Land Use Compatibility Analysis for Potential Non-market University Rental Housing for Faculty Staff and Students in the Gage South "Area Under Review"

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campus + community planning
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1. Gage South & Environs Plan Background

A planning study is underway to guide future uses in the Gage South 'Area Under Review' and Environs. The existing site and study area boundaries are shown on the map provided in Attachment 1. An efficient, elegant, and affordable plan is needed to accommodate the various needs in the area and complement the work already underway for University Square and University Boulevard.

Through a planning process that has had strong, collaborative input from the AMS, GSS, UNA, TransLink, and the UEL, along with broader opportunities for general public input, a draft proposed plan has been developed to address the uses for the academic and institutional area around the sub-portion that is officially designated 'Area Under Review' in the Land Use Plan (see Attachment 2). This draft plan, and the compatibility of introducing potential university non-market rental housing for faculty, staff and students into the 'Area Under Review' in that particular academic layout context, will be the subject of Phase 2 public consultations.

At the conclusion of the process and requisite Board approvals, the Land Use Plan and the Campus Plan would be updated accordingly. A formal public hearing, and Ministerial adoption will be necessary to revise the designation of 'Area Under Review' in the Land Use Plan. The specific 'Area Under Review' boundaries are highlighted in yellow.

2. Purpose of Compatibility Analysis

The compatibility analysis is intended to assess whether university rental housing for faculty, staff and students, would be a compatible land use to introduce into the 'Area Under Review' portion of the Gage South & Environs study area, assuming the draft institutional and academic planned layout shown in Attachment 2. Assumptions regarding housing are:

- Rental only
- Small affordable unit size aimed at young one and two person households
- Approximately 28,800 gsm (310,000 gsf)
- 6 to 8 storeys (approximately 25 metre height at top of range)

3. Analysis Methodology

The methodology for the compatibility assessment was as follows:

1. Identification of the compatibility assessment zone and neighbouring uses;
2. Identification of potential compatibility issues;
3. Consideration of compatibility issues through:
    - Obtaining technical data and expert advice where needed on scope and scale of compatibility issues;
    - Analysis of remaining data/issues
    - Identification of whether issues might be resolved through physical mitigation measures (planning layout, detailed architectural design/ screening/ sound attenuation etc.),

governance, or operational mechanisms;

4. Conclusion regarding compatibility of the proposed use in light of each issue.

1. Identification of Compatibility Assessment Zone and Neighbouring Uses that Might Affect or be Affected by University Rental housing on the 'Area Under Review'

All surrounding existing and future draft plan land-uses within a 30 metre radius of the possible non-market rental housing for faculty, staff and students or the next closest building, were identified (see illustration in Attachment 2).

The 30 metre distance selected is consistent with the standard 30 metre notification distance required in UBC's other land use development policies and procedures (e.g. Land Use Plan amendments, Neighbourhood Plan amendment processes, and Development Permits).

The 30 metre distance is also 5.6 metres greater than the City of Vancouver policy that considers 24.4 meters (or 80 feet) as a guideline for reasonable separation distance for residential towers over 21.3 meters (or 70 feet) high. The City considers 24.4 metres sufficient to ensure privacy between buildings and it is about the same distance that separates typical single family dwellings from each other across roads.

Those neighbouring uses within 30 metres include the replacement diesel bus loop, the replacement aquatic centre, the existing Student Recreation Centre, Student Union Boulevard, and Wesbrook Mall. Additional neighbouring buildings/uses also considered within the review were: potential noise issues stemming from student concert activities on MacInnes Field (approximately 112 metre distant), UEL residences 60 to 65 metres to the east across Wesbrook Mall, and the Gage Student residence towers 58 metres to the north.

2. Identification of Compatibility Issues

Based on careful review of the land-uses in question, feedback during consultations to date, and experience with development of academic and residential development interfaces on campus, a list of potential issues to consider for compatibility was determined. This list included noise, views, privacy, lighting, traffic.

