of views and number of observers is greater than surrounding areas, the resulting visual sensitivity is regarded as being higher.

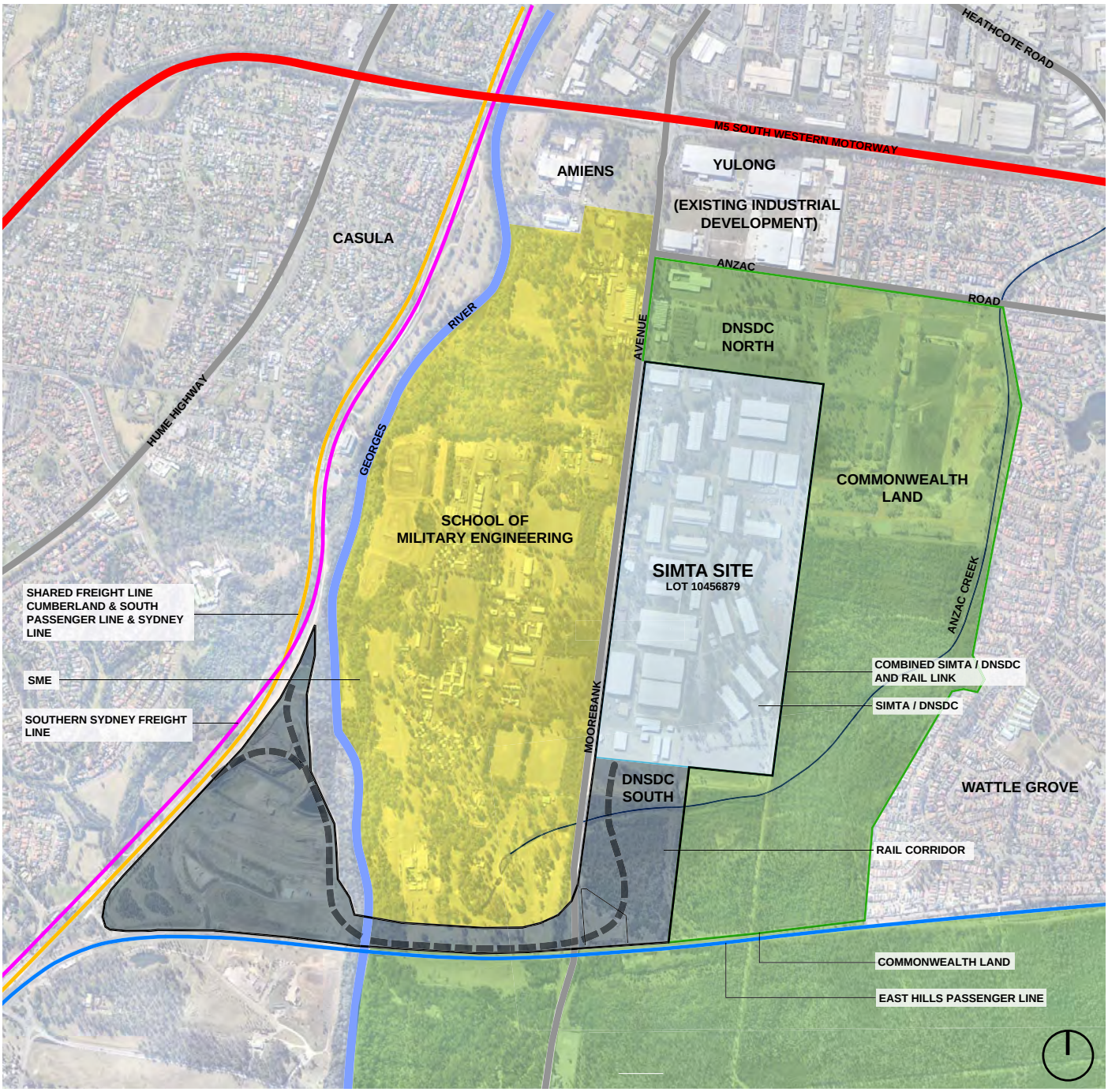
Visual sensitivity is expressed in relative terms in this study with residential areas being of higher visual sensitivity and industrial areas having a lower sensitivity. Other areas of higher sensitivity include roads where, despite a short duration of views, there are large numbers of potential viewers and parks where the duration of views is not particularly long, but where a high degree of importance is placed on visual amenity.

visual impact

The resulting Visual impact is summarised on a qualitative basis against the above criteria.

