600 Victoria Road, Ryde

Proposed amended Concept Plan Stage 1

Certification of Accuracy of Block Montates

Report prepared for Frasers Property Australia Pty Ltd

by Dr. Richard Lamb

Date: 9 November, 2012

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9 November, 2012

Mr Warwick Dowler

Project Director

Frasers Property Australia Pty Ltd

Suite 11, Lumiere Commercial

Level 12, 101 Bathurst Street

Sydney NSW 2000

Dear Sir,

Response to request to prepare and certify accuracy of block model montages received from the Department of Planning and Infrastructure

Major Project MP05_0001

Proposed Buildings in Stage 1, Putney Hill, 600 Victoria Road, Ryde

1 The reason for this response

Richard Lamb and Associates (RLA) have been appointed by Frasers Property Australia Pty Ltd, the Applicant, to assist with a request from the Department of Planning and Infrastructure that block model montages be prepared to accurately show the potential massing, bulk and scale of proposed buildings in Stage 1 on the subject site.

Montages were requested to be prepared to demonstrate the effects of proposed building envelopes on views from the adjacent land on the south boundary of the Calvary Retirement Village (Calvary) and on a representative view into the site from Victoria Road.

RLA specialise in visual impacts assessment and the supervision and certification of the accuracy of photomontages.

2 Preparation of Block Model Montages

So as to provide a higher level of certainty with regard to the effects of the amended Concept Plan on views from the adjacent retirement village and the site frontage to Victoria Road, the Department of Planning and Infrastructure requested that three representative block model montages be prepared independently and verified for accuracy.

RLA in consultation with Frasers Propery Australia Pty Ltd and Cox Richardson appointed an independent architectural illustration firm, DigitalLine, to prepare block model montages representing the views from the three locations.

Dr Richard Lamb (RL) initially visited Calvary Retirement Village to determine the most appropriate locations from which photographs would be taken for preparation of the montages. Two locations had previously been used to prepare draft montages by Cox. These locations were in the car park area south east of the part of Calvary that is adjacent to the subject proposed buildings. RL considered the locations to be appropriate for representing the massing and scale of the buildings, however since impacts on privacy had been mentioned as a potential concern by Calvary, the locations from which photographs were to be taken for preparation of montages were re-located to land adjacent to residential units north west of the car park locations rather than the locations used by Cox for the draft montages. RL considered that they would better represent the buildings as seen from residential units and therefore better represent any potential for overlooking or impacts on privacy.

In one of the views from Calvary there was minimal visibility of fixed features on the subject site that would be likely to be present on the existing survey plans. Fixed features such as light poles, existing buildings etc. would customarily be used to establish accurate 3D references to the existing survey plan and 3D model of existing approved buildings, which in turn are referenced to the 3D model of the proposed new buildings.

In this case, RL advised Frasers that it would be necessary to have surveyors, who are also required to locate and survey the camera locations, to erect and survey a series of temporary 3D reference markers.

Surveyors from Denny Linker attended each of the camera locations with RL on 11 October, 2012 on which day the photographs for montage preparation were taken. At each place from which photographs were taken, the camera location and height of the lens above natural ground level was surveyed. At each of the locations, a minimum number of five 3D reference mark objects were identified by RL and the surveyors. The 3D reference mark objects were later surveyed accurately and added to the electronic survey files by Denny Linker along with the location and RLs of the camera. The DWG files of the surevey with the extra 3D reference markers were then provided to DigitalLine.

For the location in Calvary where there were insufficient 3D reference marks visible, RL nominated a series of locations at widely separated spacing on trees, on which the surveyors nailed temporary coloured surveying target tags. The visibility of the tags was determined by taking a test photograph and “zooming” in on the image to ensure that the reference marks would be visible in the photographs to be later sent to DigitalLine.

High definition photographic images were taken by RL using a Canon Eos 5D Mark 2 full-frame Digital Single Lens Reflex (DSLR) camera, using a tripod to standarise the eye height at the conventional 1.55m height and a self levelling head to ensure that the camera was horizontal in both horizontal and vertical planes. The images at 22.2 mega pixels provide a very high resolution image in which the temporary tags and other 3D reference mark features can be easily discerned.

Because of the distance and height of the buildings relative to the camera positions, it is necessary to use a wide angle lens. A standard 50mm focal length lens which is recommended for general landscape and more distance views would not be able to encompass enough of the vertical field of view for the buildings to be visible from Calvary. In the case of Victoria Road, a 50mm lens image would not encompass enough of either the horizontal or vertical field of view to be useful as an urban design tool. The building would in other words have been cut off on all sides. The lens was therefore standardised at 24mm focal length for all of the images for which montages were prepared. This is a common focal length used for architectural photography for the reasons set out above.

