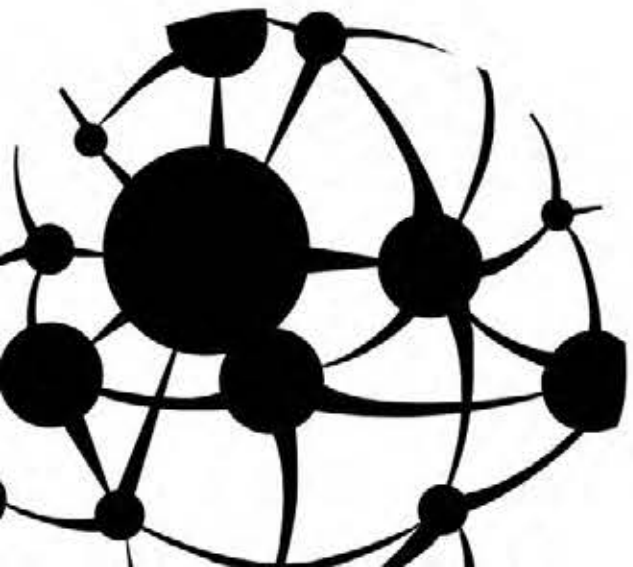


Integral Group

Level 7 16 Spring Street
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Moorebank Precinct West Stage 2 Urban Heat Island Mitigation Strategies Modelling

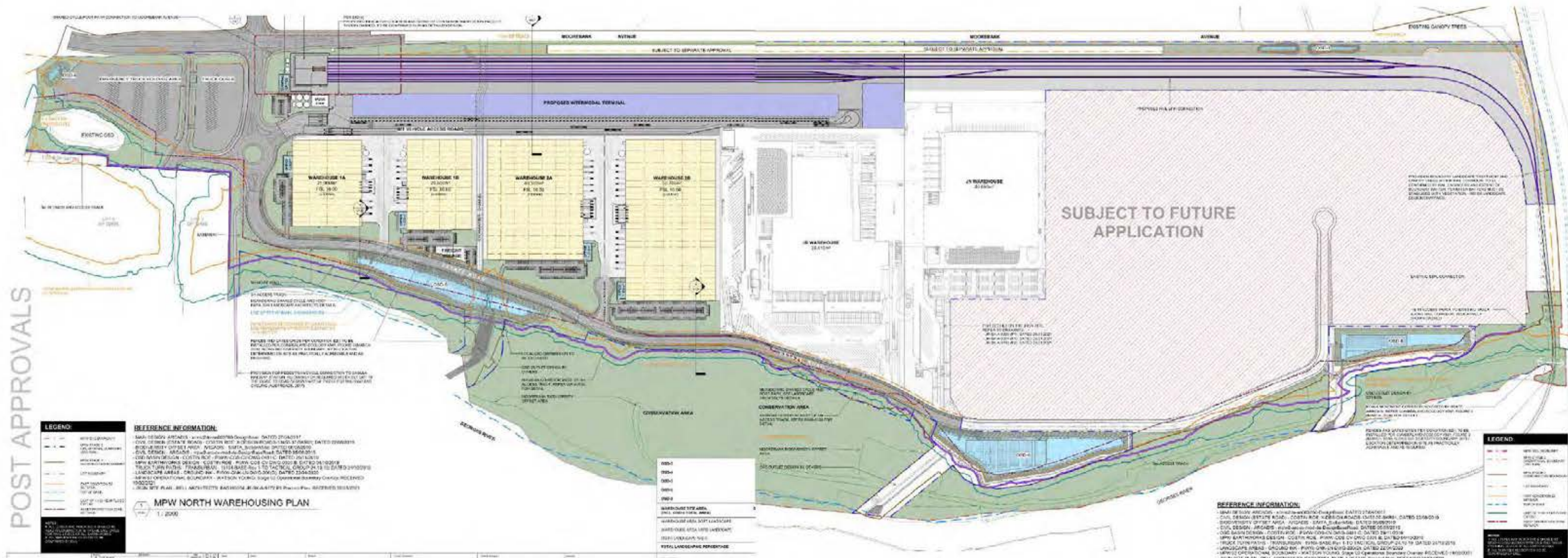
03.03.2021 :: Updated Scheme



2021 Update Overview

This report is an update to the previous report dated 21.11.2019. Integral Group has rebuilt a model of the MPW site based on the updated layout per the 23 Feb. 2021 drawings set. The updated scheme has been simulated through the Urban Heat Island analysis engine, in the same manner as previous schemes were analysed.

The 2021 layout has a slight increase in hardscape area. Since the project is already targeting “cool pavements” through the inclusion of high albedo hardscape, there was not a substantial change in performance. The project still achieves the same outcome when compared against the reference design without UHIMS. All comparisons in this report have been updated based on the latest layout.



2021 Update Site Layout

Introduction

Integral Group built a model of the MPW site based on the local weather data, using the Grasshopper software and Urban Weather Generator engine, to compare it to the neighbouring industrial sites and measure the impact of the UHI Mitigation Strategies suggested in the condition B48.

Several strategies were modelled by Integral Group to get a more realistic understanding of the strategies achieving the outcomes specified in the condition of consent – a 4°C degree decrease in temperature compared to neighbouring industrial developments.

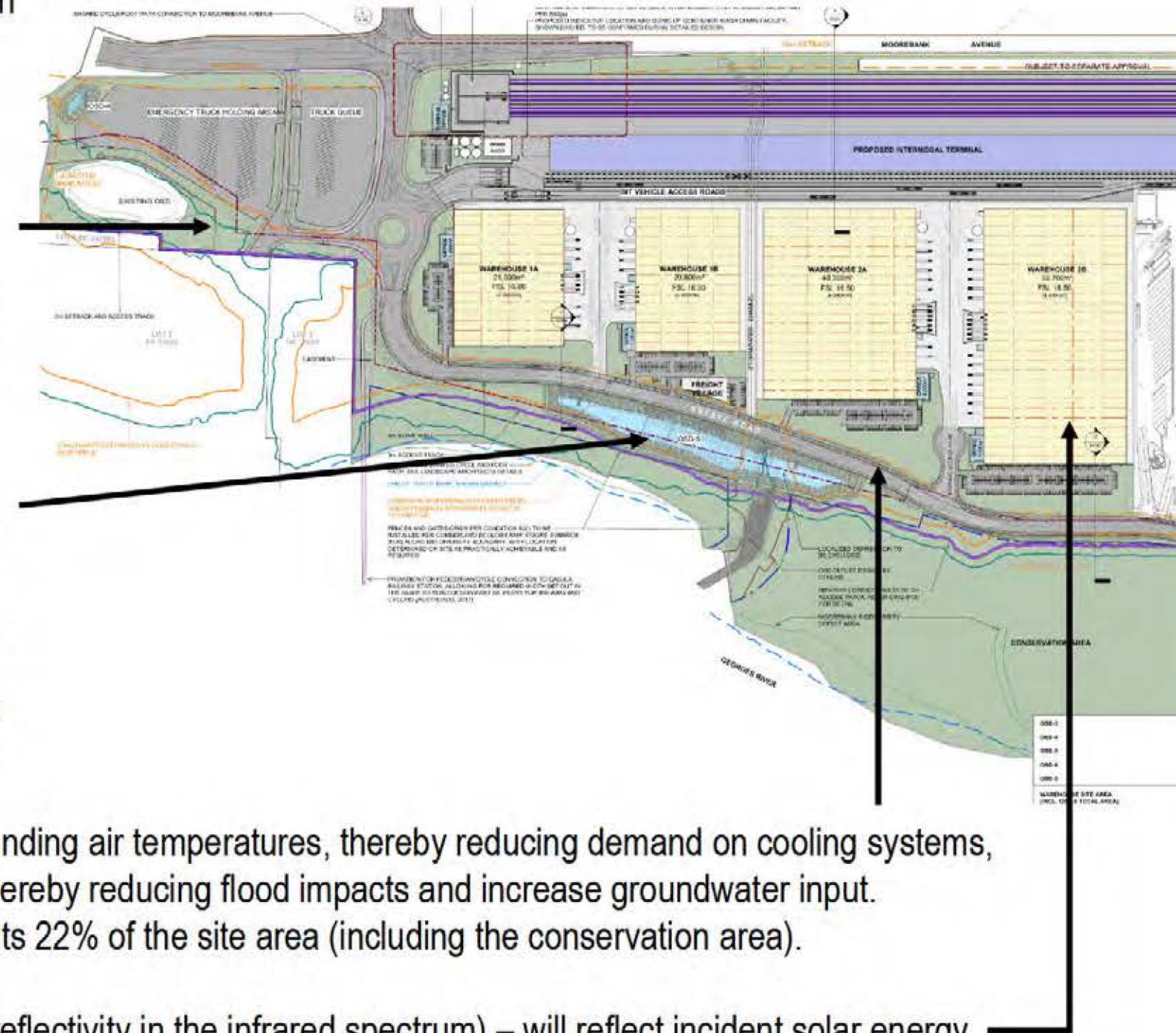


The UHI model considers the site and adjacent conservation area, as shown above.

Implementation

Next mitigation strategies from the condition B48 have been incorporated in the design:

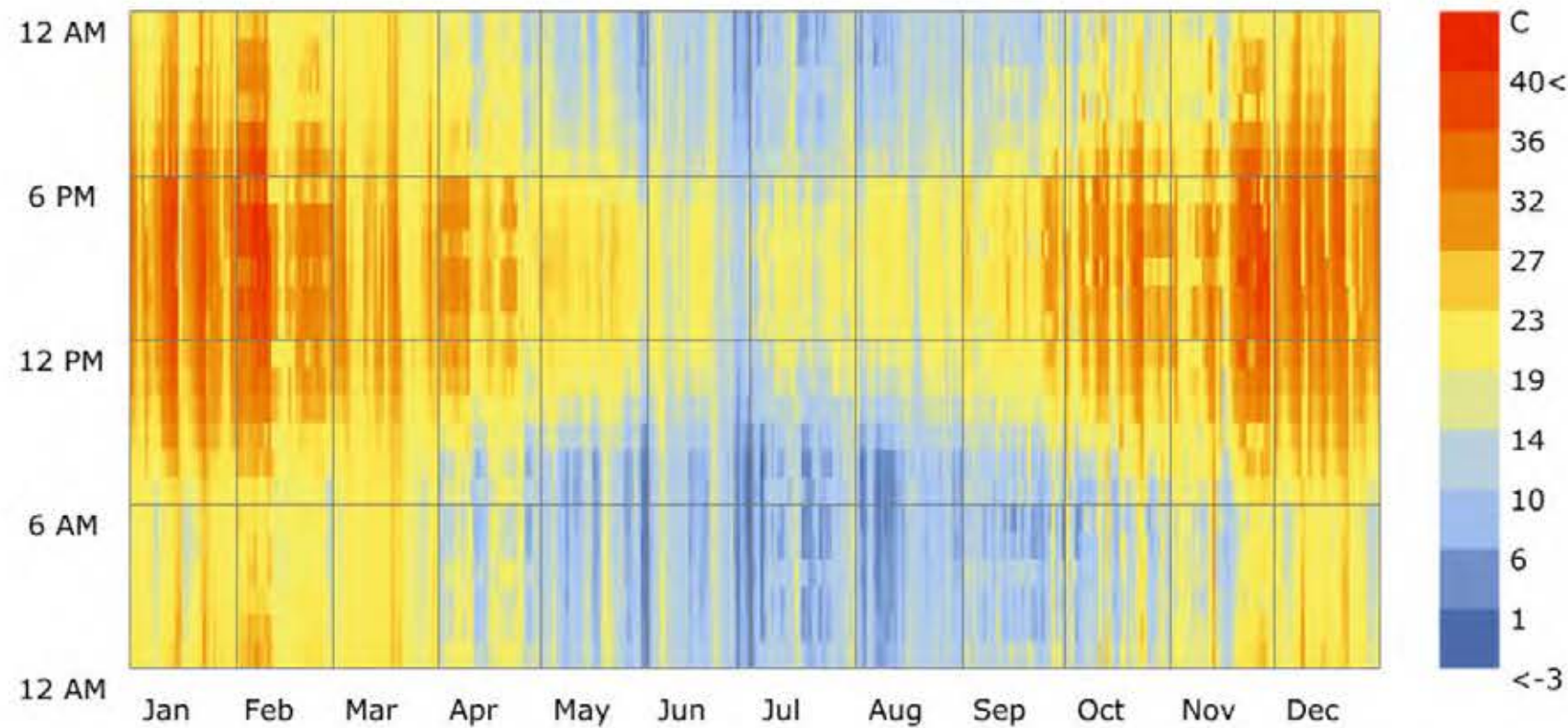
- **Shade tree planting** – tree canopies intercept and dissipate the incoming solar radiation through reflection, absorption and transmittance. The obstruction of solar radiation from the street trees, results in a smaller Sky View Factor and a decrease in the UHI effect. The site benefits from 12% tree canopy shading based on a 1-per-30 tree spacing which will increase shading, cooling and energy saving. This has been captured in the UHI model.
- **WSUD** – bio-retention system, such as On-Site Detention (OSD) have the ability to increase infiltration and evapotranspiration. The evapotranspiration component of the site OSD is not able to be captured in the UHI model due to software limitations, and will provide an additional benefit to the results presented. The benefit of vegetative coverage associated with OSD are captured in the model and results.
- **Vegetation ground cover** – will reduce energy use by lowering surrounding air temperatures, thereby reducing demand on cooling systems, as well as reduce site stormwater runoff due to increased infiltration, thereby reducing flood impacts and increase groundwater input. Vegetative ground cover has been captured in the model and represents 22% of the site area (including the conservation area).
- **Use of 'cool' building and pavement materials** (i.e. those with high reflectivity in the infrared spectrum) – will reflect incident solar energy back into the atmosphere and reduce energy use by lowering surrounding air temperatures, thereby reducing demand on cooling systems. All roofs on the site will receive a cool-roof treatment (albedo of 0.65)



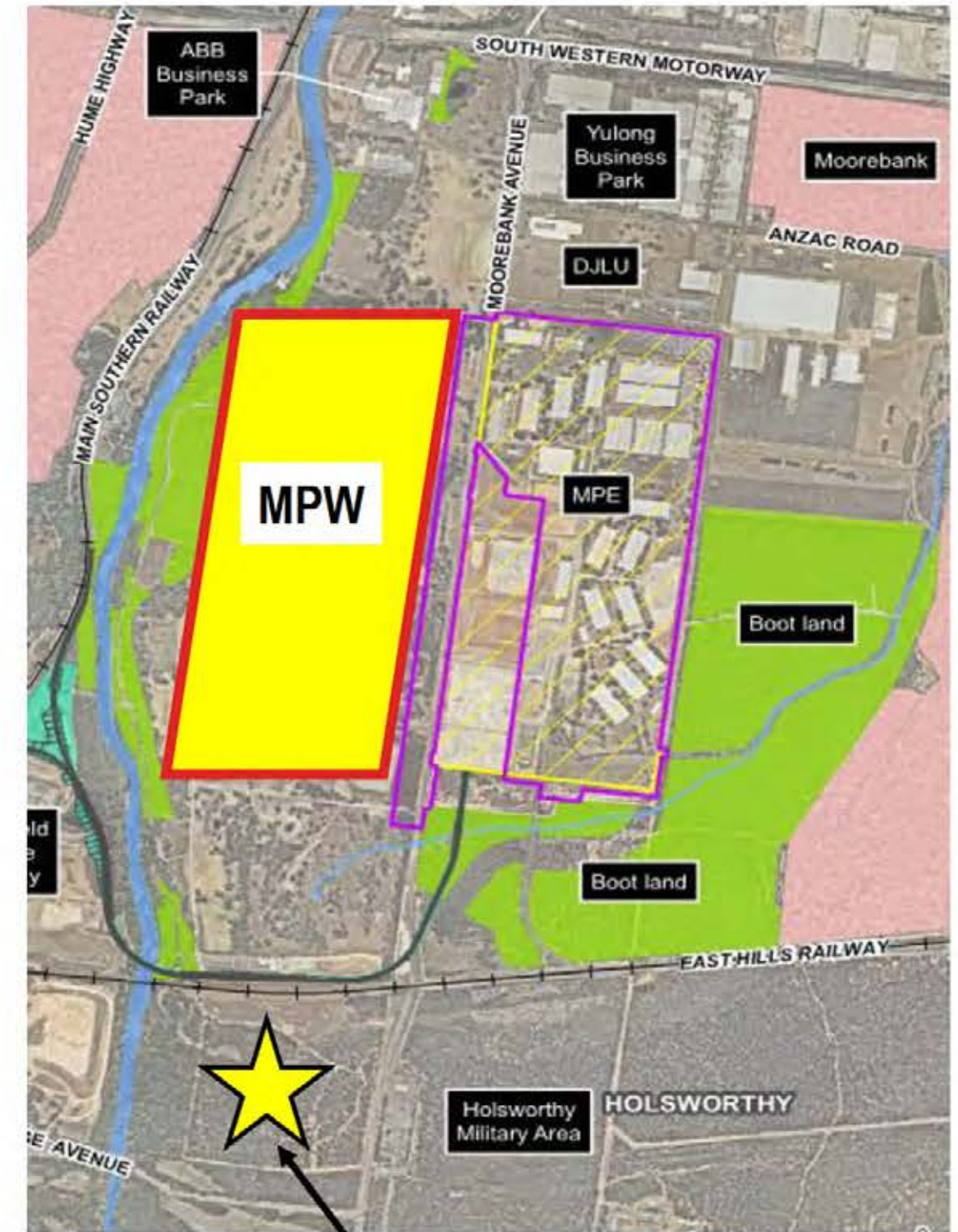
The Green Roofs strategy has not been included in the design, as it is not a suitable and applicable design for the industrial project.