3. Consideration of Compatibility Issues

Campus & Community planning reviewed the issues above using in-house professional architectural, planning and engineering advice. Supplementary technical data, measurements, and expert advice reports were also obtained as follows (reports available on the Campus & Community Planning website):

- ***UBC Gage South & Environs Noise Impact Analysis*** by BKL Consultants Ltd.(Acoustical Engineers)
- ***Traffic Assessment of Wesbrook Mall:*** *Gage South & Environs Draft Plan* by Richard Drdul

- Architectural support and advice on residential design mitigation opportunities from VIA Architecture Ltd.

The compatibility analysis and considerations are outlined in the table: *Compatibility Assessment Results* (Attachment 3). A very brief summary of these findings is provided in the abbreviated table: Compatibility Assessment Synopsis (Attachment 4).

Highlights are as follows:
A major focus has been assessing noise issues and considering potential mitigation and management approaches. The noise study by BKL Consultants assessed current and projected noise levels, proposed built form location and massing, and likely noise levels that would be audible at the site of potential non-market rental housing for faculty, staff and students. Noise sources considered include mechanical noise from the Aquatic Centre and Student Recreation Centre, traffic in the diesel bus loop and on Wesbrook, and occasional concert noise and student activities on MacInnes Field. Results indicate that noise concerns in the proposed plan layout would not be an unmanageable concern. The new aquatic centre would block most noise generated on the new MacInnes Field location from reaching the north, west and east sides of the potential new housing site for faculty, staff and students. Architectural and other mitigation measures are recommended to effectively address the south façade which is exposed to higher noise levels.

Architectural measures that could be explored might include the configuration of potential rental housing such that walls and windows facing noise sources are better insulated, that fewer windows are oriented to strongest noise sources, (e.g. on the south flank), and that an interior courtyard on the site be provided as a quiet and light filled area protected from noise by the building form itself. Strategic location and screening of mechanical equipment on the new aquatic centre can also effectively anticipate and mitigate noise concerns. These measures are best dealt within the detailed project design phase.

Students are concerned that noise complaints from renters might unfairly constrain student activities in this social part of campus. A fair arbiter of such complaints, with sensitivity to student interests may help alleviate such concerns. In the second phase of consultation, a Noise Complaint Resolution Committee, comprising the VP Students, VP Finance Resources and Operations, and VP External, Legal and Community Relations, will be proposed as a mechanism for managing this potential conflict. Input will be sought on that proposal along with alternate ideas. In addition, rental clauses can be implemented to forewarn rental tenants of typical noise, and UBC has the ability to offer tenants alternate accommodation in rental units elsewhere on campus.

The traffic report indicates that traffic impacts to Wesbrook Mall will include a likely long-term reduction of bus traffic along a portion of Wesbrook Mall as a result of the proposed Gage Plan because approximately 750 fewer buses daily would travel between the bus loop entry and Student Union Boulevard. This would compensate for any increased traffic due to the introduction of university rental housing on the Area Under Review.

In addition to the above, bus traffic on Wesbrook Mall in general is expected to increase by 20% until 2021, then decrease again to blow current levels when rapid transit comes to campus.