03.2 light spill assessment criteria

Light spill at the edge of the site has been digitally modelled by Hyder Consulting Engineers and is expressed quantitatively in terms of light intensity.



LEGEND

- RAIL LINE - SOUTHERN SYDNEY FREIGHT
- RAIL LINE - DEDICATED PASSENGER LINE
- RAIL LINE - SHARED PASSENGER & FREIGHT
- SME
- GEORGES RIVER
- MOTORWAYS
- MAJOR ROADS & HIGHWAYS
- SIMTA / DNSDC
- RAIL CORRIDOR
- COMBINED SIMTA / DNSDC & RAIL LINK
- COMMONWEALTH LAND
- INDICATIVE RAIL LINK APPROX. 30 M WIDE

SCALE BAR

0 m 150 300 450 600

Figure 2 - Visual Character of the Surrounding Area

04 visual character of the surrounding area

The site is currently occupied by the Department of Defence and consists of a number of buildings with the primary uses being large format logistics and warehousing.

The site is surrounded by land owned and occupied by the Department of Defence. This includes the School of Military Engineering (SME) to the west, the Defence National Storage and Distribution Centre (DNSDC) to the north and east, and further Commonwealth Land to both the east and the south. The outer proximity toward the north includes existing Moorebank industrial developments known as 'Amiens' and 'Yulong'. The residential suburb of Wattle Grove is located to the north-east and east. The Casula residential area is approximately 1km west of the SIMTA site divided by the SME, the Georges River and the Southern Sydney Freight Line (SSFL).

The site is within relatively close proximity to the M5 Motorway, which intersects with Moorebank Avenue approximately 600 metres to the north of the north-east site boundary. Moorebank Avenue runs in a north-south direction and provides a direct connection between the Liverpool City Centre and M5 Motorway on/off ramps to the north and the Glenfield/ Macquarie Fields residential areas to the south.