Site Context / Weather Data

- The project site is the new Moorebank Precinct West
- This analysis uses local weather data from the Holsworthy weather station



Dry Bulb Temperature (C) - Hourly
Holsworthy Control Range_NSW_AUS
1 JAN 1:00 - 31 DEC 24:00



Weather Station in Holsworthy, NSW

Methodology

- Integral Group has analyzed the Moorebank Precinct West Stage 2 Site using the state-of-the-art Urban Heat Island analysis tool
- The model is built in Grasshopper and uses the Urban Weather Generator (created by MIT) to predict UHI conditions based on a variety of site inputs



Modeling Inputs

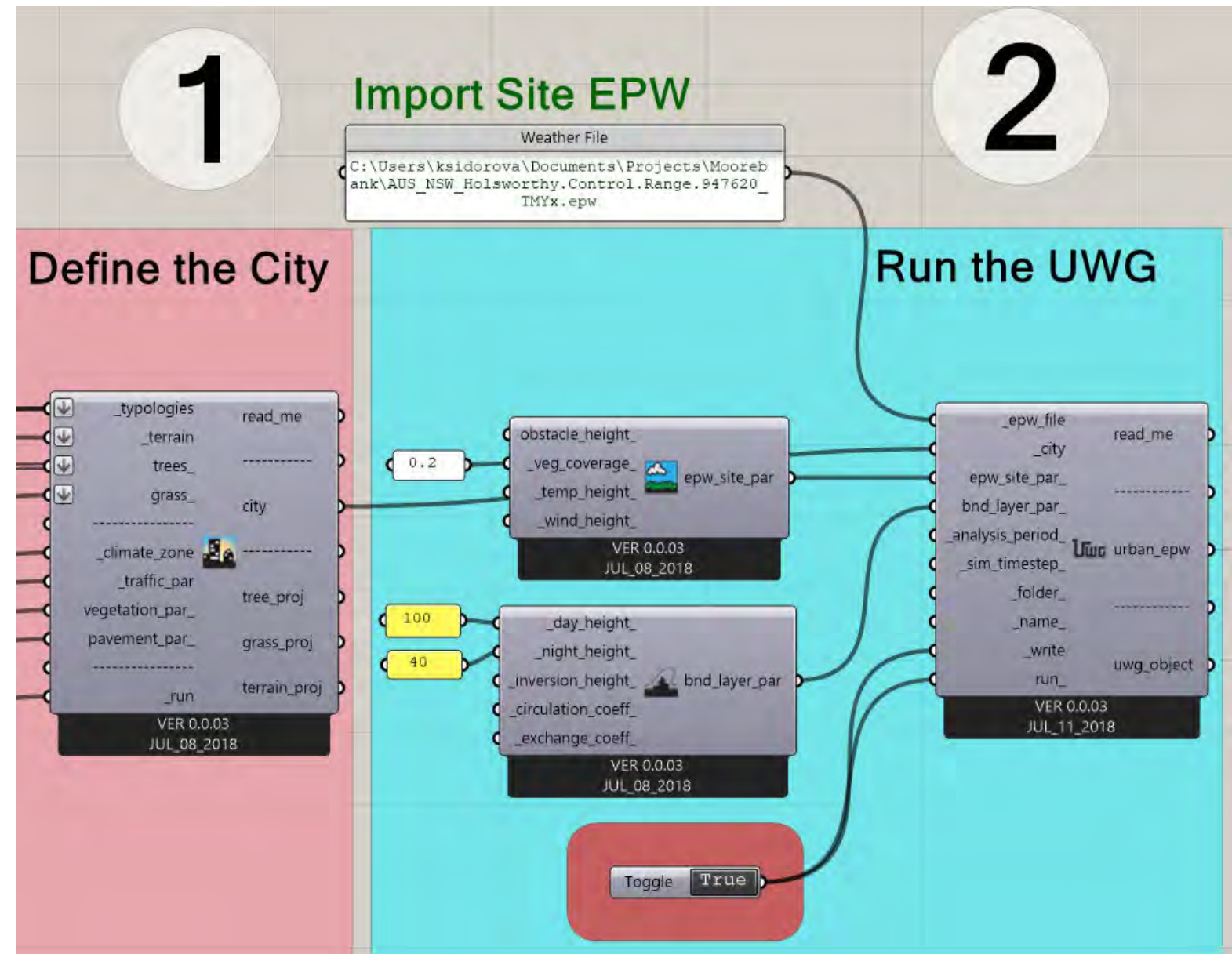
Currently Model includes following UHI Mitigation Strategies:

- 40% of site is Vegetation
- High Albedo Roof (0.65)
- High Albedo Wall (0.45)
- Energy efficient building design (4-star Green Star equivalent)
- Building Overhangs providing localized Shading

Additional Key Parameters in model:

- 16% of site is Building footprint
- 45% of site is Hard Surfaces (concrete and asphalt)

Compared to the 2019 report, the project has increased the amount of hardscape.



UHI, Surface and Canopy Temperature

When discussing Urban Heat Island, there are two predominant temperatures that are considered:

1. **Surface Temperature** – this is the temperature of the surface, often captured by satellite images and also called Land Surface Temperature. Typical Intensity can vary by $\pm 10^{\circ}\text{C}$ due to UHI effects

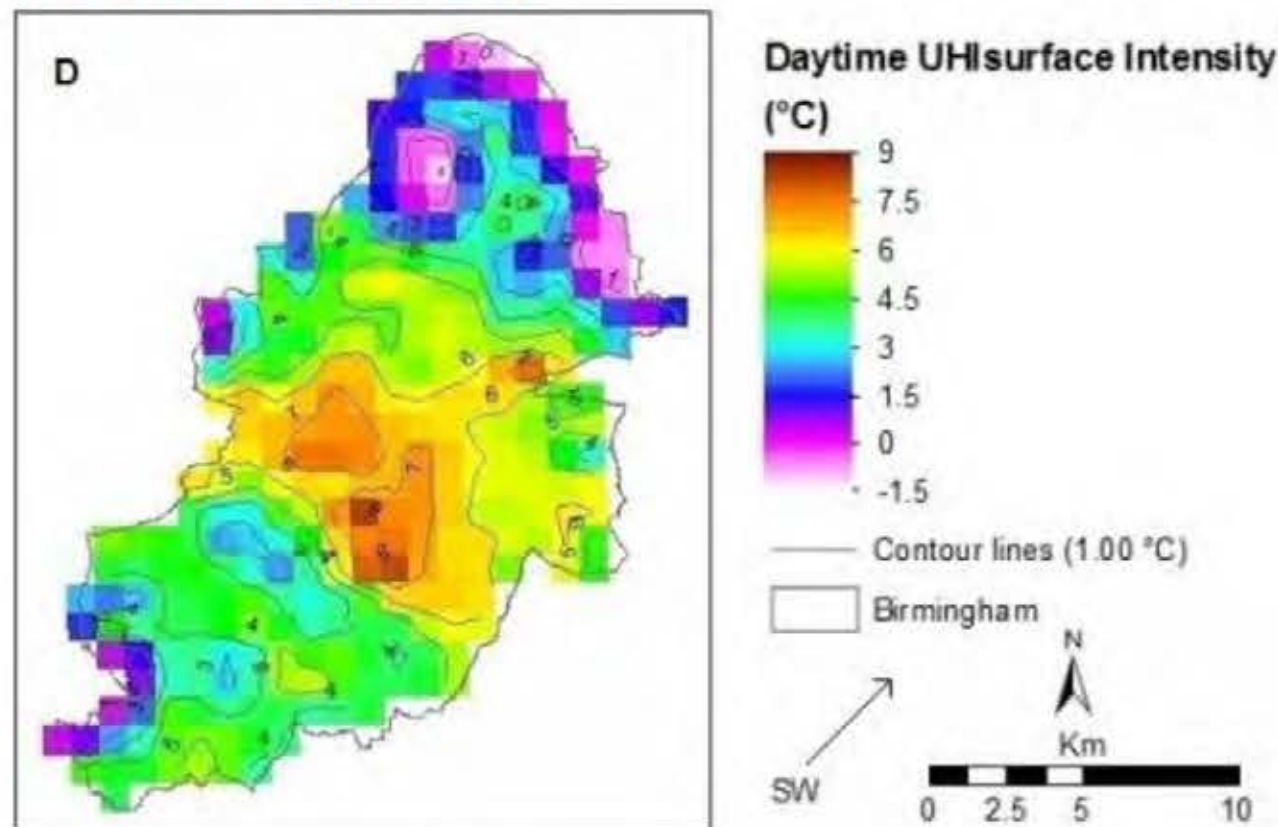


2. **Canopy Temperature** – when looking at models of urban areas, climate scientists will typically model the air temperature within the urban canopy (the height capped by the tallest buildings). It has a smaller Intensity, given the nature of air temperature, and can vary by ± 1 to 2°C due to UHI effects.

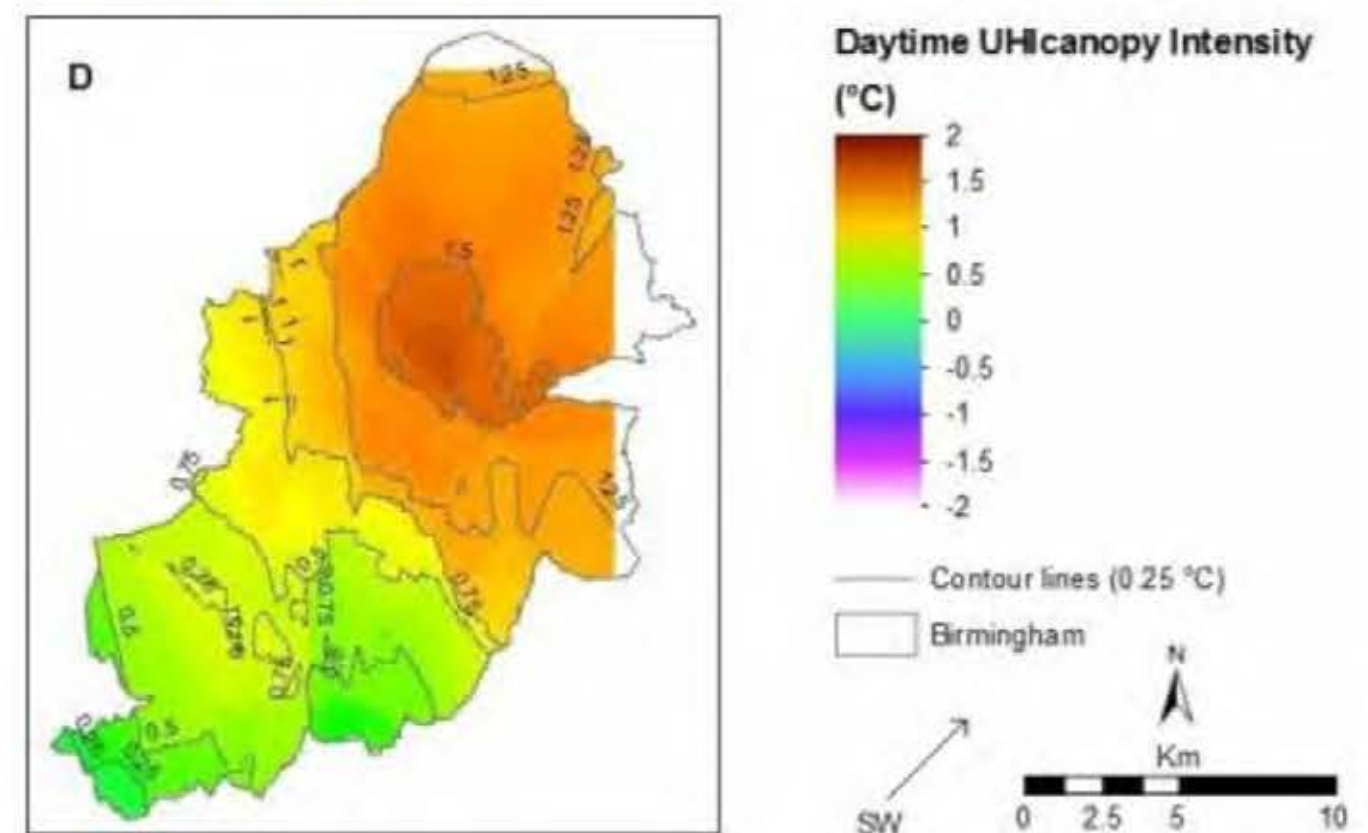
The following data has been pulled from a UHI study performed by Azevedo et al 2016 at the School of Geography, Earth and Environmental Sciences, University of Birmingham found the following correlation between Land Surface Temperature (LST) and Canopy Air Temperature:

a 1°C difference in UHI Canopy Temperature correlated to approximately a 4°C difference in UHI Surface Temperature.

Surface Temperature



Canopy Temperature



UHI Mitigation Strategies Impact on Surface Temperature

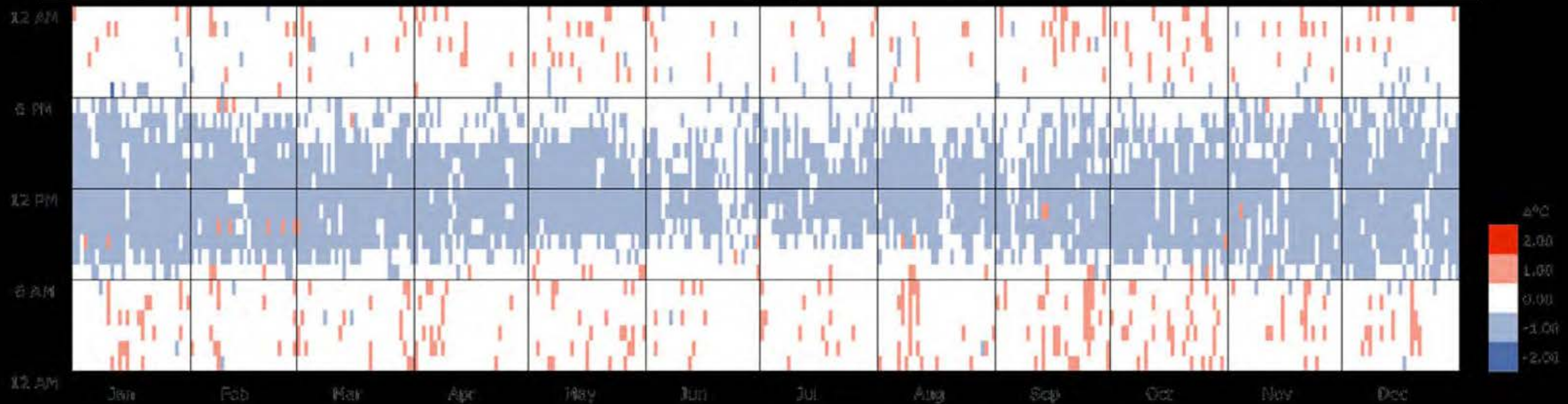
Integral Group have built a model of the MPW site to show the benefit of adding UHI Mitigation Strategies.

This chart shows the **temperature difference** ($\Delta^{\circ}\text{C}$) for each hour of the year for a design with no UHI MS versus a design including UHI MS.

Appendix C provides additional detail on how to interpret these flood plots.

The blue band throughout the centre of the graph indicates that there is a 1°C temperature reduction in canopy temperature for most hours throughout the year between 6am and 6pm due to the inclusion the UHI MS. **This 1°C canopy temperature reduction correlates to a 4°C reduction in Surface Temperature.**

The results are slightly improved over the 2019 analysis due to increased dark pavement in the reference case.



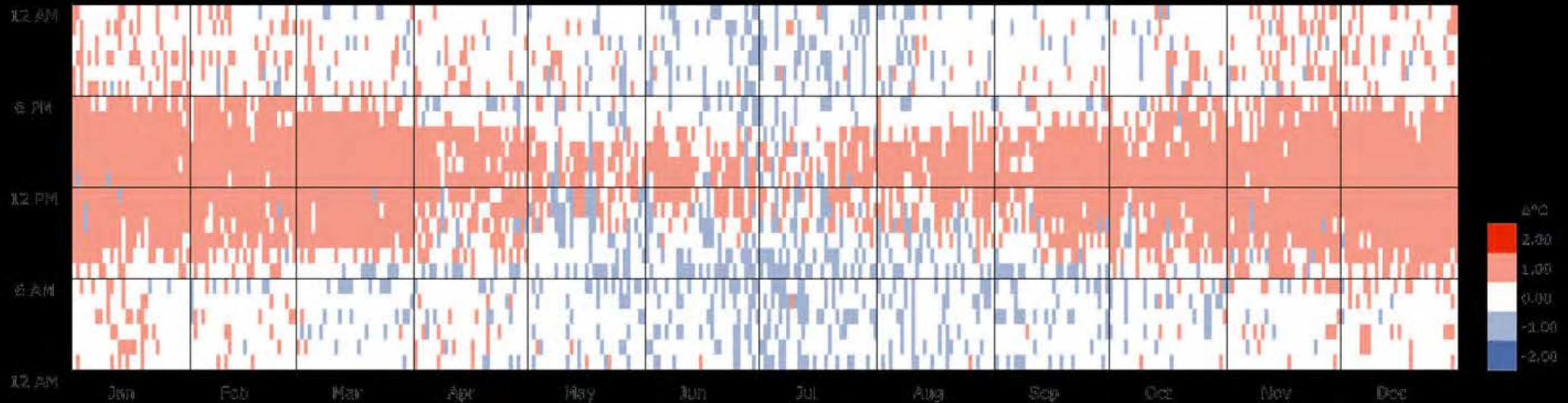
MPW without UHI MS versus MPW with UHI MS |

MPW Site with the Mitigation Strategies vs Adjacent Site DJLU

Integral Group have built a model of the DJLU site, including the landscape, tree and building coverage, and compared it to the MPW site with the UHI Mitigation Strategies.

Similar to the modelling results of MPE, the light pink colour in the graph demonstrates that the MPW site performs 1°C warmer than DJLU over summer months.

Note that DJLU is not an ideal 'peer' site due to a significantly different site usage.



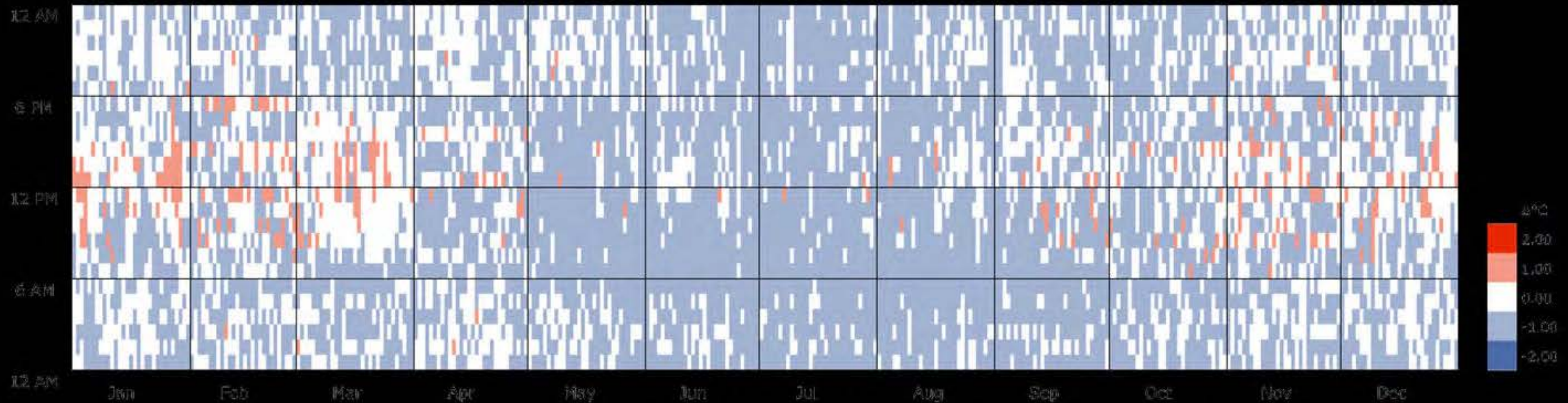
MPE Site with the Mitigation Strategies vs Adjacent Site Goodman

Integral Group have built a model of an additional neighbouring industrial site (Goodman) and compared it to the MPW site with the UHI Mitigation Strategies. The peak temperature reduction between these two sites shows a 1°C reduction in canopy temperature at the MPW site.