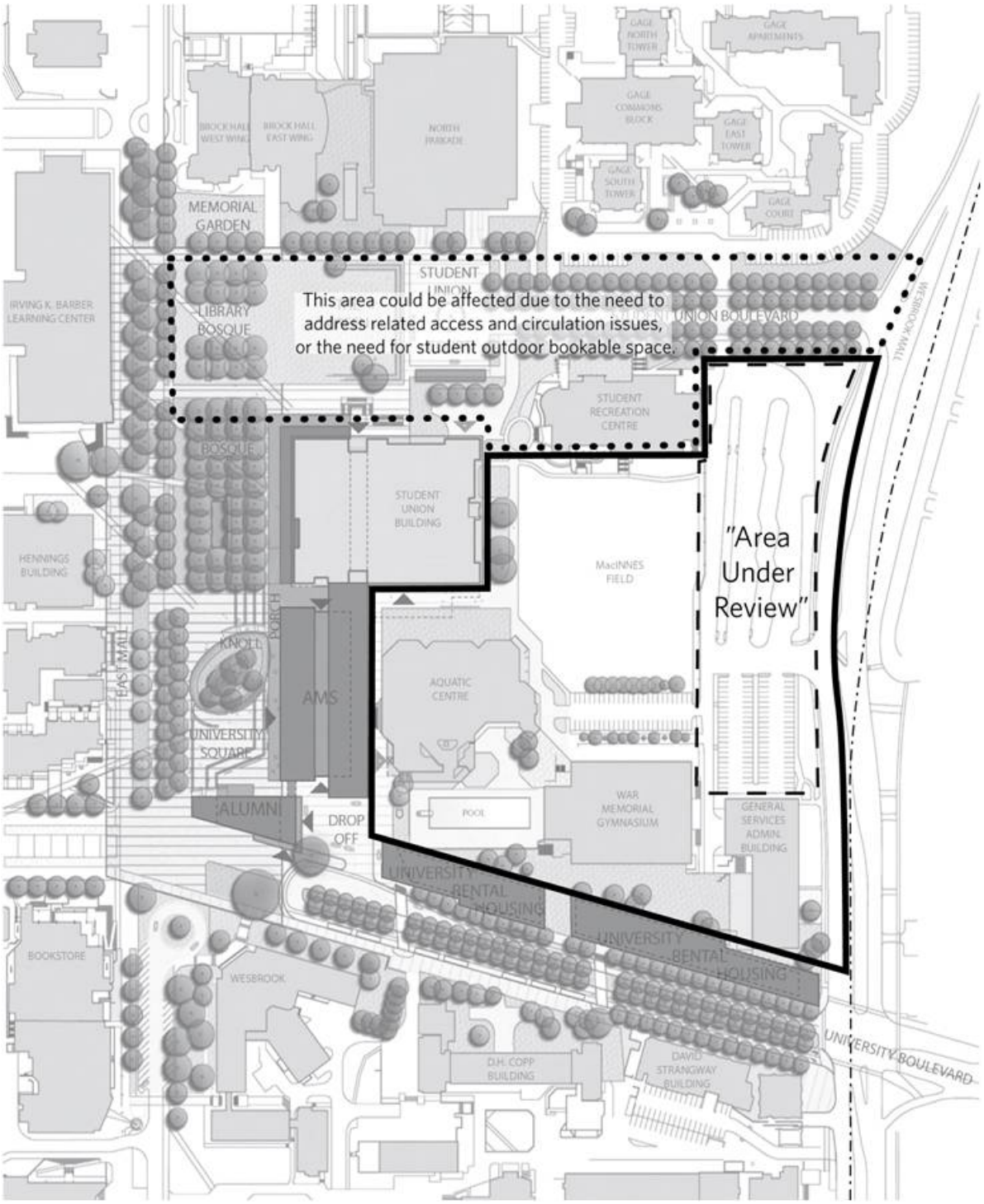
4. Conclusion on compatibility of the proposed land-use

Consulting reports and staff analysis on noise, traffic and architectural issues conclude that university rental housing for faculty staff and students would be a compatible land-use for the 'Area Under Review'. Reasonable recommended mitigation measures in the form of proactive design measures will further improve compatibility.