After the images were downloaded from the camera and the best images chosen to be send to DigitalLine, the images were imported into Corel Draw X5, a vector based drawing program, and the 3D reference markers were located in the image. Corel Draw was used to draw a circle around each of the 3D reference markers to identify it for DigitalLine, who in turn refer it to the DWG and plot configuration files of the survey that includes the extra reference marks, provided by Denny Linker. An example of one of these images is attached to this certification report.

DigitalLine was provided with a 3D computer model of the proposed amended Master Plan by Cox, in the form of a Sketchup model. The model included the locations of trees to be retained, such as the date palms to Victoria Road and a large blackbutt tree, as well as notional landscape for the entry road from Victoria Road. They were also provided with the landscape plan for vegetation in the area between the proposed buildings and Calvary. RL advised that only vegetation that is proposed to be planted inside the subject site should be shown in the montages and should be shown as a transparent layer so as not to totally obscure the block model behind it.

DigitalLine prepared an independent 3D block model of the proposed buildings. The model is of the basic form, shape, mass and height of the buildings. It does not contain features such as windows and doors, articulating elements, etc. It does contain everything that is necessary to establish the effect of the building on the composition of views from the specific viewing places required to be modelled.

A statement prepared by DigitalLine, describing the process of preparing the montages and how to establish the accuracy of location of the 3D model with respect to the photographic image, is attached this response. A certification as to the accuracy of the survey work by Denny Linker is also attached.

The 3D model was then merged by DigitalLine with the images provided by RL. Existing vegetation that is not affected by the development and vegetation that is proposed to be retained inside the site, such as vegetation in Calvary and between its boundary and the proposed new buildings, the date palms to Victoria Road and large blackbutt tree were retained as a layer in Photoshop for placement over the 3D model once it was accurately located.

Position 2 in Calvary Retirement Village

Example of information provided to DigitalLine to shown the locations of 3D reference points that were surveyed by Denny Linker and added to the site survey file.

Marks the reference point (Five permanent reference points, two light poles in the car park behind the trees, one light pole in the carpark in the foreground and two on the pergola along the side of the buiding in the background on the right)

The accuracy of the locations of the 3D model of the buildings with respect to the photographic images was checked in three ways:

1. The model was checked for alignment and height with respect to the the 3D reference markers which are visible in the images taken by RL and which were identified on the images send to DigitalLine.
2. The location of the camera was checked using the Camera Match utility in the 3D Studio Max program, which uses five or more match coordinates to back-check the location, the RL of the camera and the focal length of the lens used.
3. Each of the images has five or more 3D reference marks visible. In the case of the Victoria Road view, there are also other features that can be referenced in location from the survey plans. As a result, there are more than the necessary numbers of reference points for cross-checking accuracy in every image.
4. The physical location of the camera and its RL is also independently known. There is therefore a further cross-check that can be performed in the event that the predicted camera location does not match the location calculated by the Camera Match utility in 3D Studio Max. This proved unnecessary, because there was a close match.
5. No significant discrepancies were found between the known camera locations and those predicted by the computer software of the Camera Match utility.
6. This is the most accurate method of aligning a 3D model that is currently used in preparing photomontages of these kinds of developments, as it has three formal and other informal cross-checks.

I can therefore certify on the basis of my supervision of the work, my knowledge of the methods used and the cross-checking that has been carried out, that the montages are as accurate as is possible in the circumstances.

I hope this analysis will assist in providing the information requested by the Department of Planning and Infrastructure and in demonstrating and certifying the accuracy of the block montages.

If you have any questions or require any clarifications, please do not hesitate to call me,


Yours sincerely

Dr Richard Lamb
Richard Lamb & Associates

Method Statement by DigitalLine

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Richard Lamb and Associates
Suite 1/134 Military Road
Neutral Bay NSW 2089

Re: Project 600 Victoria Road, Ryde,

7/11/2012

Dear Dr Lamb,

The photomontages provided for the buildings proposed at the property 600 Victoria Road, Ryde, were prepared utilizing the latest technology and the following methodology:

1. Digital Line Pty Ltd was created in Sydney, NSW in November 1998. The company creates 3D computer generated graphics, including photomontages for the analysis of visual impacts of Development Applications..