Overall our site is typically cooler than Goodman.

The Goodman site layout is more similar to MPW, and is good comparison point for the MPW site performance.

Our site has a large amount of landscaping and less hardscape and building mass. This results in some hours of increased temperature during the day (because there is no mass to absorb the incoming solar radiation) and reduced temperatures at night (while Goodman is

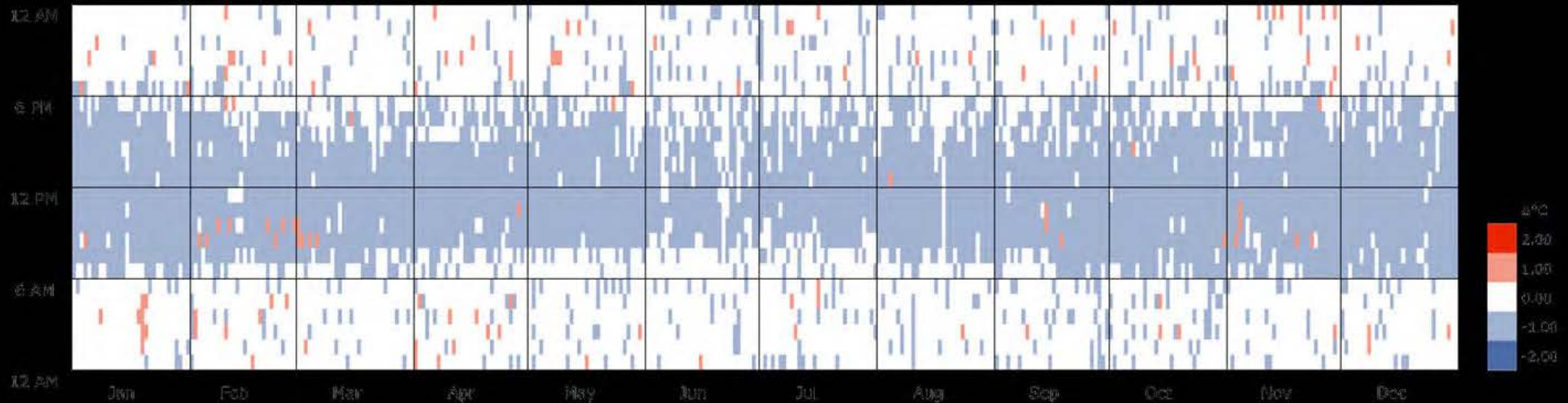


Sensitivity Analysis (Greenfield Site vs Developed Site)

A sensitivity analysis has been undertaken at the outset to determine which means of measurement should be applied. Based on the modelling efforts (including full tree and grass coverage of the site with no buildings) and referenced literature, a 4°C Canopy Temperature reduction is not achievable.

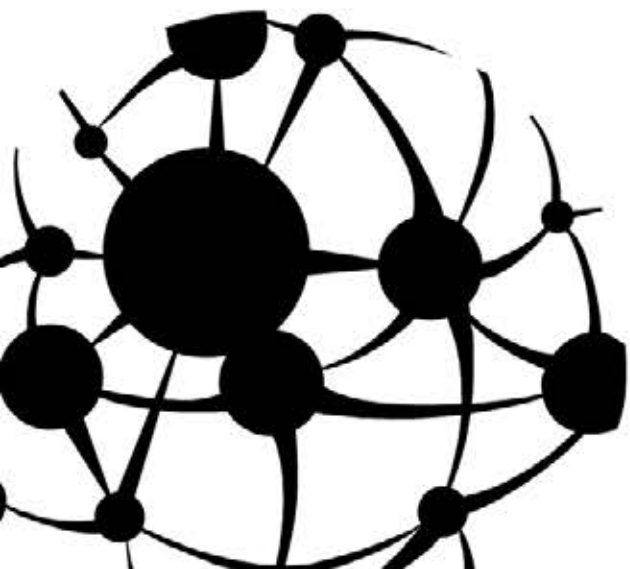
However, the 1°C canopy temperature reduction correlates to a 4°C surface temperature reduction which aligns with the project goals.

This correlation is based on the study by Azevedo et al 2016 described on slide 6.



Conclusion

1. The modelling shows that the Mitigation strategies that have been incorporated into the MPW Stage 2 design have contributed to achieving a 4°C reduction in surface temperature.
2. Current MPW Stage 2 design achieves 4°C reduction in comparison to the neighbouring industrial site, based on the examined and modelled strategies.
3. A further sensitivity analysis shows that there are diminishing returns in further increasing the density of vegetation across the site. Hence, no additional vegetation is required, as the current landscaping presents sufficient reduction.
4. The 2021 layout increased hardscape slightly. Since the design includes reflective pavement as one of our UHIMS, the design does not see a large impact in this increase; the reference case with dark pavement is negatively impacted (ie warmer). The net result is a slightly larger cooling reduction in our UHIMS case.



Appendix A – UHIMS Implementation and Materials

The UHI modelling compared a ‘business-as-usual’ development against this project implementing best practices. The results of the analysis indicate that the implementation of UHIMS can reduce canopy air temperature by up to **1°C compared to a ‘business-as-usual’ design without UHIMS.**

UHI Models	Business-as-Usual	MPW Design
Roof Area	217,284 m ²	217,284 m ²
Roof Albedo	0.15	0.65
Reference Material	Standard Coloured Metal Albedo 0.15	Colorbond Coolmax Albedo 0.77
Tree / Landscape Coverage	Same as Design	12% tree + 22% landscape UHI Site boundary includes conservation area
Site Hardscape	Albedo 0.10 (Site Average)	Albedo 0.19 * (Site Average)
Reference Material	Asphalt Concrete (0.05 – 0.10 albedo)	Light Colour concrete (0.25-0.40 albedo)

*Design Hardscape albedo was calculated on the following materials:
 63% of hardscape is asphalt with an albedo of 0.10
 37% of hardscape is concrete with an albedo of 0.35



Image Source: Bluescope Colorbond Coolmax Roofing product, Albedo 0.77

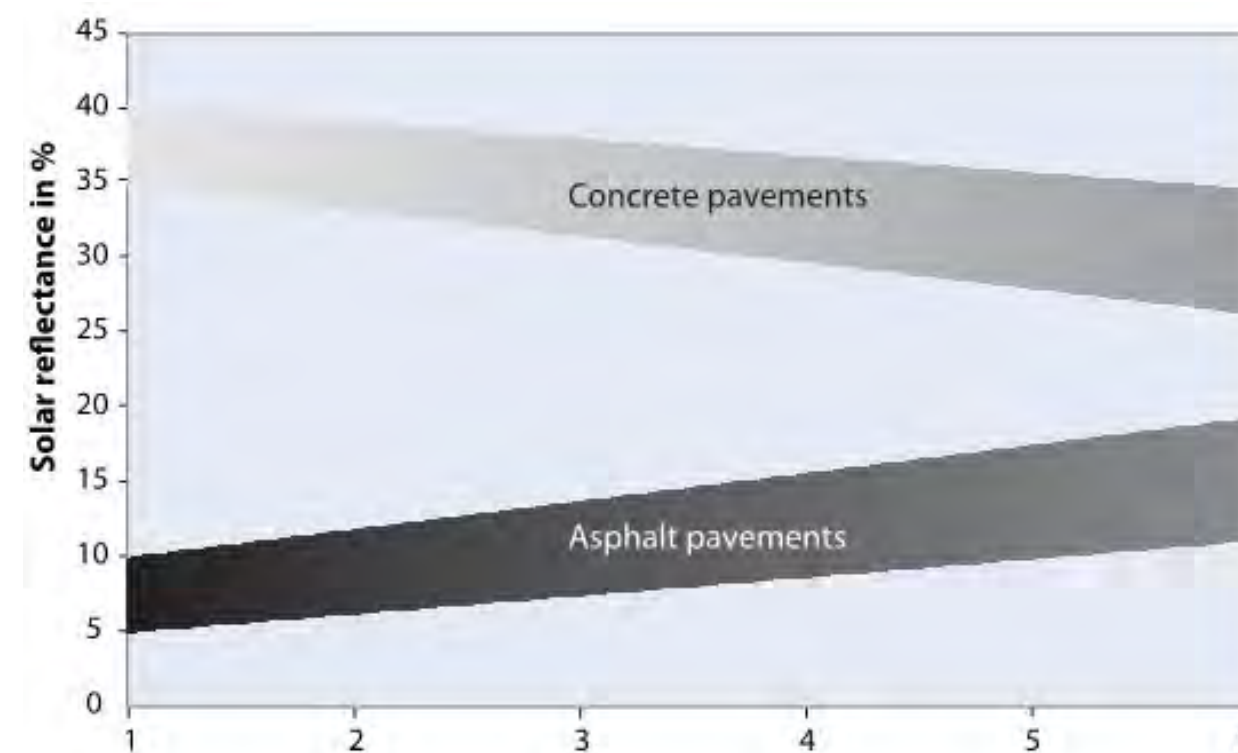


Image Source: U.S. Environmental Protection Agency. 2008. Reducing urban heat islands: Compendium of strategies. Draft. <https://www.epa.gov/heat-islands/heat-island-compendium>

Appendix B – Urban Heat Physics

Solar Reflectance = Albedo;
Solar Reflectance Index (SRI): metric combining reflectance and emittance

Description of “cool” materials and colour:

High albedo, or reflective, surfaces that reflect most of the light and heat that hits the surface. These surfaces are known as cool surfaces and can help to mitigate the urban heat island effect. Cool surfaces include cool (white) roofs, light pavements and roads. Alternatively, high albedo surfaces like asphalt roads absorb heat and radiate that heat to the surrounding areas.

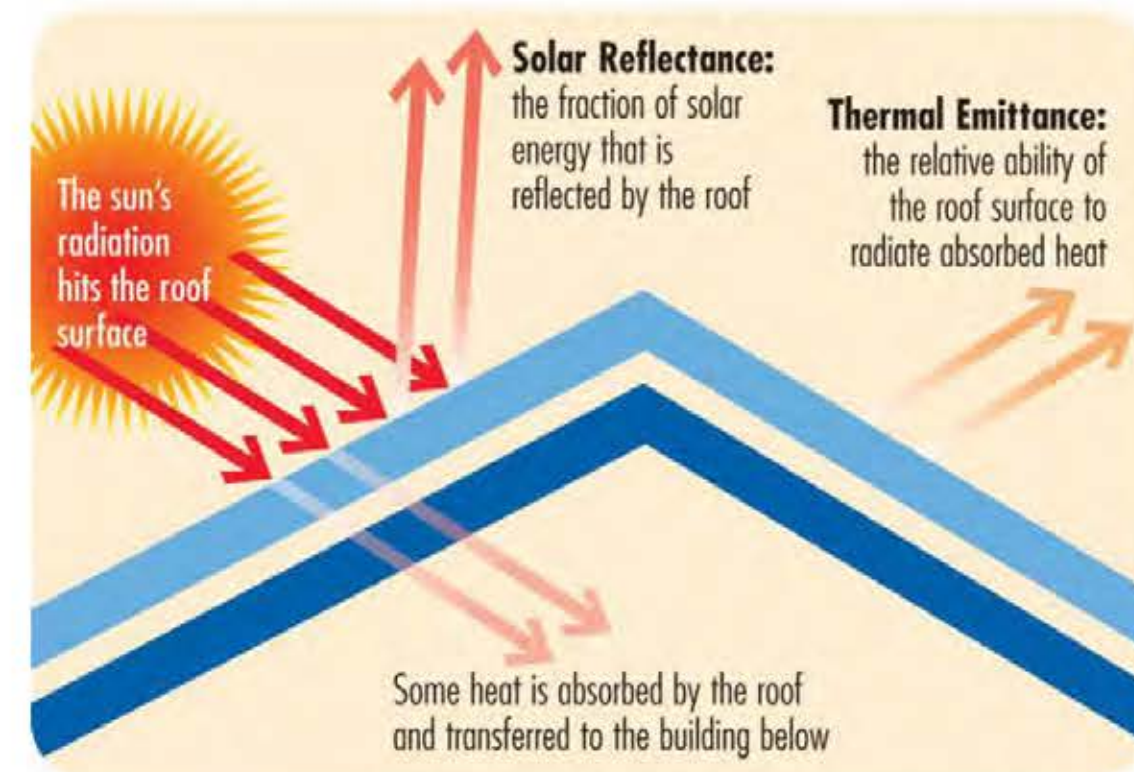
Specialist paints used for cool roofs has the technology to maximise sun and heat reflection. Not all cool roof products are white there are many products which use darker pigments that still maintain a high solar reflectance.

General Description of Glare

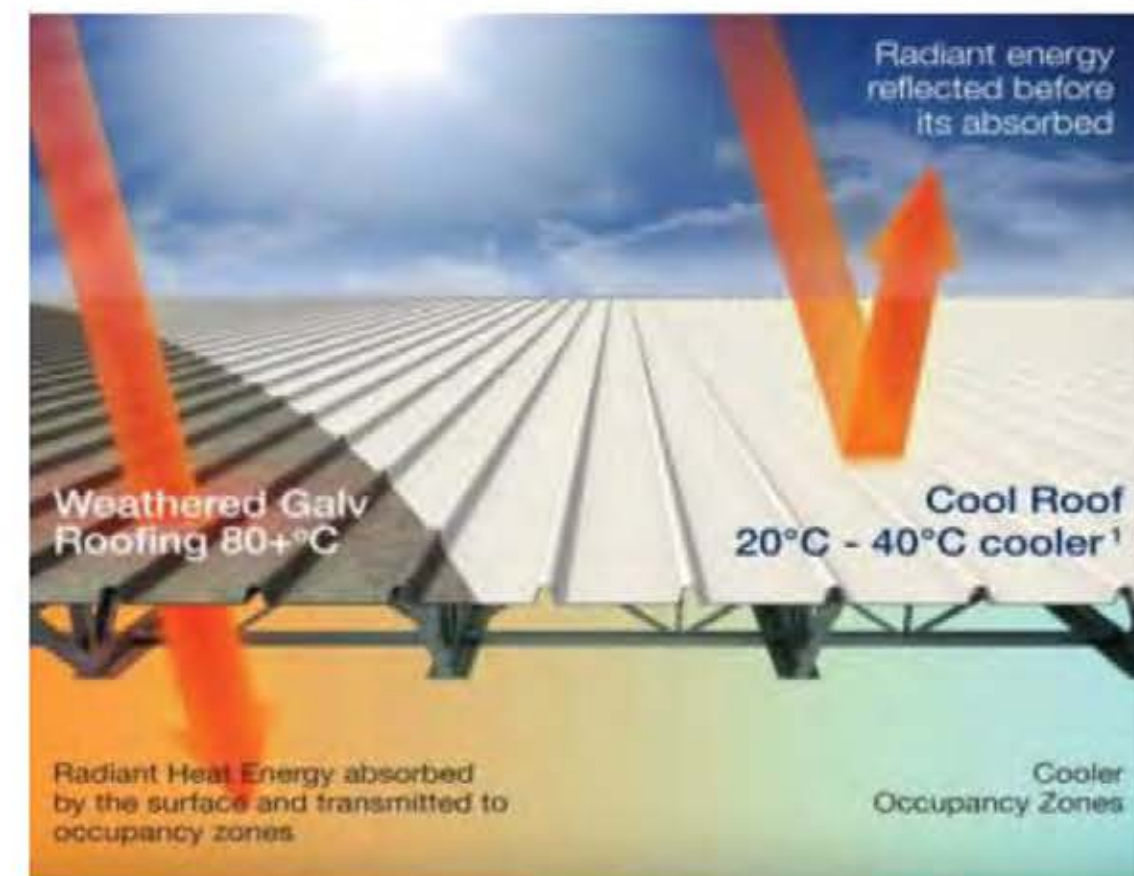
A detailed glare assessment has not been included in this study.
Generally: Higher reflective roofs contribute to glare, and is most problematic when taller buildings overlook the rooftops from the south.

Higher albedo paving materials are typically much lower reflectivity than are cool roofs:

High albedo pavement: 0.15 to 0.40; High albedo roofing: >0.65



Solar Reflectance and Thermal Emittance Image
Source: Cool Roof Rating Council coolroofs.org



Cool Roof Image

Source: City of Melbourne Cool Roof Guide <https://www.melbourne.vic.gov.au/>

Appendix C – Flood Plot Data Review

Flood plots are a useful way to graph data across an entire year.