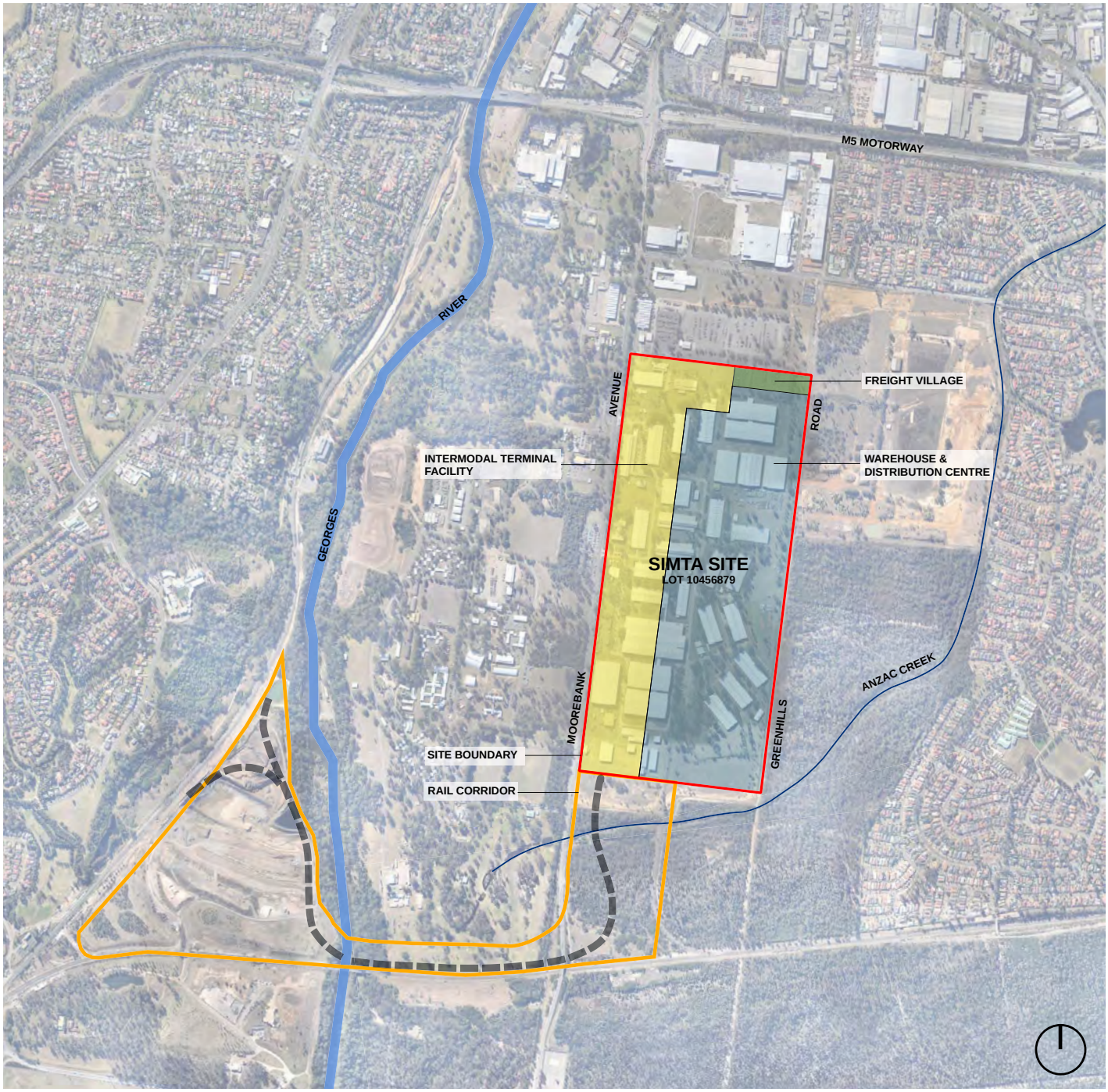
Approximately 1-1.5km west from the site, the SSFL and passenger rail line run in a north-south direction and are bounded by the Casula residential area. To the south of the site, the existing East Hills railway runs in an east-west direction. The proposed rail link corridor will be connected and confined within these areas.

The outer area to the east and north of the site comprises the Wattle Grove residential area (primarily low density), extensive commercial and industrial developments and major motorways.

Surrounding natural elements include:

- Georges River which runs along the western boundary of the School of Military Engineering.
- Anzac Creek which runs along the eastern boundary of the Commonwealth owned land, linking to Chipping Norton Lake and Georges River to the north.
- Existing landscape and vegetation known as the 'Cumberland Plain Woodland' running along approximately one half of the eastern boundary and full length of southern boundary of the site, forming a physical barrier to surrounding areas. This bushland is primarily regenerated vegetation and includes Anzac Creek. The density of the bushland provides significant screening to much of the south and east of the site from surrounding areas.

The existing visual character of the site and surrounding area is shown on Figure 2.



LEGEND

- SIMTA SITE BOUNDARY
- RAIL CORRIDOR
- FREIGHT VILLAGE
- WAREHOUSE & DISTRUBUTION CENTRE
- INTERMODAL TERMINAL FACILITY
- INDICATIVE RAIL LINK APPROX. 30 M WIDE

SCALE BAR

0 m 150 300 450 600

Figure 3 - Land Use Plan