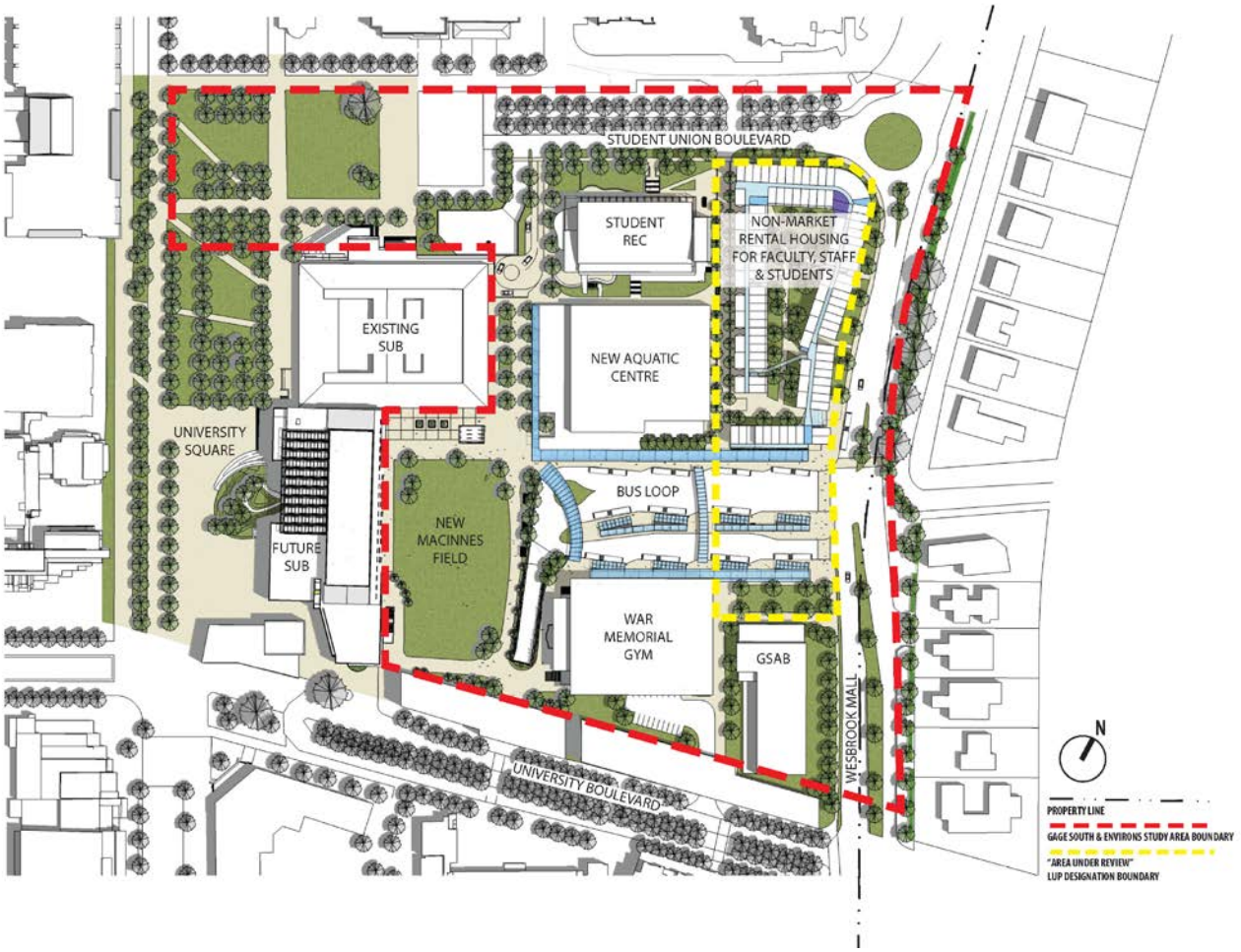
Attachments:

Attachment 1: Boundaries for Gage South "Area Under Review" & Environs
Attachment 2: Draft Plan for Gage South "Area Under Review" & Environs
Attachment 3: 30 metre Compatibility Assessment Radius Map
Attachment 4: Table 1 — Compatibility Assessment Detailed Results
Attachment 5: Table 2 — Compatibility Assessment Synopsis