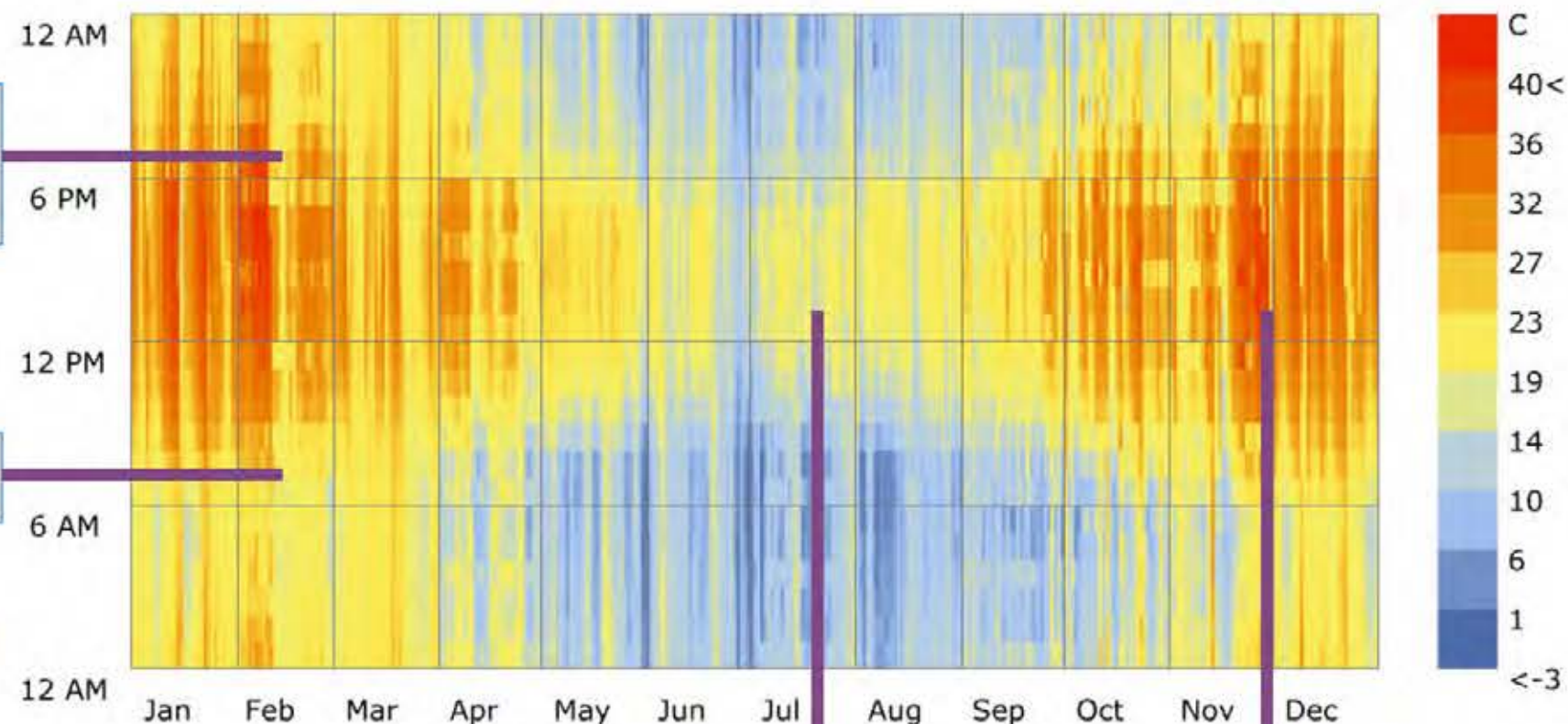
Annual air temperature (dry bulb) is shown at right as an example.

UHI has been assessed by comparing the difference in air temperature between two different scenarios.

The chart below compares the air temperature at each hour between a urban model **with** UHIMS against one **without** UHIMS. Each blue pixel represents an hour of the year where the model **with** UHIMS is cooler than the model without. Red pixels represent an hour of warmer temperature.

Warmer afternoons and evenings

Cooler mornings

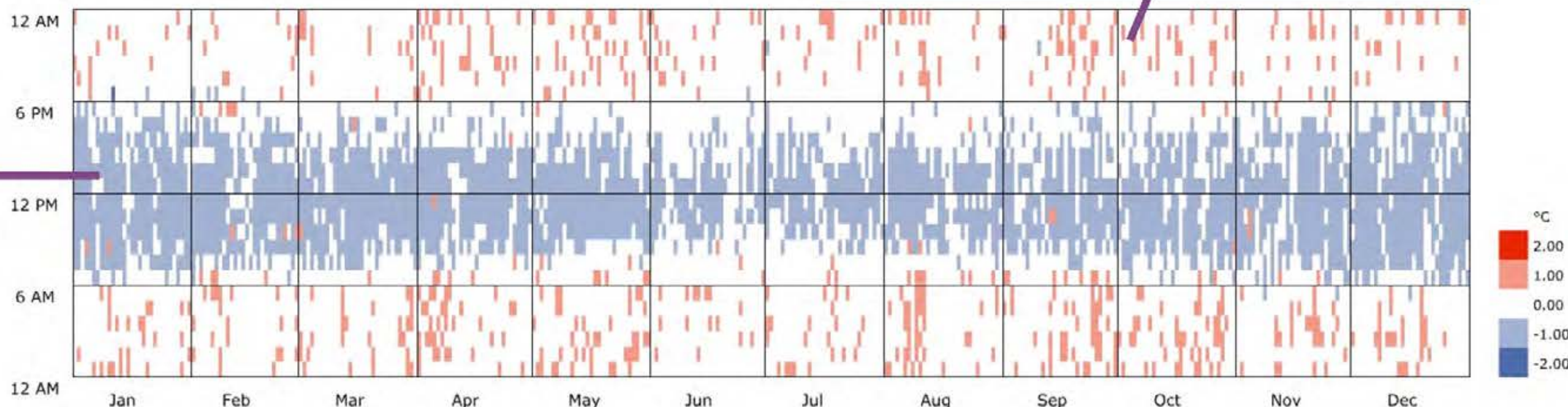


Cooler winter midday

Warmer summer midday

Model with UHIMS has some warmer night time hours, but infrequently during summer

Model with UHIMS Cooler shows cooler daytime temperatures. This is due to higher surface reflectivity.



Response to Independent Review Issues - Urban Heat Island Mitigation

Item	Reviewer Comment	Response
1	<p>“This is an important aspect of the master plan scheme and - given the large areas of warehouse roof and hardstand - this will be an obvious area of scrutiny. On the face of it warehousing projects will always be associated with UHI impacts. When I read this page, I’m not clear what the master plan specifically offers.”</p>	<p>The implementation of UHIMS is covered in detail in the MPW UHIMS Modelling report. The report quantifies the benefit of implementing UHIMS over ‘business-as-usual’ design, and compares the design to adjacent sites. The results presented in this report are in draft format, and are in the process of being finalized based on the latest site layout.</p> <p>Integral has added “Appendix A – UHIMS Implementation and Materials” to the modelling report that more clearly defines the business-as-usual baseline, and the strategies implemented on this site to minimize the impact of UHI.</p>
2	<p>“The 5 bullet points are positive, but I wanted more (spatialised) information on where these things occur within the master plan”</p>	<p>Integral has amended page 3 (“Implementation”) of the modelling report to more clearly show where UHIMS are implemented, and quantified the implementation of each UHIMS.</p>
3	<p>“what high albedo material means when it comes to large roofs and areas of hardstand. Is it white to reflect light and heat? Doesn’t this add to glare? Won’t the hardstand still radiate heat?”</p>	<p>Integral has added “Appendix B – Urban Heat Physics” to the modelling report to describe the relationship between albedo and colour. A detailed glare study has not been performed, and general feedback on glare is provided.</p> <p>The hardstand will absorb less heat (due to higher albedo) reducing the impact of UHI.</p>
4	<p>“The blue/red graphs need explanation.”</p>	<p>Integral has added “Appendix C – Flood Plot Data Review” to the modelling report</p>
5	<p><i>Additional Report Updates for clarity</i></p>	<p>We have clarified that DJLU is not an ideal ‘peer’ site due to a significantly different site usage.</p>

08 June 2021



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Ref: 640009.00 MPW UHIMS

Dear Nathan

Re: MPW Urban Heat Island Mitigation Strategy Performance

Integral Group has concluded our analysis of the Urban Heat Island Mitigation Strategies included at the Moorebank Precinct West site.

Two formal analyses have been completed; the latest one is summarised in the "640009.00_MPW UHIMS_2021_Reissue_01" Report which documents our methodology and results showing that we meet the 4°C temperature reductions.

A recent change to the site layout has occurred, and Integral Group has performed a desktop study to determine whether the changes in the new layout materially impact our UHIMS strategy and performance. The following table summarises the current and previous site layouts and UHIMS performance :

	Iteration 1 – Nov 2019	Iteration 2 – March 2021	Iteration 3 – June 2021
% of site as Vegetation	43%	40%	<0.2%
% of site as Building Roof Area	18%	16%	<0.2%
Roof Albedo	0.65	0.65	No Change
% of site as Hardscape	39%	45%	<0.2%
Hardscape Albedo	0.19	0.19	No Change
Compliance with UHIMS targets	Complies	Complies	Deemed to Comply

During the first major remodelling effort in March 2021 (for Iteration 2) we found that while the percentage of site as hardscape increased, the overall UHIMS performance comparing our design against a reference design did not substantially change or negatively impact our compliance. This was due to the inclusion of 'cool paving' and 'cool roofs' on this project that outperform the conventional materials in a reference project.

This latest update has (Iteration 3, June 2021) has very minor changes in terms of area and does not reduce the targets for the cool roofs or cool paving. It is Integral Group's opinion that this does not constitute a significant change to the project's ability to achieve the UHIMS targets, and this will not negatively impact the previously demonstrated compliance. Based on this, the project is deemed to comply with the previously issued results that demonstrate UHIMS performance.



Specific Compliance Metrics:

In the "640009.00_MPW_UHIMS_2021_Reissue_01" Report we have outlined two scenarios to demonstrate compliance.

Scenario 1: Business as Usual vs Design

We have modelled the site with, and without UHI mitigation strategies. The impact of these strategies was a 1°C reduction in canopy temperature across the site. This is shown and described on page 9.

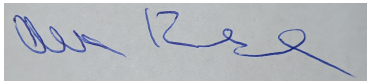
Scenario 2: Our Site vs Neighbouring Site

We have modelled an adjacent site to compare urban heat island impacts on both sites. We have identified Goodman as peer site. Our site, with the implementation of UHIMS, shows is shown to have a 1°C cooler canopy temperature than our neighboring site. This is shown and described on page 11.

Calculating 4 degrees:

Page 8 outlines our methodology that the 1°C canopy temperature changes we have calculated correspond to 4°C difference in UHI Surface Temperature. Canopy temperatures are used for measurement and calculation, whereas Surface Temperature is the perceived temperature felt by people.

Yours sincerely,



Alex Krickx

Associate

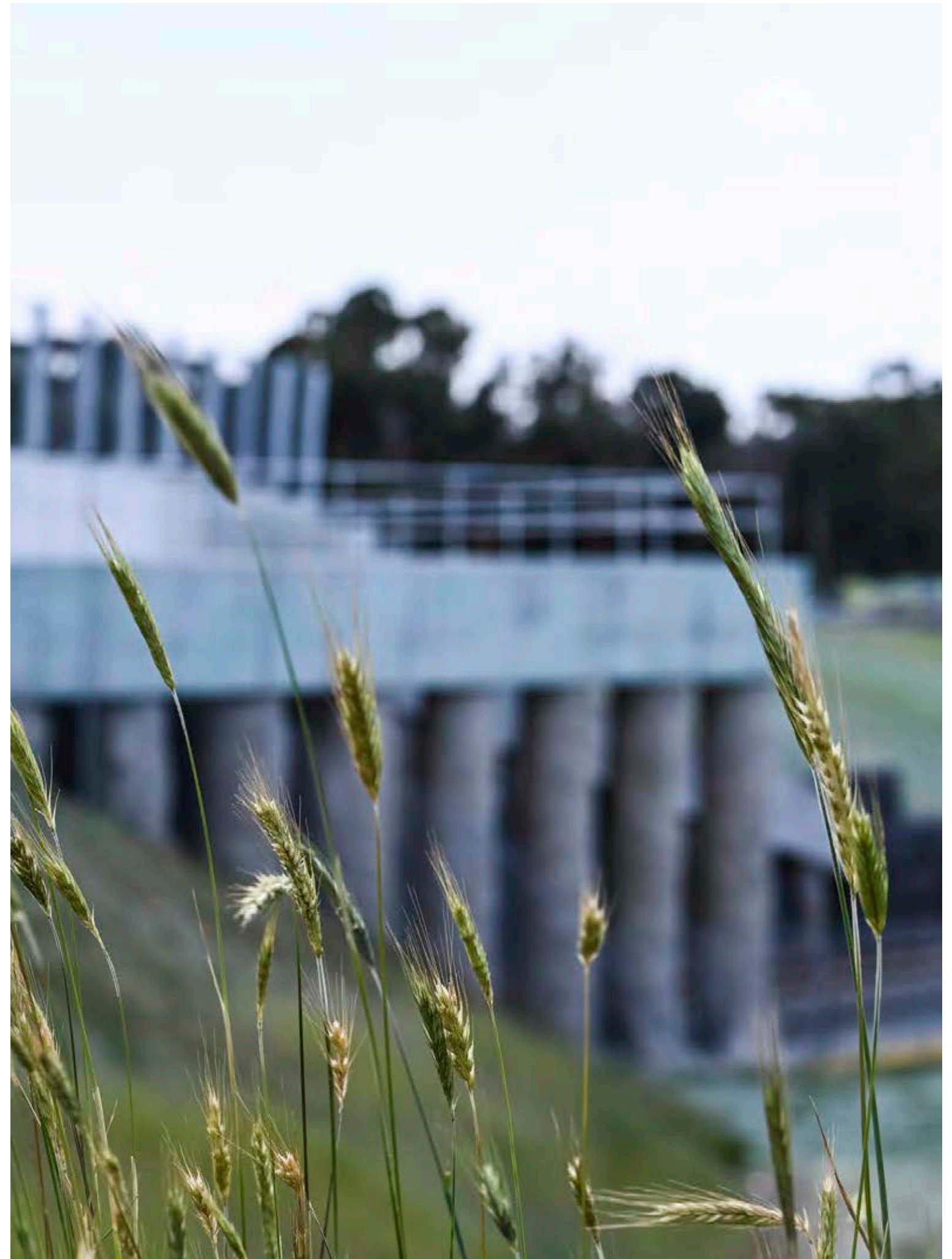
On behalf of Integral Group



4.5 INDEPENDENT PEER REVIEW REPORT

During the development of this Urban Design Development Report, Matthew Pullinger [FRAIA, Registered Architect: 6226] was engaged to author an Independent Peer Review Report, as required under Condition B55 of the consent. The report author was actively involved in the refinement of the urban and landscape design strategies detailed in the UDDR over a period of approximately 5 months, as detailed below:

6 July 2019	Introduction to project and requirements
8 July 2019	Email response outlining issues to be considered in UDDR
25 July 2019	Project team workshop 1
22 October 2019	Draft UDDR received
24 October 2019	Response to draft UDDR documentation
4 November 2019	Revised UDDR and design drawings received
6 November 2019	Project team workshop 2
15 November 2019	Final UDDR and design drawings received
13 December 2019	Peer review report finalised
11 March 2021	Project team workshop - revised UDDR
15 March 2021	Peer review report revised and finalised
10 June 2021	Peer review report revised and finalised
20 July 2021	Peer review report revised and finalised



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20 July 2021

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Dear Nathan,

Revised Urban Design and Landscape Independent Peer Review Report

01 Background and Purpose

On 11 November 2019, the Independent Planning Commission granted development consent for a State Significant Development application referred to as Moorebank Precinct West Stage 2. The project forms the latest stage in the development of a significant intermodal freight terminal at Moorebank in Sydney's west.

At the time, an independent peer review was prepared to address a series of related conditions which accompanied the development consent. Matthew Pullinger Architect prepared this initial independent peer review, which was dated 13 December 2019.

More recently, on 24 December 2020 and under delegation, the Minister for Planning and Public Spaces approved a modification to the existing development consent (MOD 1). In summary the approved modification includes the following:

- Adjustment of the southern boundary to increase the area included within Stage 2
- Increase to the maximum building height from approximately 21m to 45m
- Rearrangement of warehousing to accommodate the needs of a specific tenant

This approved modification triggers a requirement to update a series of documents called for under the original conditions of consent. This includes the Urban Design Development Report and associated Landscape Design Drawings and Architectural Drawings.

In turn, the approved modification also triggers a corresponding requirement to revise the original independent peer review to the extent that the approved modification affects the urban design and landscape outcomes for the site.

The following report updates the author's earlier independent peer review to reflect design amendments evident in the approved modification MOD 1 and to fulfil the requirements of existing conditions of consent.

The central and most relevant conditions of consent, B55 and B56, have been copied from the parent Development Consent (in italics) as follows:

Urban Design and Landscape Independent Peer Review

*B55. An independent peer review report must be submitted with the **Urban Design Development Report and Revised Landscape Design Drawings and Revised Architectural Drawings** and supporting documentation.*

B56 The review must:

- (a) be undertaken by an expert(s) in urban design and landscaping (for example, a member of the State Design Review Panel);*
- (b) include an assessment of the **Revised Landscape Design Drawings, Revised Architectural Drawings** and supporting documentation against the objectives and urban design principles established in the **Urban Design Development Report** and all relevant conditions, stating whether the drawings demonstrate achievement of the objectives and urban design principles and that all relevant conditions of this consent have been satisfied; and*
- (c) include comments justifying conclusions reached in the assessment.*

02 Report Authorship

This Revised Urban Design and Landscape Independent Peer Review Report has been prepared by Matthew Pullinger Architect. Matthew is an award-winning architect and urban designer whose interest and experience lies in the design of the city and urban centres, urban transport systems, recreational and cultural precincts, commercial office buildings and also in the design of mixed use residential projects.

Matthew has worked on strategic projects at all scales and in public policy supporting good design in the built environment.

Matthew is a Past President of the Australian Institute of Architects (NSW) and an inaugural member of the NSW State Design Review Panel formed in April 2018, he was reappointed in 2020.

03 Report Structure and Methodology

This revised report has been structured to reference the earlier independent peer review and directly address the urban design, architectural and landscape design implications of the approved MOD1 in terms of conditions B55 and B56, and in doing so also further considers and addresses other relevant conditions of consent to the extent these relate to urban design and landscape design.

Where the earlier peer review discussion and comments remain relevant, this has been retained in the body of this report and presented in *italics*. Additional discussion arising from the implications of the approved modification is presented in underline.

This report is to be read in conjunction with the Moorebank Precinct West Stage 2 Urban Design Development Report (UDDR), dated 30 June 2021, and authored by Reid Campbell.

In turn, the UDDR has been prepared to address conditions of consent B52 and B53, which require a considered and coordinated design approach - effectively a 'master plan' - to address a wide range of environmental and development issues (B48, 49, 57, B59-B74, and B75-B81).

Ultimately, the resolved design objectives and strategies identified by the UDDR are documented in the Revised Landscape Design Drawings (prepared by Ground Ink) and Revised Architectural Drawings (prepared by Reid Campbell) - each dated July 2021. These revised drawing sets require the approval of the Planning Secretary prior to the commencement of relevant permanent built surface works on site.

Generally, this peer review report follows the structure of the UDDR and moves from more strategic and metropolitan urban design issues towards increasingly site specific urban design, landscape and site planning issues.

Each design issue is discussed in terms of the opportunities and constraints present in the project, and considers the resulting design strategies that have been developed in response to the site and project requirements.

The author of this report was re-engaged in March 2021, receiving a project briefing on 11 March and final amended documentation on 19 July 2021. The author has reviewed the project documentation contained within the UDDR and accompanying landscape and architectural design documentation noted above.

04 Metropolitan Context and Project Benefits

Peer review discussion remaining relevant from 13 December 2019 shown in italics below

The Moorebank Precinct West Stage 2 project is a major logistics and warehousing facility, playing a pivotal role in the future of freight logistics and transport for NSW.