2. Photomontages created by Digital Line have been successfully used by our clients in Randwick, Woollahra, Waverley and other NSW councils. In 2009, Digital Line was announced as a winner of the tender for the preferred supplier of DA photomontages for Randwick City Council.

3. For creating photomontages Digital Line Pty Ltd uses specialized software 3DStudio MAX 2012, created by Autodesk®. Software is licensed and registered with Autodesk®, S/N 391-03075907.

4. We use the “Camera Match utility” for creating the photomontages:
   - 4.1. The following input information was required for creating the photomontages:
     - High resolution digital photograph of the site, taken from each viewing place.
     - Architectural plans and elevations in DWG format.
     - Certified survey plans.
   - 4.2. The Camera Match utility uses a bitmap background photo and five or more special "CamPoint" objects to create or modify a camera match so that its position, orientation, and field-of-view matches that of the camera that originally created the photo.
   - 4.3. An accurate 3d model is created from the architectural drawings and this is then superimposed on the original photograph
   - 4.4. After determining the position of the camera match we check accuracy by comparing the photograph and 3d model with existing objects (such as height poles, buildings, trees, light rail poles and other objects, the locations and heights of which can be derived from survey data)
   - 4.5. For a detailed explanation of the processes involved, please call Digital Line Pty Ltd

5. The “Camera Match utility” currently is the most accurate system for creating images used in the preparation of photomontages.

Sincerely yours,

Leonid Medvedskiy
Director

Surveying Certification by Denny Linker & Co.

DENNY LINKER & CO.

SURVEYORS CONSULTING

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7 November 2012
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Attn: Warwick Dowler

Email: *warwick.dowler@fraserspropery.com.au*

Re: Victoria Road, Putney

Dear Warwick

I hereby certify that the information documented on our "Plan of Photography Control Points in Relation to Design Lot Layout at Putney Hill Project" dated 23 October 2012 is a true and accurate representation of the survey work undertaken by my site surveyor Simon Ho.

Simon Ho is a registered surveyor and has been employed by Denny Linker & Co for five years.

Yours sincerely

Tasy Moraitis

TASY MORAITIS
Director
Denny Linker & Co

Block Photomontages by DigitalLine

View from Calvary Retirement Village Site 1

Block Photomontages by DigitalLine

View from Calvary Retirment Village Site 2

Block Photomontages by DigitalLine

View from Victoria Road, Site 4

Summary Curriculum Vitae: Dr Richard Lamb

Summary

- Professional consultant specialising in visual and herittage impacts assessment and the principal of Richard Lamb and Associates (RLA)
- Senior lecturer in Architecture and Heritage Conservation in the Faculty of Architecture, Design and Planning at the University of Sydne, 1980-2007
- Director of Master of Heritage Conservation Program, University of Sydney, 1998-2004.
- 30 years experinence in teaching and research in environmental impact, heritage and visual impact assessment.
- Teaching and research expertise in interpretation of heritage items and places, cultural transformations of environments, conservation methods and practices.
- Teaching and research experience in visual perception and cognition, aesthetic assessment and landscape assessment,.
- Supervision of Master and PhD students postgraduate students in heritage conservation and environment/behaviour studies..
- Experience in academic empirical research into human aspects of the built environment, in particular aspects of aesthetic assessment, visual perception, landscape preference and environmental psychology.
- Richard Lamb and Associates provides:
    - professional services, expert advice and landscape and aesthetic assessments in many different contexts
    - Strategic planning studies to protect and enhance scenic quality and landscape heritage values
    - Scenic and aesthetic assessments in all contexts, from rural to urban, provide advice on view loss, view sharing and landscape heritage studies.
- Dr Lamb provides:
    - Expert advice, testimony and evidence to the Land and Environment Court of NSW and Planning and Environment Court of Queensland in various classes of litigation.
    - Specialisation in mattes of heritage landscapes, visual impacts, and urban design
    - Appearances in over 150 cases and submissions to several Commissions of Inquiry and the principal consultant for over 400 consultancies.
- Qualifications
    - Bachelor of Science - First Class Honours, University of New England
    - Doctor of Philosophy, University of New England in 1975
    - Accredited Administrator and Assessor, Myers Briggs Psychological Type Indicator
- International Journals for which Publications are Refereed
    - Landscape & Urban Planning
    - Journal of Architectural & Planning Research
    - Architectural Science Review
    - People and Physical Environment Research
    - Journal of Environmental Psychology
    - Australasian Journal of Environmental Management
    - Ecological Management & Restoration
    - Urban Design Review International