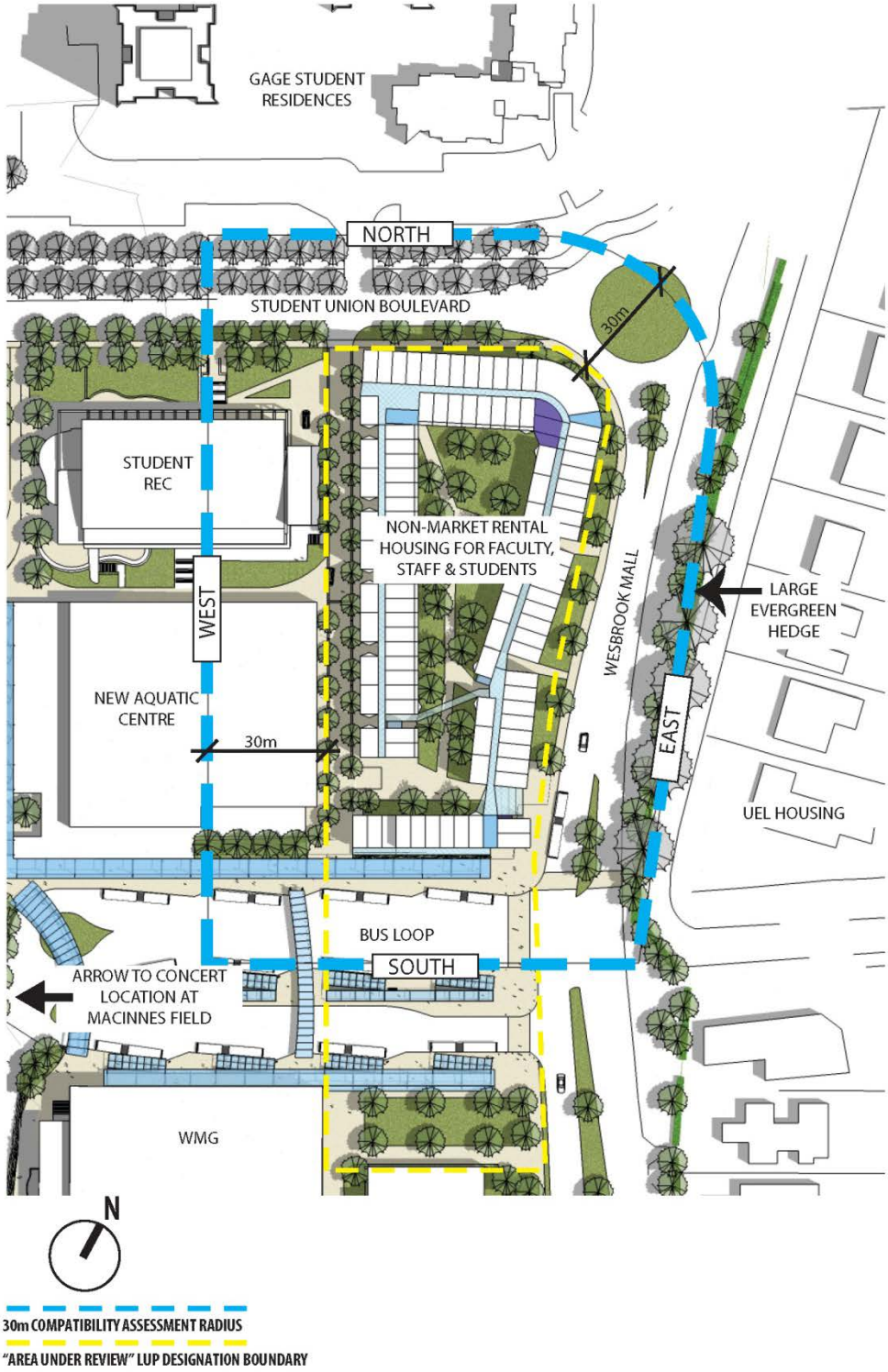
Study Area Boundaries



Draft Plan for Gage South "Area Under Review" & Environs



30 metre Compatibility Assessment Radius Map



Compatibility Assessment Detailed Results

COMPATIBILITY ANALYSIS for Potential University Rental Housing Land Use in Gage South 'Area Under Review in Context of Gage South Environs Proposed Plan Layout February 2012