Comprising a direct heavy rail freight link with existing container facilities at Port Botany, the project will distribute containers from ships via rail to the Moorebank site in western Sydney, where warehousing and logistics facilities will enable their forward distribution across the metropolitan area and elsewhere within NSW and the eastern seaboard, primarily via the arterial road network, including the M5 and M7 motorways.

The direct benefits to metropolitan Sydney and NSW include not only more efficient freight distribution, associated employment and economic benefits - key objectives of strategic metropolitan planning - but also specifically through reduced demand for road-based containerised freight conveyed through inner-urban streets and roads.

Upon completion, the project reduces the need for up to 3,000 heavy vehicle journeys every day along over 30km of inner-urban streets and roads. This equates to over a million fewer truck movements every year.

The corresponding reductions in carbon emissions and inner-urban congestion attributable to the project are significant and closely aligned with environmental and amenity objectives described in all metropolitan planning documents and policies.

The strategic urban design case in support of the project is clear and particularly strong.

July 2021 - No additional discussion arises as a result of the approved MOD.

05 Regional Context and Landscape Setting

Peer review discussion remaining relevant from 13 December 2019 shown in italics below

The project is situated within an approximately 220 hectare site, formerly controlled by the Commonwealth Department of Defence, strategically valuable due to its direct access to the Southern Sydney Freight Line and the M5 motorway.

Located within the western Sydney basin in an area forming part of the original Cumberland Plain Woodland ecological community, the site benefits from approximately 3km of sensitive riparian frontage to the Georges River, which forms the western site boundary. The site's eastern boundary is formed by the existing Moorebank Avenue.

The site is approximately 5km south of the major urban centre of Liverpool. Approximately 2km to the east lies the residential suburb of Wattle Grove. To the east, across the Georges River, is the residential suburb of Casula. South of the site is the extensive Commonwealth Department of Defence land holdings, comprising Holsworthy Barracks.

Within this regional context the project presents an inherent tension between the demands of a major warehousing and logistics facility, and the site's ecological and biodiversity values, along with its sensitive riparian landscape setting on the Georges River.

This tension is resolved in large part by the siting and design strategies deployed to balance the operational requirements for large format warehouse structures and the extensive hardstand necessary for accommodating heavy vehicle access and movement, situated within an ecologically valuable riparian setting.

July 2021 - No additional discussion arises as a result of the approved MOD.

06 Urban Design Strategies and Site Planning

Peer review discussion remaining relevant from 13 December 2019 shown in italics below

The predominant siting and design strategy guiding the project has been to establish a clear distinction between the 'operational' and 'conservation' components of the project.

Generally, the western, river-edge portion of the site - which includes flood affected areas - has been designed to accommodate conservation and biodiversity functions. Adjacent to this conservation area, additional open space has been provided for water sensitive urban design (WSUD), and stormwater detention and treatment prior to discharge into the Georges River system.

The western-most estate road is then configured to strongly delineate between operational logistics and warehousing functions to the east, and conservation, biodiversity and WSUD functions to the west.

Alternative potential design strategies - such as a more integrated or mixed approach to operational and conservation areas - were considered, but discounted after careful evaluation.

Conceptually, a more integrated or mixed arrangement of operational and conservation areas appealed strongly to the design team. However, the sensitive ecological, hydrological and biodiversity values of large portions of the site were found to be incompatible with the operational requirements for large format warehousing and associated hardstand. Similarly, the incorporation of sufficient space within the operational areas of the site to achieve meaningful conservation values was not possible without eroding the functional relationships and efficient performance of the logistics and warehousing facility.

On this basis, the adopted siting and design strategy is considered to be the most optimal approach to resolving the inherent tension implicit within the project, and also contributes to satisfactorily addressing conditions of consent B48, B49, B57, B59, B60, B67 and B68.

July 2021 - The approved MOD maintains the fundamental site planning strategies and internal urban structure evident in the parent approval.

The southern Stage 2 site boundary has been adjusted to include additional operational site area to meet the needs of a specific, identified tenant and building user. This has the effect of reducing the developable area available to future stages of the broader Moorebank Precinct West project.

07 Contribution to Sydney's 'Green Grid'

Peer review discussion remaining relevant from 13 December 2019 shown in italics below

The NSW Government Architect has recently published a series of significant design policy documents - Better Placed, Greener Places and the Green Grid - that collectively focus attention on the ongoing expansion and strengthening of Sydney's Green Grid - a network of open space and hydrological systems that traverse the extent of greater metropolitan Sydney.

In the immediate vicinity of the site, the Georges River is the major ecological and recreational corridor linking other natural assets, such as the land associated with Holsworthy Barracks, with adjacent urban areas, including connecting to the city of Liverpool, which lies approximately 5km to the north of the site.

The project presents an important opportunity to further strengthen the recreational, ecological and physical links between these natural assets and at the same time deliver a distinctive sense of place and memorable character to the project.

The creation within the site of significant open space for conservation and WSUD functions, along with the provision of additional contiguous open space associated with well-vegetated car parks and shaded outdoor space providing amenity for workers and visitors to the facility all positively contribute to the policy objectives set out in Better Placed, Greener Places and the Green Grid.

On this basis, the UDDR describes appropriately detailed landscape design strategies, which are further documented in the Revised Landscape Design Drawings are considered to satisfactorily address condition of consent B57.

July 2021 - The approved MOD maintains the fundamental site planning strategies and internal urban structure evident in the parent approval.

The key contribution made by the project to Sydney's Green Grid is unaltered by the approved MOD. Although the southern Stage 2 site boundary has been adjusted to include additional operational site area, this does not alter the existing approved configuration of conservation areas.

As a consequence, the relevant ecological, recreational and open space and benefits implicit in the original approval are preserved in the MOD.

08 Detailed Landscape Design Response

Peer review discussion remaining relevant from 13 December 2019 shown in italics below

The detailed landscape design response outlined within the UDDR is predicated upon a series of inter-related objectives, which include:

- Provision of high levels of amenity for workers and visitors*
- Visual integration of built form within the landscape setting and urban tree canopy*
- Integration of areas for conservation and water cycle management*

The specific design response to achieve these objectives has been structured around sound landscape design principles including the following:

- Use of native vegetation species to improve conservation and biodiversity values*
- Establishment of linkages to facilitate movement within and beyond the site*
- Creation of new, well-vegetated access roads and streets*
- Introduction of extensive new open space areas with corresponding tree canopy*

The use of locally indigenous plant species, consistent with the ecological communities of the endangered Cumberland Plain Woodland, is strongly supported and is evident throughout the UDDR and Revised Landscape Design Drawings.

The provision of useful, open space at least equivalent in area to 15% of the total area of the proposed warehouses has been situated to the west of the warehouses in a configuration that creates a meaningful and contiguous new extent of urban tree canopy. In this location the new vegetated open space will also mediate between the 'operational' and 'conservation' functions of the project and incorporate space allocated to WSUD functions.

Similarly, upon maturity, the proposed vegetation will envelope the large format warehouses and positively assist to integrate these large structures into their landscape setting, a strategy that will also minimise visual impacts of built form when viewed from Casula, west of the Georges River.

The establishment of a meaningful area of large canopy trees is fundamental to the creation of a distinctive and memorable character for the facility, and the proposed strategy is supported.

Casula Station is approximately 200m from the western boundary of the site. However, in its existing configuration it is approximately 5km from the station by the most convenient road connection and an approximately 7km walk. The proposed provision for direct pedestrian access to Casula Station via a proposed bridge across the Georges River is supported.

Other pedestrian and cycle connections have been provided in the landscape design facilitating access across the site from north to south along both the Georges River frontage and also along Moorebank Avenue. Additional connections link east to west and align with the provision for pedestrian connection across the river to Casula Station.

A generous landscape setback regime, consistent with condition of consent B63, has been applied along Moorebank Avenue and the internal estate road network.

The detailed site and landscape planning locates the warehouse office structures and the freight village - places where workers and visitors are most likely to congregate - to maximise their engagement with, and relationship to, highly amenable, accessible and useful open space, also incorporating the necessary cycle parking, shaded meal break areas, lighting and the provision of drinking fountains.

On this basis, the UDDR outlines appropriately detailed landscape design strategies, which are further resolved and documented in the Revised Landscape Design Drawings, and are considered to satisfactorily address conditions of consent B57, B58, B59-62, B63, B64, B65, B66, B67 and B68.

Additionally, condition of consent B68 (a) requires the support of the independent peer reviewer in order for areas nominated as on site detention basins (OSD) to contribute to soft landscaping area calculations.

Given that the nominated conservation areas and OSD basins are co-located, generally on the western side of the internal estate road, and together form a contiguous pattern of open space, the inclusion of OSD basins within the calculations for landscape open space is supported.

The conditions of consent B69-74 relate to the detailed design of retaining walls, fencing and noise walls across the project. The specific requirements of these conditions have been carefully referenced and incorporated into the project documentation, the UDDR and Revised Landscape Design Drawings.

In the case of condition B74 (and also referred to in condition B129), there is a requirement for a 5m high noise barrier to be constructed along the western boundary of the internal estate road.

While this noise wall has been incorporated within the UDDR and the Revised Landscape Design Drawings, and has been designed to minimise visual and amenity impacts, the need for a noise wall and the compromises it creates to quality site planning was questioned through the peer review process.

Given the closest sensitive receivers are residential uses located in Casula, set a minimum of approximately 250m to the west, the effectiveness of the required noise barrier is questioned.

More relevant to the question of urban and landscape design quality is that the required noise wall serves to physically and visually sever the relationship between 'operational' and 'conservation' functions, diminishing the benefits that would otherwise be derived from the two functions being connected.

The independent peer review supports the deletion of condition of consent B74 (and B129) subject to alternative noise mitigation strategies - potentially delivered through landscape design - being demonstrated to be effective.

July 2021 - The approved MOD maintains and adapts the landscape design principles evident in the parent approval and discussed above.

Similarly, the existing internal estate road, its alignment, set backs, landscape design treatment and key intersections remain unaltered as a result of the approved MOD.

The key changes to the design solution arising as a consequence of the approved MOD relate to the southern portion of the site and the introduction of proposed warehouses JR and JN.

These two facilities are configured to serve the specific operational requirements of the tenant and this has resulted in a reconfiguration of the detailed landscape design. This includes the requirement to accommodate larger numbers of heavy vehicles on the site, and the introduction of structured car parking.

The amended landscape design solution incorporates these new operational requirements whilst preserving a minimum total of 15% of the warehousing area as landscaped open space - as required by condition B68(a) - and reconfigures the frontage to the estate road in a manner consistent with the underpinning landscape design principles.

Condition of consent B68(b) - requiring 1 canopy tree for every 30 square metres of landscaped area - has been maintained.

The approved MOD anticipates an increase in the maximum height of buildings from 20m to 45m - to incorporate 'high bay' warehousing particular to the needs of the tenant of warehouses JR and JN. The approved increase in maximum building height will result in greater visibility of these warehouses from areas west of the site. Hence the combination of building setbacks from the estate road along with the establishment of mature large canopy trees will be important to mitigate against these visual impacts.

Should operational requirements change over time, portions of the site area identified for the accommodation of heavy vehicles and addressing the estate road can be altered from hardstand to soft landscape area, further improving the extent of landscaped area, and the character and presentation of the estate generally.

09 Urban Heat Island Mitigation

Peer review discussion remaining relevant from 13 December 2019 shown in italics below

The extent of proposed warehouse roofing, coupled with associated hardstand areas for heavy vehicle movement and on-grade car parking represent a significant proportion of the total project site area, and will inevitably contribute to a local increase in the urban heat island effect at the site. This is an issue common to all similar industrial facilities.

Condition of consent B48 seeks to limit any increase in ambient air temperature when measured at ground level. It does so by targeting a 4°C comparative reduction in temperature when measured against the surface temperature of a typical industrial facility in the same locality.

Consequently, a comprehensive urban heat island mitigation strategy has been developed and incorporated into the project documentation. This strategy has been supported by the involvement of a specialist consultant.

The resolved urban heat island mitigation strategy deploys a series of measures including:

- Extensive areas of tree canopy, vegetated ground cover and green open space*
- Building, roofing and paving materials with high albedo surfaces*
- Energy efficient and passive environmental building design*
- Water sensitive urban design*

The potential introduction of green roofs was considered, but given the significant extent of roof area of the warehouse buildings, and the associated establishment and maintenance obligations, this was deemed prohibitive.

A related project commitment to incorporate a minimum of 30% of the warehouse building roof area for a photovoltaic solar array further diminished the benefit of introducing green roofs.

The possible application of smaller extents of green roofs was also considered, noting any such smaller extent of green roof would be emblematic of the importance of the issue, rather than convincingly mitigating against it. For this reason, smaller extents of green roofs were ultimately discounted in favour of the measures noted above.

The key findings of the specialist consultant's report suggest the 4°C comparative reduction in surface temperatures will be achieved through the adopted measures.

On this basis, the UDDR outlines appropriately detailed landscape and architectural design strategies, which are further documented in the Revised Landscape Design Drawings and Revised Architectural Drawings, and which are considered to satisfactorily address condition of consent B48.

July 2021 - The approved MOD - given the adjustment of the southern site boundary - results in a larger overall site area, but effectively maintains the proportion of site area allocated to landscaped area. The proponent acknowledges a minor reduction (from 16.4% to 15.58%) to the total landscaped area, noting there is no specific condition requiring the achievement of landscaped area expressed as a proportion of total site area.

Based on modelling the proposed extent of tree canopy, high albedo roofing materials and high albedo hardstand areas, the revised Urban Heat Island Mitigation Strategy report demonstrates that a predicted 4°C comparative reduction in surface temperatures will be maintained as a result of the approved MOD.

10 Ecologically Sustainable Development

Peer review discussion remaining relevant from 13 December 2019 shown in italics below

A series of sound, ecologically sustainable development principles, further supported with commitments to achieve recognised sustainability performance ratings, underpins the design of the project.

The sustainability measures applied to the project include:

- Passive environmental design considerations, including natural ventilation*
- Incorporation of renewal energy systems*
- Selection of materials with lower embodied energy and higher recycled content*
- Locally sourced materials*
- Rainwater harvesting and reuse*
- Water efficiency*
- Waste management and minimisation*
- 4 star Green Star design and as-built rating*
- Infrastructure Council of Australia (ICSA) sustainability rating*

Large format warehouse structures are inherently structurally efficient, optimising internal volume with long, lightweight structural spans. Consequently, the traditional configuration for this building type is finely tuned and highly efficient.

Additionally, the primary volume of each warehouse is designed adopting passive design principles, which maximise natural ventilation and cross ventilation. This building type does not rely on a conditioned internal environment. Eave overhangs and awnings associated with building entries create shade at the building perimeter for improved worker amenity and indoor environment.

A combination of opaque and translucent roofing material achieves high levels of natural light within the primary warehouse volume and is augmented with highly energy efficient lighting systems.

Although emerging technologies for long span cross laminated timber were considered (and are not discounted in future detailed design stages), they are less likely to achieve a cost benefit threshold for viability.

The primary structural solution for the warehouse buildings is therefore most likely to be based on steel framing, and the potential exists to specify high recycled content steel from locally based suppliers.

The commitment to achieve 4 star Green Star ratings in design and operation will incentivise more sustainable decisions during the detailed design of each warehouse.

A significant contribution made by the project towards the sustainability agenda is the commitment to instal a minimum of 30% of the total warehouse roof area as a photovoltaic array, to generate renewable energy for use within the facility and potentially for export to the electricity grid.

The commitment to achieve a recognised sustainability rating for each of the warehouse buildings, and for the associated infrastructure, through the Green Star and ICSEA rating tools, will further drive the sustainability performance of detailed design solutions.

On this basis, the UDDR outlines appropriately detailed architectural design strategies, which are further documented in the Revised Architectural Drawings, and which are considered to satisfactorily address conditions of consent B49, B50 and B51.

July 2021 - The approved MOD maintains all sustainability commitments and targets set out in the parent approval. The detailed design of warehouses JN and JR is targeting a 5 star Green Star rating for design and operation.

11 Conclusion

In undertaking this revised independent peer review report, the author continues to be satisfied of the ongoing strategic urban design merit presented by the project and restates the significant metropolitan-wide social, economic and environmental benefits derived from the project, particularly those offered by reducing heavy vehicles on the inner-urban street and road network, and the commitment to on-site renewable energy generation.

The site planning and urban structure evident within the project as a consequence of the approved modification remains clear and compelling, organising the site into 'operational' and 'conservation' areas, with a positive relationship and interface within and beyond the site.

Importantly, the overall site planning and the configuration of the conservation areas remain unaltered by the approved MOD. Proposed WSUD areas and landscaped open space provided adjacent to warehousing directly contributes to the strengthening of Sydney's 'Green Grid', improving the ecological and recreational values of the site and the Georges River.

Beyond these strategically valuable project benefits, the detailed requirements of the various conditions of consent have been maintained through the design development process and in the preparation of the revised UDDR, further Revised Landscape Design Drawings and further Revised Architectural Drawings as these have each been amended and adapted in response to the approved MOD.

In each case, the author remains satisfied the urban design principles established in the revised UDDR address the detail of the relevant conditions, and further, is satisfied the corresponding drawings demonstrate achievement of the stated objectives and urban design principles.

A simple compliance matrix follows:

B48	Urban Heat Island Mitigation (UHIM)	Addressed in Section 09
B49, 50, 51	Ecologically Sustainable Development (ESD)	Addressed in Section 10
B52, 53, 54	Urban Design Development Report, Revised Landscape Design and Architectural Drawings	Independent reviewer satisfied
B55,56	Urban Design and Landscape Independent Peer Review	Satisfied by Section 01-11
B57	Landscape Design	Independent reviewer satisfied
B58	Design Criteria	Independent reviewer satisfied
B59, 60, 61, 62	Staff and Visitor Facilities	Evident in Revised Drawings
B63, 64, 65,66, 67, 68	Landscaping	Independent reviewer satisfied
B69, 70, 71, 72, 73, 74	Noise Walls, Retaining Walls and Fencing	Evident in Revised Drawings
B75	Urban Design and Landscaping Supporting Information	Evident in Revised Drawings
B76	Lighting	Evident in Revised Drawings
B77, 78	Signage	Evident in Revised Drawings
B79	Building Floor Levels	Evident in Revised Drawings
B80, 81	Rainwater Re-use	Evident in Revised Drawings

As a consequence, this revised independent peer review report concludes that all relevant conditions of consent have been satisfied and are maintained as a result of the approved MOD 1.

Please feel free to contact the author on 0413 990 052 should you wish to discuss any issues raised in this report.

