CITY OF VANCOUVER

COMMUNITY SERVICES GROUP
Planning
Current Planning

Refers Item No. 6
Public Hearing of February 27, 2012

MEMORANDUM

February 20, 2012

TO: Mayor Robertson and Councillors

COPY TO: P. Ballem, City Manager
S.A. Johnston, Deputy City Manager
D. McLellan, Deputy City Manager
M. Coulson, City Clerk
M. Welman, Director of Communications
W. Stewart, Assistant Director, Corporate Communications
F. Connell, Director of Legal Services
P. Judd, General Manager of Engineering Services
B. Prosken, Acting General Manager of Community Services
Y. McNeill, Rezoning Centre, Current Planning

FROM: K. Munro, Assistant Director of Planning, Current Planning Division

SUBJECT: **CD-1 Rezoning – 228-246 East Broadway and 180 Kingsway**

At the regular Council meeting on January 31, 2012, Council considered the policy report relating to the rezoning application for 228-246 East Broadway and 180 Kingsway. At that time, Council requested further information from staff, to be supplied prior to the public hearing, as follows:

> *"provide an information memo to explain the discrepancies between staff's rendering of the proposed building heights and a computer modeling prepared by a member of the public."*

Background

The staff report dated January 20, 2012 presents the staff review and analysis of a rezoning application. As noted in the Recommendation section of the report, the application is reflected in the "Plans received October 7, 2011" which include architectural plans and elevations. Although not part of that record set of plans, the staff report includes an artist rendering of the proposed development on page 7 of Appendix E. That rendering, which was provided to staff by the applicant, was included in the report to help the reader to visualize the nature of the proposal.

On January 31, 2012 Council received a correspondence from a citizen who constructed a digital model of the development proposal based on the applicant's submitted architectural plans. A three-dimensional perspective view was generated and overlaid on the applicant's rendering and some discrepancies were noted.

Discussion

Artist's renderings such as the one provided in this case, are generally produced from two distinct images produced from two media and by inserting one image into the other. The two media employed are photography and computer-generated perspective graphics. To capture the site and the surrounding physical context, a photograph is taken from some established vantage point. To illustrate the proposed building, the development is modeled within a three-dimensional computer program and one is then able to digitally generate a perspective view from any selected point in space. In theory, if the viewpoint where the photograph has been taken is exactly the same as the point in space where the computer view has been generated, then the computer image should be able to be "inserted" into the photograph to give a reasonably accurate overall depiction.

With this merging of media technique, at least two major factors can affect the accuracy of the resulting depiction:

1. Graphic distortions that are inherent in any media when a three-dimensional image is represented in a two-dimensional format, and;
2. The amount of time spent to secure and validate all of the three-dimensional data upon which the computer modeling is based (not only the building proposal but also the surrounding context).

Each of these factors that affect accuracy are discussed as follows:

Graphic distortion:

Some degree of distortion or misrepresentation is inevitable when any three-dimensional object is projected or drawn onto a two-dimensional surface. In fact, any media and any two-dimensional representation of an object in space is an abstraction of reality or an "impression" of it. A simple example of such distortion is an image of a scene looking down railway tracks; in three-dimensional reality the parallel tracks never converge, however, in a two-dimensional perspective depiction the lines of the tracks intersect. In photography, perspective distortion is affected by the relative distances at which the image is captured and viewed, the type of lens used (which determines the scope or extent of the scene viewed) and by the angle of view (where the camera is pointed) of the image. In a scene photographed with a wide-angle lens, for example, objects in the centre of the image appear as though they are farther away—relative to a "normal" view—while objects at the periphery can appear misshapen or warped.

As noted, the type of artist rendering that is the subject of this memo is produced by setting a computer-generated perspective of the proposed building within a photograph of the site and its surrounding context. Because of the many factors that can affect how a resulting depiction is distorted and given the technique of combining two different media, it is not surprising that some degree of graphic distortion will result. However, the best overall construct would result when both of the images being merged are produced using the exact same vantage point, the exact same field of view and the exact same angle of view.

Time spent on data input:

Three-dimensional computer modeling of a proposed building is relatively easy to do given that architectural plans are already typically in a digital medium. What is not typically in a digital form is all the spatial data relating to the heights, dimensions, locations and elevations of every surrounding building that is depicted in a context photograph. That complete data for the entire surrounding context is needed to produce computer-generated perspectives of the whole scene which can then be used as "overlays" on the photograph and to match the views. The level of accuracy of any generated depiction is entirely dependent on the degree of accuracy of all of the data. In other words, there is always a trade-off to be made

between the amount of time one can reasonably allocate to the task and the degree of resulting accuracy (noting that there will always be some level of graphic distortion as discussed above).

It is because of the significant time and resource implications of that task that the City does not have accurate or verified three-dimensional computer models of the City. Further, City staff do not customarily compile the data for the urban context for any rezoning applications. For all three-dimensional depictions that are submitted to the City by applicants, staff do not have the capacity to verify or assess them for accuracy.

Staff Analysis

In this particular case and at Council's direction, a significant amount of City staff time has been deployed to construct and verify a comprehensive computer model of this rezoning site as well as the surrounding context. Staff have used views generated from that model to overlay on the applicant's context photograph as a way to find a "best fit" so that the computer images align with the photographic image.

With respect to the artist's rendering provided by the applicant and the depiction provided to Council by the citizen, staff would suggest that both images display some degree of distortion. Staff have generated a depiction from the fully developed computer model that strives to minimize graphic distortions and aims to align the computer-generated image with that of the context photograph (Figure 1(b)). The staff depiction shows the proposed building as taller and marginally larger than that shown in the applicant's rendering (Figure 1(a)) yet shorter and marginally smaller than that depicted by the citizen's illustration (Figure 1(c)).

Given all of the variables that can affect distortion and recognizing the limitations of the technique used to produce these images, it is staff's conclusion that all three images—the applicant's, the citizen's and staff's—can be considered to provide reasonable graphic representations of the proposal within its context. Each of these three depictions was produced from differing sources of data and using differing assumptions about the variables that affect graphic distortion. All perspective depictions such as these should be viewed as graphic representations or interpretations of the proposal, for illustrative purposes only.

Conclusion

It is important to recognize that any three-dimensional graphic representation will inherently exhibit some degree of distortion. This does not render them incredible. These types of depictions have value in communicating an image or sense of a proposal for those who have difficulty in understanding detailed architectural plans. Staff feel that as long as these depictions are done with a reasonable degree of accuracy and that distortions are minimized, such representations should not be discarded given that they do hold value in helping people to visualize how a proposal will generally fit within its context.

Kent Munro
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Current Planning Division

KM/YM/ws

Figure #1 – Three Perspective Depictions of the Proposal in its Context

Page 7 Appendix E, Rezoning Report
228-246 East Broadway and 180 Kingsway

City of Vancouver staff generated virtual model
superimposed over original photo

Image Submitted by Citizen to Council
January 31, 2012