	NORTH SIDE	SOUTH SIDE	EAST SIDE	WEST SIDE
Adjacent Land Uses within 30m distance (or closest Building)	**Pedestrians on sidewalk** - General daytime - SRC and AC visitors **Student Union Blvd** 3 to 8m to the curb (distance varies) **Gage Student Residences** 58m to north - Students - Summertime conference visitors	**Bus loop** 9.7m from building face to curb **Bus shelters** 6-7m tall **Main bus entry and exit to loop** **MacInnes Field** student activities 112m to south-west	**Tall Hedge** on east side Wesbrook Mall 30-40m distance (varies) **Wesbrook Boulevard** 7-10.5m to curb (varies) **UEL Neighbour Housing** 60-65m to west across road	**Aquatic Centre** (AC) 12m distance, approx 22m height **Student Rec Centre (SRC)** 11m distance; 14m height **Pedestrian Mews/ Service Access Lane** **Gage Student Residences** 58m to north - Students - Summertime conference visitors
Potential Issues Considered	**Noise** Vehicular traffic on road. Passersby voices on sidewalks. Late night voices of students or conference attendees walking to and from Gage residence and the Pit Pub along north sidewalk, **Privacy** Overlook from Gage student residences towers. Passersby looking into units from Student Union Blvd sidewalks.	**Noise** Buses coming and going. Passenger drop off noise. Voices during queuing and pick-up on the south sidewalk and median. 2 outdoor concerts/ year on MacInnes Field (until 9 pm), plus approx. 10 -12 other informal activities per year during the day. **Views/Privacy** Bus loop/shelter aesthetic as viewed from housing. Waiting/arriving passengers looking into residential units.	**Noise** Vehicular traffic on road. **Views/Privacy** Passersby view into units from Wesbrook Mall. The appearance and overlook potential of univ rental housing as seen from the UEL homes. **Lights** Street lights on Wesbrook **Traffic** Current weekdays 7,100 vehicles daily (4500 weekend days). Peak	**Noise** Participant noise around SRC and AC during swim meets, summer camps, student events. Infrequent noise from service deliveries, loading, maintenance activities at SRC (approx 7-10 /day), and new AC at north east corner (approx 2-5/day) AC & SRC rooftop mechanical equipment. Day time or late night voices of students or conference attendees

	Lights Street lights.	**Lights** Night lighting at bus loop. Lighting of events on field **Traffic** 1100 buses daily at temporary bus loop 6:15 am to 1 am. (11 drop-off / pick-up, 23 layover). Bus traffic will shift to the new permanent bus loop location along Wesbrook Mall. The new bus loop will have 4 drop-off, 8 pick-up and 17 layover bus bays, plus 1 extra drop off bay on Wesbrook Mall. Capacity based on TransLink 2030projections including rapid transit. Diesel bus traffic volumes projected to increase gradually to approx. 1300 buses daily by 2021. But this could drop back again to less than today (as few as 800 buses per day) when rapid Transit comes to campus. Intersection improvements (like a traffic light) likely required to support left turning on Wesbrook at loop entry, to be confirmed at the detailed design stage:	weekday trips: 850 from 8:30-9:30 am; 670 from noon to 1 pm; 830 from 4:30-5:30 pm. Proposed changes to Wesbrook Mall include: – new roundabout at Student Union Boulevard – road narrowing from 4 to 2 lanes – likely intersection improvements to support left turning buses at loop	walking to and from Gage residence and the bus loop, along sidewalks adjacent to the rental housing, **Views/Privacy** Aesthetic of AC and SRC building from living units across a 12m Mews. Privacy concern along Mews if passersby look into units. **Lights** Emergency lighting around the AC and SRC, and interior lights at night. Lighting intensity and direction in pedestrian/ service Mews east side of AC and SRC.
Analysis Result	**COMPATIBLE** (See Analysis Discussion section reasoning)	**COMPATIBLE** (See Analysis Discussion section for reasoning)	**COMPATIBLE** (See Analysis Discussion section for reasoning)	**COMPATIBLE** (See Analysis Discussion section for reasoning)