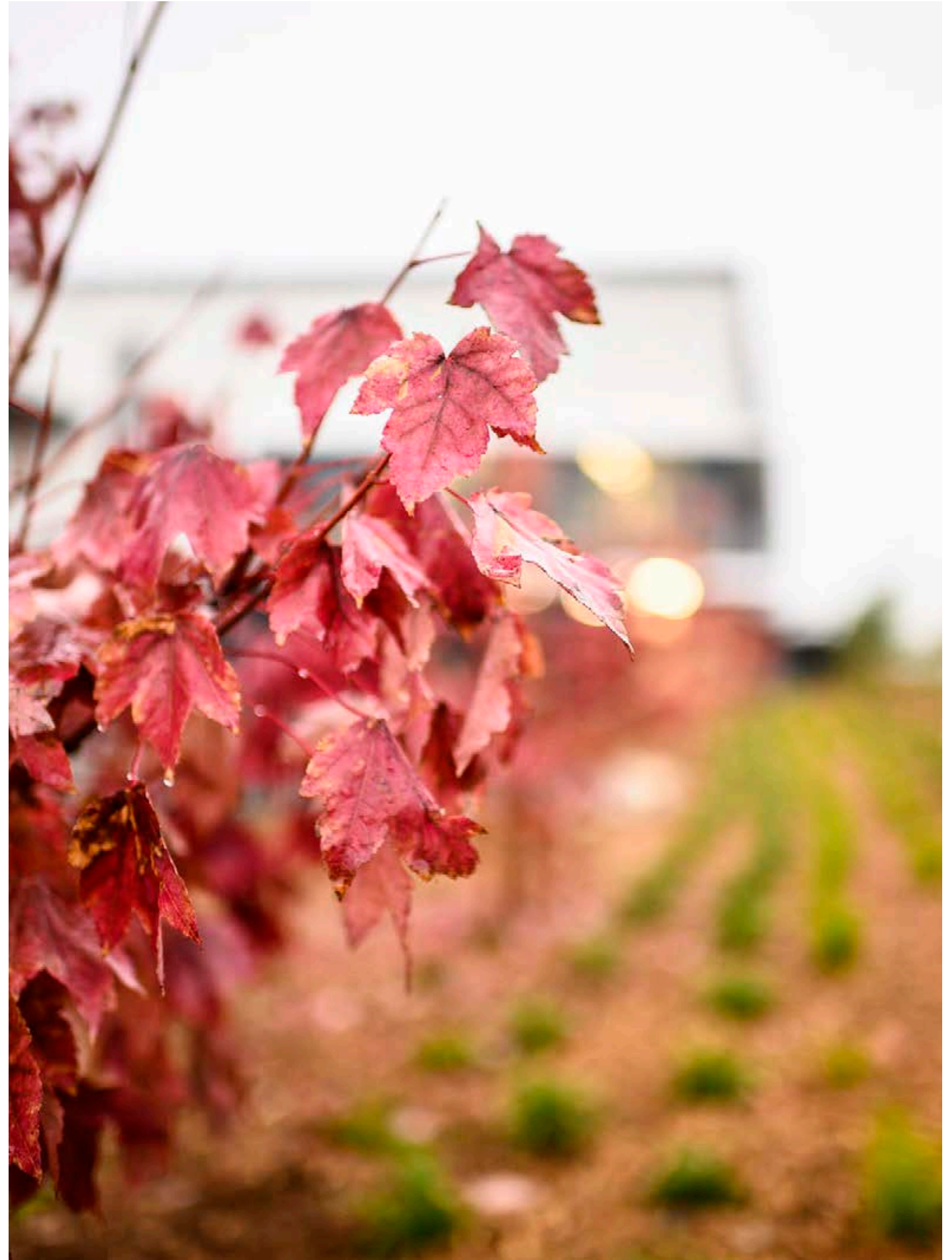
Regards,



Matthew Pullinger LFRAIA

Registered Architect: 6226

4.6 GANSW EVIDENCE OF CONSULTATION



CONSULTATION

This report has been prepared in consultation with Government Architects New South Wales (GANSW), as outlined in Table 1-1. Supplementary Information to support the consultation undertaken and endorsement provided is included.

Table 1-1 Consultation Summary

AGENCY	DATE	PERSON CONTACTED	CONSULTATION CONTEXT
GANSW	23/10/2019	GANSW Representative	Introduction to project and the role of the GANSW
	28/10/2019	SIMTA Representative	Confirmation of request and advised that GANSW are having an internal meeting to discuss and will advise SIMTA
	29/10/2019	SIMTA Representative	Advised that consultation is to be discussed with DPIE regarding State Design Review Panel
	7/01/2020	GANSW Representative	Submitted email with consultation advise to GANSW
	9/01/2020	GANSW Representative	Follow up call
	10/01/2020	GANSW Representative	Follow up call
	13/01/2020	GANSW Representative	Follow up call . GANSW returned email and advised that GANSW will provide advice on the 16th January 2020
	16/01/2020	SIMTA Representative	Received advise stating GANSW wants to review the UDDR and Independent Reviewer- Landscape credentials.
	21/01/2020	GANSW Representative	Sent copies of the UDDR and Independent Reviewer's updated CV
	23/01/2020	GANSW Representative	Follow up email
	31/01/2020	GANSW Representative	Follow up email. GANSW returned call and advised will provide direction mid-week 05/02/20
	06/02/2020	GANSW Representative	Provided advise on GANSW Consultation preferred actions.
	7/02/2020	GANSW Representative	Follow up call regarding date of presentation
	11/02/2020	SIMTA Representative	GANSW advised that advise will be provided shortly.
	17/02/2020	SIMTA Representative	GANSW sent Calendar Invite for presentation on the 25/02/20. Replied that an earlier date would be preferable.
	18/02/2020	SIMTA Representative	GANSW sent updated Calendar Invite for presentation of the 03/03/20
	27/02/2020	GANSW Representative	GANSW requested that specified attendees be included in the Calendar Invite.
	16/03/2020	SIMTA Representative	Received formal correspondence from NSW Government Architects dated 16 March 2020 raising issues and queries
6/04/2020	GANSW Representative	Comprehensive response from SIMTA responding to all issues raised in correspondence dated 16 March 2020	
6/04/2020	SIMTA Representative	GANSW advised that a response will be provided after Easter	

14/04/2020	GANSW Representative	Follow up email
14/04/2020	SIMTA Representative	GANSW advised that a review will be undertaken by 15/4/2020 and respond with a timeframe
17/04/2020	GANSW Representative	Follow up email
20/04/2020	SIMTA Representative	GANSW advised that a response will be provided by 23/4/2020.
23/04/2020	SIMTA Representative	GANSW provided a response to SIMTA's UDDR response.
24/04/2020	SIMTA Representative	SIMTA reviewed GANSW's response and considers consultation closed.

GOVERNMENT ARCHITECT NEW SOUTH WALES

16 March 2020

Richard Johnson
Director
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PROJECT: MOOREBANK LOGISTICS PARK

Moorebank Precinct West Stage 2
Urban Design Development

Dear Richard,

Following the Urban Design Development Report Presentation for the Moorebank Logistics Park, Moorebank Precinct West- Stage 2 on 3 March 2020, please find a summary of observations and recommendations in response to the following conditions of consent and the material reviewed:

- Urban Heat Island Mitigation B48
- Ecologically Sustainable Development B49-51
- Urban Design and Landscaping B52-B54
- Urban Design and Landscape Independent Peer Review B55-B56
- Landscape Design B57
- Design Criteria B58
- Staff and visitor facilities B59-B62
- Landscaping B63-B68
- Noise Walls, Retaining Walls and Fencing B69-B74
- Urban Design and Landscaping Supporting information B75

The material reviewed included:

- Urban Design Development Report Revision 1/November 2019 -Simta, Tactical Group and Reid Campbell
- Urban Design Development Report Revision 3 /December 2019 Appendix - Simta, Tactical Group and Reid Campbell

We note that the Environment Impact Statement was reviewed by GANSW in 2017 and a number of recommendations pertaining to the urban design and landscape components of the scheme were made. We acknowledge that many of these recommendations have been addressed and commend the team accordingly.

Contribution to Sydney's Green Grid

The Georges River is identified as a major Green Grid Corridor in the South District Plan. The Georges River shapes the landscape and character of the Moorebank precinct and the greater Metropolitan area. As the District grows, more people will be looking to use the waterways for recreation, meaning this asset will assume an even greater significance. The truncation of the Georges River foreshore and bank profile by the

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proposed on-site detention (OSD) outlet channel will impact on ecological health and habitat within the foreshore environment. The OSD channel will also impact on contiguous access for people and wildlife. Inhibiting access to Georges River foreshore is not considered an appropriate response and is not supported. The precinct as a whole including the conservation area and the design of the OSD outlet should support public access.

Recommendation

- Provide opportunities for foreshore access for walking and cycling
- Protect and enhance the landscape and scenic quality of the Georges River foreshore by minimizing the impact of the OSD channel
- Ensure the design of the OSD channel and the landscape and planting design of the conservation zone supports public access along the Georges River foreshore
- Seek to reduce the potential impact of the development in the land/water interface environment

Urban design strategies and site planning

Whilst the siting and design strategy clearly delineates between the 'operational' and 'conservation' components of the project, it is evident that the dedicated conservation area will be compromised by the scale of the proposed OSD outlet channel design. The width of the proposed stormwater channel has the potential to impact on the conservation attributes including habitat restoration, biodiversity and connectivity for both people and wildlife. The OSD outlet channel severs the conservation zone in three locations. The detailed treatment of the channel design is not clear in the drawing package – (Moorebank Precinct West – Stage 2 Urban Design Development Report Revision 3/December 2018 Appendix)

Recommendation

- Provide a detailed section through the OSD stormwater channel illustrating channel bank gradient, overall width of the channel and proposed planting and bioremediation strategy.
- Provide detailed information describing how the proposed scheme improves the health and amenity of the Georges River

Urban heat island mitigation (B48)

The condition states that the Development must be designed and operated to meet UHIM principles and to achieve a 4 degree decrease in temperature compared to neighboring industrial developments. The drawings indicate the bulk of vegetative cover for Moorebank Precinct West Stage 2 is located within the conservation area and associated foreshore. There are minimal additional tree planting / heat mitigation measures located within the operational area of the development.

Within Moorebank Precinct West Stage 2 approximately one third of the site is identified as conservation area (green cover). When applying this green cover measure across all stages of the development, it is evident that the overall percentage of green cover will reduce considerably.

Given the operational constraints of the development and the limited opportunity to introduce trees to mitigate against urban heat, there is merit in exploring green roofs as a potential solution to the broad range of issues the scheme is trying to address:

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Recommendation:

- Introduce green roofs to the remaining roof space not dedicated to photovoltaic panels to: provide insulation; support heat mitigation in response to associated hardstand; mitigate the visual impact of the extensive warehouse roofing areas from Casula; provide a substitute for trees given the operational constraints of the intermodal logistics park
- Provide additional evidence to verify that the proposed development in its entirety can achieve a 4 degree decrease in temperature
- Provide a detailed planting schedule for the conservation area to ensure there is a suitable mix of species (grasses, trees and shrubs) aligned with the Riverine environment. This will also assist in improving views of buildings and infrastructure particularly when viewed from Casula.

Ecologically Sustainable Development (ESD)

We commend the sound ESD principles and sustainability measures applied to the project with further commitments to achieve recognized performance rating through Green Star and ISCA rating tools. These should be conditioned

Landscape Design

The detailed landscape design response is predicated upon the following objectives:

- Provide for visitor and worker amenity
- safer by design principles
- use of locally indigenous species
- landscape planning integrated with stormwater design,
- mitigate the visual impacts of building and infrastructure particularly when viewed from Casula

The generous landscape setback to both Moorebank Avenue and Estate Road is commended, as is the provision of accessible, high amenity outdoor spaces as well as end of journey facilities.

Due to the scale of the development it is unlikely that the visual impact of the building and infrastructure will be mitigated solely by the proposed canopy planting to the west of the Warehouses. An integrated planting strategy incorporating both the operational and conservation area is recommended to ensure that the maximum benefit of the 'borrowed' landscape effected by the conservation area is realised. This integrated planting strategy will serve to assist with mitigation of the visual impacts from Casula as well as heat mitigation.

The use of locally indigenous plants which are consistent with the ecological communities of the endangered Cumberland Plain Woodland and the riparian vegetation associated with the Georges River is highly supported.

Recommendations

- Provide detailed planting schedule for the conservation area to ensure that proposed species will serve to expand the landscape context for the overall site.
- Provide detailed sections through on-site detention ponds verifying that the proposed bank profiles will support macrophyte planting and function as a bioremediation wetland
- Ensure that all street trees and car park trees are installed at a minimum size of a 100l to create a landscape impact from the outset.

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- Enable worker and visitor access for walking and cycling to the Georges River foreshore to support worker amenity and opportunity for lunchtime strolling
- Further describe circulation strategy to illustrate how contiguous pedestrian and cycle access is being achieved in accordance with the principles of the Green Grid
- Provide further detail on the pedestrian and cycle connection to Casula Station across the Georges River to the Moorebank Intermodal
- Provide site specific soil, drainage and planting specification in accordance with Australian Standard noting that a large proportion of the planting will be on compacted sub-base
- Ensure that 100 l trees are procured well in advance to ensure quality and size
- Provide detailed tree replacement strategy
- Provide arborist report in relation to tree planting across the site (Refer to GANSW letter 22 May 2017 Comment on the EIS)

Noise Walls

There is a requirement for a 5m high noise barrier to be constructed along the western boundary of the internal estate road to mitigate sound. The proposed noise wall will compromise the urban design strategy to ensure a positive relationship between the operational and conservation functions of the development. The wall will physically and visually cut this relationship between the two functions diminishing the benefit that would have been derived from the two functions being connected. The foundation and footings of the wall will also limit tree planting opportunities which has the potential to impact on the trees negating the visual impact of the wall. The scale of the wall will impact cool breezes from the river corridor.

Recommendation:

- Review noise study and requirements to determine overall necessity of noise barrier
- Explore alternative options for noise mitigation to ensure quality site planning including but not limited to landscape design

Visual Impacts

We note that updated proposed views were not presented. GANSW had initial concerns about a number of the views as presented in the original application. The importance of views to neighbouring suburbs is important.

Recommendation

- Provide updated views to illustrate impacts from the public domain and to all surrounding residents.

Please contact myself or Jane Threlfall if you would like to discuss further or require clarifications.

Regards

Barbara Schaffer
Principal Design and Green Infrastructure

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22 April 2020

Richard Johnson on behalf of Qube

Director

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PROJECT: MOOREBANK LOGISTICS PARK

Moorebank Precinct West Stage 2

Urban Design and Landscape Peer Review Report

Dear Richard,

Please find below GANSW comments, following our review of the Draft Urban Design and Landscape Independent Peer Review Report for Moorebank Precinct West Stage 2.

The Urban Design Development Report

Condition B53

The Urban Design Development Report must be developed in consultation with the Government Architect NSW (GANSW) and provide detailed objectives for design and operation of the development and define place specific urban design principles incorporating those outlined in Conditions B48, B49 and B57. Details of the consultation are to be submitted as part of the Urban Design Development Report.

Urban Design and Landscape Independent Peer Review

Condition B55

An independent peer review report must be submitted with the Urban Design Development Report and Revised Landscape Design Drawings and Revised Architectural Drawings and supporting documentation.

Condition B56

The review must be:

- (a) undertaken by an expert(s) in urban design and landscaping (for example a member of the State Design Review Panel)
- (b) include an assessment of the Revised landscape design drawings revised architectural drawings and supporting documentation against the objectives and urban design principles established in the Urban Design Development Report

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- and all the relevant conditions, stating whether the drawings demonstrate achievement of the objectives and urban design principles and that all relevant conditions of this consent have been satisfied and
- (c) include comments justifying conclusions reached in the assessment

Urban Design Development Report

The independent peer review report notes that Matthew Pullinger was engaged by the proponent in July 2019. The report notes that the author provided preliminary urban design advice to the proponent and assisted the proponent in the refinement of the scheme for Moorebank Stage 2 West. We note that this may call into question the independence of the review. We recommend in future, that an independent review is taken by appropriately qualified professionals that have no prior involvement with the project.

In our view and consistent with design review processes run by GANSW, anyone involved in design development of a project cannot also provide independent review of the project.

We note and accept that Matthew Pullinger has appropriate urban design and architectural expertise. However, landscape design expertise is also a requirement of the condition. We are concerned that without landscape design expertise the report does not meet the condition. Furthermore, the report would benefit from this input.

Some areas of the report regarding landscape elements are not adequately covered, e.g.: the landscape design of the OSD channel and ponds and how these elements could be integrated to enhance the overall amenity of the development.

GANSW recommend that an independent landscape architect from the GANSW State Design Review Panel is engaged to satisfy the conditions of the consent.

Key items to be addressed include:

- the integration of the OSD basins within a landscape setting
- the design of the OSD channels to ensure bioremediation components
- integration of the conservation zone with the operations zone

Please contact myself or Olivia Hyde if you would like to discuss further or require clarifications.

Regards

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MPWS2 Urban Design Development Report

Status of comments from Government Architect NSW

Comment Number	GANSW Comment (16/03/2020)	SIMTA Response (03/04/2020)	GANSW Response (23/4/2020)	Date Comment Closed								
Contribution to Sydney's Green Grid												
1	The truncation of the Georges River foreshore and bank profile by the OSD outlet channel will impact on ecological health and habitat within the foreshore environment. The OSD channel will also impact on contiguous access for people and wildlife.	<p>Disagree that the OSD "truncates" the foreshore/bank profile. The MPW Concept Plan and subsequent Development under MPW Stage 2 has being approved by PAC and IPC on 03/06/2016 and 11/11/2019, respectively. Two of the channels follow existing drainage lines and cross presently disturbed minimal to low vegetated areas (firefighting training area and earthmoving and excavation training area respectively)</p> <p>The ecological health and habitat have been assessed by an ecologist and protection and conservation measures required under the biobanking agreement for the precinct have been identified in a biodiversity management implementation plan. Channel design and implementation is addressed under condition B4 Stormwater Design Development Report, which has been independently reviewed by a stormwater expert.</p> <p>Stormwater designs have considered fauna access under predominantly low-flow conditions and provides for the inclusion of habitat structures within the channel to facilitate fauna crossing. The bank grade on the channels will not be prohibitive to fauna crossing.</p> <p>Ecological habitat values and management provisions have been assessed and approved by DPIE under B154, Construction Flora and Fauna Management Plan. The plan includes recommendations in fencing design to allow fauna access along the entirety of the conservation area. This will further be considered prior to Operations, where an Operational Flora and Fauna Management Plan is required per B160.</p> <p>With regards to contiguous access for people, refer to Comment 3. Generally, the conservation areas will only be accessible to estate management employees for monitoring and maintenance activities, with emergency services being an exception.</p>	<p>We are concerned that these elements have not been designed in collaboration with a landscape architect. This should be considered in the review of the stormwater design development report.</p> <p>SIMTA's Response: Noted. Considered this comment closed. 24/4/20</p>	24/4/20								
2	The precinct as a whole including the conservation area and the design of the OSD outlet should support public access.	Refer to Comment 3	SIMTA's Response: Referring to GANSW's response in comment 3. We considered this comment closed.	24/4/20								
3	Provide opportunities for foreshore access for walking and cycling	<p>The Biobanking Agreement has not been established to permit passive recreational activity. It is not the intent to provide foreshore access for walking and cycling. Please find the below extract of The Biobanking Agreement ID 341 Section 3.5 Permissible Development Identifies the following uses.</p> <table border="1" data-bbox="1092 1192 1887 1566"> <thead> <tr> <th colspan="2">Permissible development on the biobank site</th> </tr> <tr> <th>Description of development</th> <th>Management zone/s</th> </tr> </thead> <tbody> <tr> <td>Any development permitted or required as part of a management action under Annexure C, including but not limited to maintaining existing access tracks on the biobank site, building shed/s to store weed control chemicals or other pesticides on the biobank site, building fences to manage stock on the biobank site and building structures to restore natural water flow regimes.</td> <td>All zones</td> </tr> <tr> <td>Any development within the meaning of section 127(1) of the Act reasonably considered necessary to remove or reduce an imminent risk of serious personal injury or damage to property.</td> <td>All zones</td> </tr> </tbody> </table> <p>The MPW site is an inland port and as such is a customs bonded site that requires a security standard that is not suitable, or appropriate, for general public access.</p> <p>A cycleway is proposed to come South from Chipping Norton Lakes and connect to Moorebank Avenue. The proposed design of the Moorebank Avenue Upgrade Works includes a shared path which will provide access along the Eastern boundary of the MLP site, providing connection into the site itself at the site entrance, and contiguous access beyond the site to the South. As required, provision has been made to enable a pedestrian crossing of the Georges River at the northern boundary of the site. This provides a level of access commensurate with the preservation of conservation values and site security.</p>	Permissible development on the biobank site		Description of development	Management zone/s	Any development permitted or required as part of a management action under Annexure C, including but not limited to maintaining existing access tracks on the biobank site, building shed/s to store weed control chemicals or other pesticides on the biobank site, building fences to manage stock on the biobank site and building structures to restore natural water flow regimes.	All zones	Any development within the meaning of section 127(1) of the Act reasonably considered necessary to remove or reduce an imminent risk of serious personal injury or damage to property.	All zones	<p>Noted. This represents a lost opportunity. Potential to explore during the assessment of MPW Stage 3 or future stages.</p> <p>SIMTA's Response: Noted. Considered this comment closed. 24/4/20</p>	24/4/20
Permissible development on the biobank site												
Description of development	Management zone/s											
Any development permitted or required as part of a management action under Annexure C, including but not limited to maintaining existing access tracks on the biobank site, building shed/s to store weed control chemicals or other pesticides on the biobank site, building fences to manage stock on the biobank site and building structures to restore natural water flow regimes.	All zones											
Any development within the meaning of section 127(1) of the Act reasonably considered necessary to remove or reduce an imminent risk of serious personal injury or damage to property.	All zones											
4	Protect and enhance the landscape and scenic quality of the Georges River foreshore by minimizing the impact of the OSD channel	The development will not hinder the use of the waterway. This site was previously Defence Land and access was not previously allowed therefore no change to access. The orientation of the channels has been intentionally designed at an angle that minimizes the opportunity to look	Design impacts could benefit from input from landscape architect. This should be considered in the review of the stormwater design development report.	24/4/20								

Comment Number	GANSW Comment (16/03/2020)	SIMTA Response (03/04/2020)	GANSW Response (23/4/2020)	Date Comment Closed
		<p>through a vegetation gap to the site beyond, and instead maintain a visual amenity of a contiguous vegetated buffer.</p> <p>The location impacts of OSD's was approved by DPIE under the MPW Concept Plan SSD 5066 and MPWS2 SSD 7709 therefore the location has been fully assessed and approved and construction management plans required, for example the Construction Soil and Water Management Plan and the Stormwater Design Development Report. Both of which have required review by an expert in the field and have been endorsed by the Environmental Representative.</p>	SIMTA's Response: Noted. Considered this comment closed. 24/4/20	
6	Ensure the design of the OSD channel and the landscape and planting design of the conservation zone supports public access along the Georges River foreshore	Refer to Comment 3, foreshore access is not possible or permissible under the Biobanking Agreement. Planting requirements within the Biobanking Agreement are specific. Vegetation to be planted would comprise either Riparian Forest community type or Alluvial Woodland community (on the upper terraces. These communities would each have a blend of canopy, understory and ground cover species to replicate the natural seral progression between the riverbank and floodplain terraces.	Noted SIMTA's Response: Considered this comment closed. 24/4/20	24/4/20
7	Seek to reduce the potential impact of the development in the land/water interface	Refer to Comment 1 and 4, location of OSDs approved by DPIE under the MPW Concept Plan SSD 5066 and MPWS2 SSD 7709 therefore the location has been fully assessed and approved. Such stormwater outlet structures are permissible within the riparian zones on waterfront land and are designed to work with the natural drainage systems.	SIMTA's Response: Considered this comment closed. 24/4/20	24/4/20
Urban Design Strategies and Site Planning				
8	Whilst the siting and design strategy clearly delineates between the 'operational' and 'conservation' components of the project, it is evident that the dedicated conservation area will be compromised by the scale of the proposed OSD outlet channel design. The width of the proposed stormwater channel has the potential to impact on the conservation attributes including habitat restoration, biodiversity and connectivity for both people and wildlife	Refer to Comment 1 and 4, location of OSD's approved by DPIE under the MPW Concept Plan SSD 5066 and MPWS2 SSD 7709 therefore the location has been fully assessed and approved.	As per previous comment. Design of channel and ponds could benefit from input of landscape architect. Difference between design approach of stormwater engineer and landscape architect. Recommend a collaborative approach. This should be considered in the review of the stormwater design development report. SIMTA's Response: Noted. Considered this comment closed. 24/4/20	24/4/20
9	The OSD outlet channel severs the conservation zone in three locations. The detailed treatment of the channel design is not clear in the drawing package – (Moorebank Precinct West – Stage 2 Urban Design Development Report Revision 3/December 2018 Appendix)	Refer to Comment 1, 3 and 4, location of OSD's approved by DPIE under the MPW Concept Plan SSD 5066 and MPWS2 SSD 7709 therefore the location has been fully assessed and approved.	Noted refer to previous comments SIMTA's Response: Considered this comment closed. 24/4/20	24/4/20
10	Provide a detailed section through the OSD stormwater channel illustrating channel bank gradient, overall width of the channel and proposed planting and bioremediation strategy.	Refer to Comment 1, 3 and 4, location of OSD's approved by DPIE under the MPW Concept Plan SSD 5066 and MPWS2 SSD 7709 therefore the location has been fully assessed and approved. DPIE are reviewing and approving the Construction Soil and Water Management Plan (approved) and the Stormwater Design Development Report.	SIMTA's Response: Considered this comment closed. 24/4/20	24/4/20
11	Provide detailed information describing how the proposed scheme improves the health and amenity of the Georges River	Refer to Comment 1 and 10	SIMTA's Response: Considered this comment closed. 24/4/20	24/4/20
Urban Heat Island Mitigation				
12	There are minimal additional tree planting / heat mitigation measures located within the operational area of the development.	Refer to Condition B68. Designs have been implemented as per the condition B68. The following minimum landscaping requirements apply: (a) 15% of the warehouse area landscaped at ground level, 10% of which must be soft landscaping, excluding the OSD basins unless they are accepted as contributing to soft landscaping in the peer review report required under Condition B55; (b) 1 canopy tree per 30 m2 of landscaped area; and (c) a 2.5 m wide landscaped bay every 6-8 car spaces to provide shade within carpark areas or alternative carpark landscaping accepted as providing adequate shade in the peer review report required under Condition B55.	Noted but remain concerned and would still support the provision of additional trees but we note the condition appears to have been addressed. Please consider in future stages of development. SIMTA's Response: Considered this comment closed. 24/4/20	24/4/20
13	Introduce green roofs to the remaining roof space not dedicated to photovoltaic panels to: provide insulation; support heat mitigation in response to associated hardstand; mitigate the visual impact of the extensive warehouse roofing areas from Casula; provide a substitute for trees given the operational constraints	The project has been designed around cool roof surfaces. Replacing these with green roofs would not substantially reduce any urban heat island, as the project already reflects the majority of incident solar energy striking these surfaces. The project will meet code mandated insulation levels. Green Roofs are not necessary to provide minimum insulation level. There are additional feasibility problems around structural design, and maintenance costs that make green roofs a poor fit on this project.	Noted. This is a missed opportunity as green roofs are becoming increasingly feasible options to mitigate urban heat island effect. SIMTA's Response: Considered this comment closed. 24/4/20	24/4/20

Comment Number	GANSW Comment (16/03/2020)	SIMTA Response (03/04/2020)	GANSW Response (23/4/2020)	Date Comment Closed
	of the intermodal logistics park	Note, this issue was similarly raised on MPE Stage 2 SSD 7628 and agreed it was not feasible in this context.		
14	Provide additional evidence to verify that the proposed development in its entirety can achieve a 4 degree decrease in temperature	<p>Please refer to the "Urban Heat Island Mitigation Strategies Modelling" Report which documents our methodology and results showing that we meet the 4°C temperature reductions. We have outlined two scenarios to demonstrate compliance:</p> <p>Scenario 1: Business as Usual vs Design</p> <p>We have modelled the site with, and without UHI mitigation strategies. The impact of these strategies was a 1°C reduction in canopy temperature across the site. This is shown and described on page 8.</p> <p>Scenario 2: Our Site vs Neighbouring Site</p> <p>We have modelled an adjacent site to compare urban heat island impacts on both sites. We have identified Goodman as peer site. Our site, with the implementation of UHIMS, shows is shown to have a 1°C cooler canopy temperature than our neighbouring site. This is shown and described on page 10.</p> <p>Calculating 4 degrees:</p> <p>Page 7 outlines our methodology that the 1°C canopy temperature changes we have calculated correspond to 4°C difference in UHI Surface Temperature. Canopy temperatures are used for measurement and calculation, whereas Surface Temperature is the perceived temperature felt by people.</p>	<p>Noted</p> <p>SIMTA's Response: Considered this comment closed. 24/4/20</p>	24/4/20
15	Provide a detailed planting schedule for the conservation area to ensure there is a suitable mix of species (grasses, trees and shrubs) aligned with the Riverine environment. This will also assist in improving views of buildings and infrastructure particularly when viewed from Casula	Refer to the Landscape Plans provided	<p>Noted</p> <p>SIMTA's Response: Considered this comment closed. 24/4/20</p>	24/4/20
Ecologically Sustainable Development (ESD)				
16	We commend the sound ESD principles and sustainability measures applied to the project with further commitments to achieve recognized performance rating through Green Star and ISCA rating tools. These should be conditioned	Noted		16/3/2020
Landscape Design				
17	An integrated planting strategy incorporating both the operational and conservation area is recommended to ensure that the maximum benefit of the 'borrowed' landscape effected by the conservation area is realised.	A Biobanking Agreement is in place for conversation area (supported by the Biodiversity Management Implementation Plan) and a Landscape Vegetation Management Plan will be required for the Operational Area. Areas deemed appropriate for landscaping have been outlined and have made it clear in the documents and presentation that there are restrictions with planting in the operational areas. Landscape quantitative outcomes as required under the consent conditions would be achieved, as would additional planting and management of vegetation within the conservation area and riparian zone. This includes removal of woody weeds and establishment of both Riparian Forest and Alluvial Woodland community types relevant to topography. The intended outcomes are improved continuity of relevant community types and improved habitat outcomes for local fauna.	<p>Noted</p> <p>SIMTA's Response: Considered this comment closed. 24/4/20</p>	24/4/20
18	Provide detailed planting schedule for the conservation area to ensure that proposed species will serve to expand the landscape context for the overall site.	Refer to comment 17	SIMTA's Response: Considered this comment closed. 24/4/20	24/4/20
19	Provide detailed sections through on-site detention ponds verifying that the proposed bank profiles will support macrophyte planting and function as a bioremediation wetland	DPIE are reviewing and approving the Construction Soil and Water Management Plan (approved) and the Stormwater Design Development Report.	<p>Noted</p> <p>SIMTA's Response: Considered this comment closed. 24/4/20</p>	24/4/20
20	Ensure that all street trees and car park trees are installed at a minimum size of a 100l to create a landscape impact from the outset.	We acknowledge that advanced tree specimens will be beneficial in providing instant impact and amenity; however, we should recognise that some specimens – particularly the indigenous species – will be difficult to obtain in an advanced size unless procured in the near future. We would recommend a diverse planting schedule consisting of a range of species and installation sizes. Where possible, trees will be installed at a larger size to provide instant impact. Suggest a potential range of pot sizes for tree planting ranging from 200mm pots to 200 litre with a preference for larger specimens in key locations such as the site entry and areas where sight lines for driver visibility and safety are important.	<p>Ensure procurement of mature species happens in a time fashion. Would be good to gain clarity on proposed location of mature species. Provide detailed plan</p> <p>SIMTA's Response: Detailed plan is not currently available. But will be provided at a detailed design stage. Considered this comment closed. 24/4/20</p>	24/4/20
21	Enable worker and visitor access for walking and cycling to the Georges River foreshore to support worker amenity and opportunity for lunchtime strolling	Refer to Comment 3, foreshore access is not possible due to Biobanking Agreement.	<p>Noted</p> <p>SIMTA's Response: Considered this comment closed. 24/4/20</p>	24/4/20

Comment Number	GANSW Comment (16/03/2020)	SIMTA Response (03/04/2020)	GANSW Response (23/4/2020)	Date Comment Closed
22	Further describe circulation strategy to illustrate how contiguous pedestrian and cycle access is being achieved in accordance with the principles of the Green Grid	<p>CoC B59 (a) and (b) require pedestrian and cycle paths to be provided through the site, connecting Moorebank Avenue, the rail terminal office, warehouses and the freight village, and must be integrated with existing and planned footpaths or cycleways within the locality</p> <p>Architectural drawings in Appendix 4.2 show a 2.5m shared path complying with Condition B59 connecting through MPW Stage 2 and into planned road works at the Anzac Road/Moorebank Avenue Interchange</p> <p>The cycling/pedestrian path network has been designed with consideration of the Sydney Green Grid, including but not limited to:</p> <ul style="list-style-type: none"> 1.4 – Increase Access to Open Space: interconnected network of open space providing increased livability; improved connections around industrial areas; 1.5 – Promote Healthy and Active Living; providing increased opportunity for cycling/walking through the Moorebank Industrial area 	<p>Key principle of Sydney Green Grid is to provide continuous access along major waterways. Noted that elements of the Grid policy have been addressed, however public access along the Georges River should be considered in future stages.</p> <p>SIMTA's Response: Noted. Considered this comment closed. 24/4/20</p>	24/4/20
23	Provide further detail on the pedestrian and cycle connection to Casula Station across the Georges River to the Moorebank Intermodal	Provision has been made for the connection which is compliant with Condition B2 (j) – further detail is not required as part of the application.	<p>Noted</p> <p>SIMTA's Response: Considered this comment closed. 24/4/20</p>	24/4/20
24	Provide site specific soil, drainage and planting specification in accordance with Australian Standard noting that a large proportion of the planting will be on compacted sub-base	Plant schedule has been provided on landscape plans as has a site-specific construction detail.	<p>Noted</p> <p>SIMTA's Response: Considered this comment closed. 24/4/20</p>	24/4/20
25	Ensure that 100 trees are procured well in advance to ensure quality and size	Refer to Comment 24	SIMTA's Response: Considered this comment closed. 24/4/20	24/4/20
26	Provide detailed tree replacement strategy	Refer to Comment 24	SIMTA's Response: Considered this comment closed. 24/4/20	24/4/20
27	Provide arborist report in relation to tree planting across the site (Refer to GANSW letter 22 May 2017 Comment on the EIS)	The approved MPWS2 SSD 7709 Consent does not require this action.	<p>Noted</p> <p>SIMTA's Response: Considered this comment closed. 24/4/20</p>	24/4/20
Noise Wall				
28	<p>Review noise study and requirements to determine overall necessity of noise barrier.</p> <p>Explore alternative options for noise mitigation to ensure quality site planning including but not limited to landscape design.</p>	<p>Noted. It is intended that the Noise Wall be removed as per SIMTA's long term aspirations and as supported and recommended by the Peer Review. Further noise studies will be undertaken in the future as part of a modification.</p> <p>Considered this comment closed.</p>	Noted	3/4/20
Visual Impact				
28	Provide updated views to illustrate impacts from the public domain and to all surrounding residents	Visual Impacts are approved by DPIE under MPWS2 SSD 7709. The built form retains the same envelopes and are generally in accordance with the Visual Impact Assessment submitted as part of SSD 7709 (height the same, generally same lengths and widths, slightly different siting within Warehouse Area).	<p>Noted. Does a further visual impact study need to be undertaken due to different siting.</p> <p>SIMTA's Response: Further visual impact studies will be considered in future stages of MPW. Considered this comment closed. 24/4/20</p>	24/4/20

Comment Number	GANSW Comment (23/04/2020)	SIMTA Response (27/04/2020)	Date Comment Closed
29	The report notes that the author provided preliminary urban design advice to the proponent and assisted the proponent in the refinement of the scheme for Moorebank Stage 2 West. We note that this may call into question the independence of the review. We recommend in future, that an independent review is taken by appropriately qualified professionals that have no prior involvement with the project.	Appears to be a mis-understanding. Matt Pullinger was only engaged in his role as an Independent Peer Reviewer for MPWS2 UDDR, never as part of the design team or have been involved in other parts of the Moorebank Precinct Projects. This is the only involvement Matt Pullinger has with the project as the Independent Reviewer of the UDDR. Matt Pullinger is member of the State Design Review Panel he is thereby an appropriate qualified professional. Consider this comment closed.	27/4/2020
30	We note and accept that Matthew Pullinger has appropriate urban design and architectural expertise. However, landscape design expertise is also a requirement of the condition. We are concerned that without landscape design expertise the report does not meet the condition. Furthermore, the report would benefit from this input	As per condition B56, there is no requirement for GANSW to comment on the credentials of the independent peer reviewer. SIMTA has engaged an expert in urban design and landscaping (for example, a member of the State Design Review Panel) as required under B56a. This will be determined upon Departments review, if required. Consider this comment closed.	27/4/2020
31	Some areas of the report regarding landscape elements are not adequately covered, e.g.: the landscape design of the OSD channel and ponds and how these elements could be integrated to enhance the overall amenity of the development.	This has been considered in the approved CSWMP and SDDR. Inputs from an ecologist has been considered in the design phase, this has been provided to the Department for consideration as per condition B35. Consider this comment closed.	27/4/2020
32	GANSW recommend that an independent landscape architect from the GANSW State Design Review Panel is engaged to satisfy the conditions of the consent	Refer to Comment 30. Consider this comment closed.	27/4/2020

Andrew McDonald

From: Barbara Schaffer <Barbara.Schaffer@planning.nsw.gov.au>
Sent: Thursday, 23 April 2020 4:23 PM
To: Tracy Davey; Richard Johnson
Cc: Jake Shackleton; Mark Griffiths; Danielle Eloss; Steve Ryan; Fei Chen; Aman Brar; Erica van den Honert; Olivia Hyde; Emma Kirkman
Subject: RE: Moorebank Precinct West Stage 2_ Urban Design Development Report
Attachments: 200422_MPWS2 UDDR GANSW Comments Table_Proposed Responses_clean_BS.docx; 200421_Independent Peer Review_letter.pdf; 200327_Moorebank Peer Review_BS.pdf

Dear Tracy and Richard

Please find attached GANSW response to the Moorebank Precinct West Stage 2 Urban Design Development Report and the Independent Peer Review.