Analysis Discussion *

		North	South	East	West
	Noise Impact Analysis specific to each direction	The Gage South & Environs Noise Impact Study (BKL 2012) took field measurements of pedestrian voices and surrounding transportation noise from microphones on the Existing SUB building and the Student Recreation Centre over a 24 hour period on the busiest pub night of the week (Wednesday). These measured noise emissions levels were then mapped to show the resulting decibels that would be received at the Area Under Review receiver site. A level of 75 decibels (dbA) or more would be considered incompatible for this type of noise. Levels of 65-75 dbA would be compatible with sound insulation. The mapping shows that no emissions of an incompatible level could be detected at the Area Under Review receiver site. Levels requiring some sound insulation could be detected on the NE corner near the Student Union Boulevard and Wesbrook Mall intersection Architectural mitigation measures and insulation	The Gage South & Environs Noise Impact Study (BKL 2012) took field measurements of current diesel bus loop traffic and commuter voices, and other background noises over a 24 hour period. These measured bus loop and commuter voice noise emissions levels were then mapped to show the resulting decibels that would be received at the Area Under Review receiver site. A level of 75 decibels or more would be considered incompatible for this type of noise. Levels of 65-75 would be compatible with sound insulation. The mapping shows that no bus loop sound emissions of an incompatible level could be detected at the Area Under Review receiver site. Levels requiring some sound insulation could be detected on the south façade. Bus volume and related noise is expected to increase in the medium term (to 1300 by year 2021) and then decrease (to 800) once rapid transit comes to campus. The Gage South & Environs	The Gage South & Environs Noise Impact Study (BKL 2012) estimated noise emissions from Wesbrook Mall using UBC traffic volume data, and City of Vancouver traffic volume pattern data over 24 hours. These measured emissions levels on Wesbrook Mall were mapped to show the resulting decibels that would be received at the Area Under Review receiver site. A level of 75 decibels or more would be considered incompatible. The mapping shows that no emissions of an incompatible level would be detected at the Area Under Review receiver site. Architectural measures are recommended on the east façade of the building due to proximity to Wesbrook Mall and to effectively mitigate any traffic noise.	The Gage South & Environs Noise Impact Study (BKL 2012) did not specifically measure mechanical equipment noise emissions on the SRC and could not predict emissions for the aquatic centre give that design is not sufficiently advanced. The study recommends that rooftop mechanical equipment can effectively be addressed at the detailed design stage through locating equipment on the far side of rooftops and /or the use of other shielding, screening or architectural techniques.

		would be recommended on the north east corner façade to address daily traffic noise on this façade.	Noise Impact Study (BKL 2012) also estimated MacInnes Field concert noise based on an REM (rock band) concert at the Deer Lake Park outdoor venue in Burnaby in 2008. This may be an overestimate but can be useful as a worst-case scenario. Direct concert measurements at MacInnes Field were not possible in the time frame of this study given no concerts have occurred in recent months. The estimated peak concert noise emissions levels were then mapped to show the resulting decibels that would reach the Area Under Review receiver site. The study recommended that a level of 65 dbA over a 15 minute period would be the preferred maximum noise level at a university rental residential receiver site for such concerts. The mapping illustrates that detectable concert noise for all of the possible future rental housing site except the south façade, would be far lower than the recommended 65 decibels due to the blocking effect of the new aquatic centre and the south face of the rental housing itself. The study advises that		

			university rental housing should not be considered an incompatible land use in context of regular bus loop noise levels or assumed concert noise levels and frequency, provided mitigation recommendations are followed: • Architectural mitigation measures • Advance notice to residents of special events • Review of design to CMHC Road and Rail Noise: Effects on Housing criteria.		
	Noise – additional measures	Other noise commentary applicable to all facades is as follows: o The use of noise warning clauses in rental agreements, advising prospective tenants that this is an active use area and typically includes associated noises. o Development of a fair process to handle noise complaints. o Designing units as small and affordable and appeal to 1 + 2 person households and a younger demographic, naturally more tolerant of noises associated with an animated campus core. o Strategic use of architectural massing and design to o block sound, provide sound sheltered courtyards o Double and triple glazing on windows o Orienting main living spaces and windows away from noise o Placing common areas, laundry facilities and storage against noisier facades o Increase insulation for exterior walls			
	Traffic Impacts			The elimination of 181 parking stalls interior to the Gage South will reduce vehicle trips on that stretch by 500 to 700 per day. 750 fewer buses will travel along Wesbrook between the new bus loop entry/exit and Student Union Boulevard because they are turning in further west along Wesbrook.	