Please do not hesitate to contact me should you require any clarification.

Regards
Barbara

Barbara Schaffer
Principal Design + Green Infrastructure

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From: Tracy Davey <tdavey@tacticalgroup.com.au>
Sent: Thursday, 23 April 2020 2:38 PM
To: Barbara Schaffer <Barbara.Schaffer@planning.nsw.gov.au>
Cc: Jake Shackleton <Jake.Shackleton@planning.nsw.gov.au>; Emma Kirkman <emma.kirkman@planning.nsw.gov.au>; Jane Threlfall <Jane.Threlfall@planning.nsw.gov.au>; Richard Johnson <richard@aspectenvironmental.com.au>; Mark Griffiths <Mark.Griffiths@qube.com.au>; Danielle Eloss <Danielle.Eloss@qube.com.au>; Steve Ryan <sryan@tacticalgroup.com.au>; Fei Chen <fchen@tacticalgroup.com.au>
Subject: RE: Moorebank Precinct West Stage 2_ Urban Design Development Report

Hi Barbara

Hope all is well.

I am following up on our submission on the 6 April 2020 in response to Government Architect New South Wales (GANSW) correspondence dated the 16th March 2020 pertaining to the Urban Design Development Report for Moorebank Precinct West Stage 2.

We look to hearing from you.

Regards,

TRACY DAVEY
ENVIRONMENTAL MANAGER



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 Before printing this document, please consider the environment.

From: Barbara Schaffer <Barbara.Schaffer@planning.nsw.gov.au>
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Cc: Jake Shackleton <Jake.Shackleton@planning.nsw.gov.au>; Emma Kirkman <emma.kirkman@planning.nsw.gov.au>; Jane Threlfall <Jane.Threlfall@planning.nsw.gov.au>; Richard Johnson <richard@aspectenvironmental.com.au>; Mark Griffiths <Mark.Griffiths@qube.com.au>; Danielle Eloss <Danielle.Eloss@qube.com.au>; Steve Ryan <sryan@tacticalgroup.com.au>; Fei Chen <fchen@tacticalgroup.com.au>
Subject: RE: Moorebank Precinct West Stage 2_ Urban Design Development Report

Hi Tracy
Thank you for following up today.
I will review your document tomorrow and get back to you with an expected time frame.
With thanks
Barbara

Barbara Schaffer
Principal Design + Green Infrastructure



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From: Tracy Davey <tdavey@tacticalgroup.com.au>
Sent: Tuesday, 14 April 2020 11:25 AM
To: Barbara Schaffer <Barbara.Schaffer@planning.nsw.gov.au>
Cc: Jake Shackleton <Jake.Shackleton@planning.nsw.gov.au>; Emma Kirkman <emma.kirkman@planning.nsw.gov.au>; Jane Threlfall <Jane.Threlfall@planning.nsw.gov.au>; Richard Johnson <richard@aspectenvironmental.com.au>; Mark Griffiths <Mark.Griffiths@qube.com.au>; Danielle Eloss <Danielle.Eloss@qube.com.au>; Steve Ryan <sryan@tacticalgroup.com.au>; Fei Chen <fchen@tacticalgroup.com.au>
Subject: RE: Moorebank Precinct West Stage 2_ Urban Design Development Report

Barbara hi

Hope you are well. I just tried to call you as I believe you are back at work today.

I am following up on our submission on the 6 April 2020 in response to Government Architect New South Wales (GANSW) correspondence dated the 16th March 2020 pertaining to the Urban Design Development Report for Moorebank Precinct West Stage 2.

Please advise when we are likely to receive GANSW's response. Of course if you would like to discuss further, do not hesitate to call.

We look forward to hearing from you.

Kind regards

TRACY DAVEY
ENVIRONMENTAL MANAGER



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Before printing this document, please consider the environment.

From: Olivia Hyde <Olivia.Hyde@planning.nsw.gov.au>
Sent: Monday, 6 April 2020 5:36 PM
To: Tracy Davey <tdavey@tacticalgroup.com.au>
Cc: Jake Shackleton <Jake.Shackleton@planning.nsw.gov.au>; Emma Kirkman <emma.kirkman@planning.nsw.gov.au>; Jane Threlfall <Jane.Threlfall@planning.nsw.gov.au>; Barbara Schaffer <Barbara.Schaffer@planning.nsw.gov.au>
Subject: FW: Moorebank Precinct West Stage 2_ Urban Design Development Report

Hi Tracey,

Barbara is on leave this week as her father is critically ill.

We'll get back to you after Easter when she is back.

Regards,

Olivia

Olivia Hyde

Director of Design Excellence
Professor of Practice, Architecture
University of Sydney

**GOVERNMENT
ARCHITECT
NEW SOUTH WALES**

Government Architect NSW

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*Government Architect NSW acknowledges the Traditional Custodians of the land and pay respect to Elders past, present and future. We honour Australian Aboriginal and Torres Strait Islander peoples' unique cultural and spiritual relationships to place and their rich contribution to our society. To that end, all our work seeks to uphold the idea that **if we care for Country, it will care for us.***

From: Tracy Davey <tdavey@tacticalgroup.com.au>

Sent: Monday, 6 April 2020 4:04 PM

To: Barbara Schaffer <Barbara.Schaffer@planning.nsw.gov.au>; Emma Kirkman

<emma.kirkman@planning.nsw.gov.au>; Jane Threlfall <Jane.Threlfall@planning.nsw.gov.au>; Jake Shackleton

<Jake.Shackleton@planning.nsw.gov.au>; Aman Brar <Aman.Brar@planning.nsw.gov.au>

Cc: Mark Griffiths <Mark.Griffiths@gube.com.au>; Danielle Eloss <Danielle.Eloss@gube.com.au>; Richard Johnson

<richard@aspectenvironmental.com.au>; Steve Ryan <sryan@tacticalgroup.com.au>; Fei Chen

<fchen@tacticalgroup.com.au>

Subject: RE: Moorebank Precinct West Stage 2_ Urban Design Development Report

Afternoon Barbara and Emma

Further to Government Architect New South Wales (GANSW) correspondence dated the 16th March 2020, please find attached a detailed response to each issue raised.

Do not hesitate in calling to discuss further, and we look forward to resolving this Urban Design Development Report for MPWS2.

Kind regards,


TRACY DAVEY
ENVIRONMENTAL MANAGER



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From: Emma Kirkman <emma.kirkman@planning.nsw.gov.au>
Sent: Thursday, 27 February 2020 11:57 AM
To: Tracy Davey <tdavey@tacticalgroup.com.au>
Subject: RE: Moorebank Precinct West Stage 2

Hi Tracey,

Update sent, please let me know if there's anything further you require.

Regards,

Emma

From: Tracy Davey <tdavey@tacticalgroup.com.au>
Sent: Thursday, 27 February 2020 10:26 AM
To: Emma Kirkman <emma.kirkman@planning.nsw.gov.au>
Subject: RE: Moorebank Precinct West Stage 2

Emma hi

I have had a few queries regarding the meeting on the 3rd March 2020.

Could you re-send the invite to all the participants re the GANSW presentation for the 3rd of March 2020 and also the venue and time.

There has been a bit of mis-communication.

Thanks very much.

Regards,

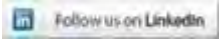
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From: Emma Kirkman <emma.kirkman@planning.nsw.gov.au>
Sent: Tuesday, 18 February 2020 3:24 PM
To: Tracy Davey <tdavey@tacticalgroup.com.au>
Subject: RE: Moorebank Precinct West Stage 2

Hi Tracy,

They've been invited.

Regards,

Emma

From: Tracy Davey <tdavey@tacticalgroup.com.au>
Sent: Tuesday, 18 February 2020 10:52 AM
To: Emma Kirkman <emma.kirkman@planning.nsw.gov.au>
Cc: Fei Chen <fchen@tacticalgroup.com.au>
Subject: RE: Moorebank Precinct West Stage 2

Thank you Emma

Please can you ensure that the following are included in the invite.

Richard Johnson - Richard richard@aspectenvironmental.com.au
Michael Fassulo – RC Michael Fasullo mfasullo@reidcampbell.com
Robert Loughman -GI Robert Loughman robl@groundink.com.au
QUBE representative. Mark Griffiths Mark.Griffiths@qube.com.au Danielle Eloss Danielle.Eloss@qube.com.au

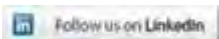
Regards,

TRACY DAVEY
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Before printing this document, please consider the environment.

From: Emma Kirkman <emma.kirkman@planning.nsw.gov.au>
Sent: Tuesday, 18 February 2020 10:50 AM
To: Tracy Davey <tdavey@tacticalgroup.com.au>
Cc: Fei Chen <fchen@tacticalgroup.com.au>
Subject: RE: Moorebank Precinct West Stage 2

Hi Tracy,

The meeting has now been rescheduled to Tuesday 3 March and the invite updated.

Regards,

Emma

From: Tracy Davey <tdavey@tacticalgroup.com.au>
Sent: Monday, 17 February 2020 4:17 PM
To: Emma Kirkman <emma.kirkman@planning.nsw.gov.au>
Cc: Fei Chen <fchen@tacticalgroup.com.au>
Subject: RE: Moorebank Precinct West Stage 2

Hi Emma

QUBE would prefer the earlier date, as the resolution of the UDDR is critical and it has been with GANSW for a number of weeks already. Notwithstanding, the people to be included in the Calendar Invite are as below.

Richard Johnson - Richard richard@aspectenvironmental.com.au
Michael Fassulo – RC Michael Fasullo mfasullo@reidcampbell.com
Robert Loughman -GI Robert Loughman robl@groundink.com.au
QUBE representative. Mark Griffiths Mark.Griffiths@qube.com.au Danielle Eloss Danielle.Eloss@qube.com.au

Thanks Emma

Regards,

TRACY DAVEY
ENVIRONMENTAL MANAGER



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From: Emma Kirkman <emma.kirkman@planning.nsw.gov.au>
Sent: Monday, 17 February 2020 4:10 PM
To: Tracy Davey <tdavey@tacticalgroup.com.au>
Subject: RE: Moorebank Precinct West Stage 2

Sorry Tracy, this meeting now needs to be moved to the week after. I'll send an updated invite shortly.

Apologies,

Emma

From: Tracy Davey <tdavey@tacticalgroup.com.au>
Sent: Monday, 17 February 2020 1:04 PM
To: Emma Kirkman <emma.kirkman@planning.nsw.gov.au>
Subject: RE: Moorebank Precinct West Stage 2

Thanks Emma

I am currently following up.

Regards,

TRACY DAVEY
ENVIRONMENTAL MANAGER



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From: Emma Kirkman <emma.kirkman@planning.nsw.gov.au>
Sent: Monday, 17 February 2020 11:38 AM
To: Tracy Davey <tdavey@tacticalgroup.com.au>
Cc: Olivia Hyde <Olivia.Hyde@planning.nsw.gov.au>; Jane Threlfall <Jane.Threlfall@planning.nsw.gov.au>; Jake Shackleton <Jake.Shackleton@planning.nsw.gov.au>; Aman Brar <Aman.Brar@planning.nsw.gov.au>; Heather Nelson <Heather.Nelson@planning.nsw.gov.au>; Steve Ryan <sryan@tacticalgroup.com.au>; Fei Chen <fchen@tacticalgroup.com.au>; Barbara Schaffer <Barbara.Schaffer@planning.nsw.gov.au>
Subject: RE: Moorebank Precinct West Stage 2

Hi Tracy,

I've sent a calendar invite for next Tuesday 25 February 1 – 3pm at our offices in Parramatta. Can you please forward this to the relevant people and let me know their names and contact details as I will need to register them. The agenda is set out in the invite and we would appreciate your response to these items to enable GANSW input.

Regards,

Emma

From: Tracy Davey <tdavey@tacticalgroup.com.au>
Sent: Tuesday, 11 February 2020 1:36 PM

To: Emma Kirkman <emma.kirkman@planning.nsw.gov.au>

Cc: Olivia Hyde <Olivia.Hyde@planning.nsw.gov.au>; Jane Threlfall <Jane.Threlfall@planning.nsw.gov.au>; Jake Shackleton <Jake.Shackleton@planning.nsw.gov.au>; Aman Brar <Aman.Brar@planning.nsw.gov.au>; Heather Nelson <Heather.Nelson@planning.nsw.gov.au>; Steve Ryan <sryan@tacticalgroup.com.au>; Fei Chen <fchen@tacticalgroup.com.au>

Subject: RE: Moorebank Precinct West Stage 2

Thanks for update Emma

Regards,

TRACY DAVEY
ENVIRONMENTAL MANAGER



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 Before printing this document, please consider the environment.

From: Emma Kirkman <emma.kirkman@planning.nsw.gov.au>

Sent: Tuesday, 11 February 2020 1:32 PM

To: Tracy Davey <tdavey@tacticalgroup.com.au>

Cc: Olivia Hyde <Olivia.Hyde@planning.nsw.gov.au>; Jane Threlfall <Jane.Threlfall@planning.nsw.gov.au>; Jake Shackleton <Jake.Shackleton@planning.nsw.gov.au>; Aman Brar <Aman.Brar@planning.nsw.gov.au>; Heather Nelson <Heather.Nelson@planning.nsw.gov.au>; Steve Ryan <sryan@tacticalgroup.com.au>; Fei Chen <fchen@tacticalgroup.com.au>

Subject: RE: Moorebank Precinct West Stage 2

Hi Tracy,

Just to keep you updated, we're discussing the format, timing and attendees for this presentation and will get back to you shortly.

Regards,

Emma

From: Tracy Davey <tdavey@tacticalgroup.com.au>

Sent: Thursday, 6 February 2020 3:13 PM

To: Emma Kirkman <emma.kirkman@planning.nsw.gov.au>

Cc: Olivia Hyde <Olivia.Hyde@planning.nsw.gov.au>; Jane Threlfall <Jane.Threlfall@planning.nsw.gov.au>; Jake Shackleton <Jake.Shackleton@planning.nsw.gov.au>; Aman Brar <Aman.Brar@planning.nsw.gov.au>; Heather Nelson <Heather.Nelson@planning.nsw.gov.au>; Steve Ryan <sryan@tacticalgroup.com.au>; Fei Chen <fchen@tacticalgroup.com.au>

Subject: RE: Moorebank Precinct West Stage 2

Afternoon Emma

Thank you for your feedback. Noting 'next steps' in points 1- 4 below please can you advise a suitable date for the presentation.

I look forward to hearing from you.

Regards,


TRACY DAVEY
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 Before printing this document, please consider the environment.

From: Emma Kirkman <emma.kirkman@planning.nsw.gov.au>

Sent: Thursday, 6 February 2020 2:58 PM

To: Tracy Davey <tdavey@tacticalgroup.com.au>

Cc: Olivia Hyde <Olivia.Hyde@planning.nsw.gov.au>; Jane Threlfall <Jane.Threlfall@planning.nsw.gov.au>; Jake Shackleton <Jake.Shackleton@planning.nsw.gov.au>; Aman Brar <Aman.Brar@planning.nsw.gov.au>; Heather Nelson <Heather.Nelson@planning.nsw.gov.au>

Subject: Moorebank Precinct West Stage 2

Dear Tracy,

Following ongoing discussions around the next steps for Moorebank Precinct West Stage 2, we provide the response below.

Understanding

The applicant is required to consult with GANSW in the development of an Urban Design Development Report (UDDR) under Condition B53. Once this has been developed, in consultation with GANSW, it is to be reviewed by an independent reviewer who is an expert in urban design and landscaping under Condition B55.

Current Situation

The UDDR report was developed without GANSW input. It has now been reviewed by Matthew Pullinger, an architect and urban designer and member of the SDRP. It has not been reviewed additionally by an expert in landscape architecture.

The letter prepared by the independent reviewer (Matthew Pullinger) was sent to GANSW on 7 January 2020, by the design team (Arcadis). GANSW requested the drawings and report upon which this review letter was based, and these were sent to GANSW on 16 January 2020.

GANSW is concerned that the process to date undertaken by the applicant may not satisfy the requirements of the Conditions in regards to:

- GANSW consultation
- expertise of the independent reviewer.

Further, GANSW remains concerned that earlier advice and recommendations have not yet been incorporated into the proposal.

Next Steps

In order to satisfy the Conditions, GANSW recommends the following process:

1. Presentation by the design team. To include:
 - a) **Overview**
Overview of the Moorebank Intermodal project
Stages and programme
Vision, Objectives and Design Principles for all stages
 - b) **Moorebank Precinct West Stage 2**
Design Vision for MPW Stage 2
Supporting Design Objectives for the stage
Design Principles for the stage
How the proposal meets the points above
How the proposal responds to advice and recommendations raised by GANSW previously
2. GANSW and the applicant agree next steps in relation to the consultation following the presentation.
3. Resubmission as required.

Regards,

Emma Kirkman
Principal Design Review

**GOVERNMENT
ARCHITECT
NEW SOUTH WALES**

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Please note, I work Monday – Thursday only.



*Government Architect NSW acknowledges the Traditional Custodians of the land and pay respect to Elders past, present and future. We honour Australian Aboriginal and Torres Strait Islander peoples' unique cultural and spiritual relationships to place and their rich contribution to our society. To that end, all our work seeks to uphold the idea that **if we care for Country, it will care for us.***

[Find out more about our latest document *Aligning Movement And Place*](#)





REIDCAMPBELL

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ABN 28 317 605 875

NSW Registered Architect James Webb, 10187

NSW Registered Architect Mark David Roach, 10332

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