	Views/ Privacy	Architectural design can address privacy concerns through orientation of windows, shades, and balcony or patio screens. Regular 'eyes on street' from rental units can help safety of street.	Attractive bus loop and shelter design would mitigate aesthetic concerns. Architectural design can also address privacy concerns and undesirable view of the bus loop through orientation of windows, shades, and balcony or patio screens. However some views of the area may be a good idea. Regular 'eyes on the street' from rental units can help safety at bus loop.	Housing would likely be perceived as a more attractive edge along Wesbrook than the elongated side view of bus-loop. Overlook concerns may be mitigated through generous distance of separation. No unit s will be closer than 60m to existing UEL housing. Retained mature hedge will enhance privacy. Architectural design can address privacy concerns through orientation of windows, shades, and balcony or patio screens. Regular 'eyes on the street' from rental units can help safety at Wesbrook Mall.	Sensitive architectural design of aquatic centre east wall will be important, as will careful orientation of windows onto the Mews. Windows should be designed, angled and shaded such that tenants can see out but passersby will not look in. Rental units' eyes on the Mews are an important natural safety feature.
	Lights	At project design stage, a light plan consistent with VCP intensity, character, and safety objectives should be developed. Street trees, appropriate light intensity, and shielding hardware on lamps, could be used to prevent any glare into unit windows.	Massing would help shield much of bus loop lighting from all but south face of project. At project design stage, a light plan consistent with VCP intensity, character, and safety objectives should be developed. Street trees, appropriate light intensity, and shielding hardware on lamps, could be used to prevent any glare into university rental unit windows.	At project design stage, a light plan consistent with VCP intensity, character, and safety objectives should be developed. Street trees, appropriate light intensity, and shielding lamp hardware could be used to prevent glare into unit windows.	At project design stage, a light plan consistent with VCP intensity, character, and safety objectives should be developed. Appropriate scale, intensity, spacing and can balance safety, character, and privacy concerns along the pedestrian mews, and residential edge.

Compatibility Assessment Synopsis

	North	South	East	West
Adjacent Land Uses within 30 metres (or closest structure)	• Student Union Boulevard • Gage Towers (58m)	• Bus Loop • Concerts on MacInnes Field (112m)	• Wesbrook Mall • Hedge east side Wesbrook • UEL homes (60-65m)	• Student Rec Centre (SRC) • New Aquatic Centre(AC)
Possible compatibility issues reviewed:				
Noise	• Traffic on Student Union Blvd. • Pedestrian voices	• Buses coming & going 6:15 to 1:00 a.m. daily • Queuing passenger voices	• Traffic on Wesbrook	• Participants at SRC & AC events • Rooftop mechanical noise • Service deliveries in east Mews
Privacy and Views	• Overlook from towers	• Bus loop aesthetic • Passersby looking in	• Passersby looking in	• View of AC/SRC from units • Passersby looking in
Lights	• Street lights	• Bus loop lighting	• Street lights	• Emergency lighting around SRC & AC • Lighting along service/ pedestrian Mews
Traffic	• Volume/capacity	• Bus loop volume	• Changes/ disruptions on Wesbrook due to volume.	• Impacts to existing Service access to SRC
Assessment	**Compatible** With use of architectural mitigation for sound and ground floor privacy on north facade	**Compatible** With use of architectural mitigation for sound and privacy on full height of south facade	**Compatible** With use of architectural mitigation for sound, privacy and overlook on east facade, and likely new bus light on Wesbrook.	**Compatible** With use of sound screening on AC and SRC rooftops around mechanical equipment, and ground floor architectural mitigation along east side public pedestrian and service Mews for sound and privacy.