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Hesperia Development Corp.
3104 – 37th Avenue
Vernon, BC V1T 2Y2

Email: khclwahl@telus.net

Attention: Keith Wahlstrom, P.Eng

Dear Keith,

**Subject: Parking Review for Hesperia Lands Development
Vernon, B.C.**

We have now updated our parking review for your client's proposed residential development, located on Okanagan Road in Vernon, B.C. The purpose of this review was to establish an appropriate parking ratio for the development recognizing that the City of Vernon Zoning Bylaw may result in an excess of parking. Following is a summary of the results from our review.

1.0 BACKGROUND

1.1 PROPOSED DEVELOPMENT

Hesperia Development Corporation is proposing to develop a multi family residential development towards the west of the City of Vernon. A summary of the development, which includes a mix of townhouse, and low-rise apartments, and both market and rental housing, is shown in Table 1.

TABLE 1: PROPOSED DEVELOPMENT	
Header	Units
Townhouse	494 (102) ¹
Low rise apartment	556 (123) ¹
Total	1,050 (225) ¹

Note: (1) - Number of flex units

When built-out, the development will contain 1050 units, with approximately 47% (494 units) being townhouses and the balance in apartment type buildings. The distribution of units according to the general floor size are shown in Table 2. This allocation was required as a basis for considering alternative approaches to estimating parking requirements.

TABLE 2: SIZE BASED DEVELOPMENT			
Unit	Number of Units	Size (ft ²)	Percent
Small	-	< 630	0%
Medium	397	630-1114	38%
Large	653	>1114	62%
Total	1050		100%

The development will also contain a small amount of community amenity space, with services such as a daycare, mail service, small retail outlet and office space. The specific details of this space have not been defined at this time. For the purpose of this review, the parking requirements for this amenity space were not included in the analysis as these services will primarily serve the residents of this community.

1.2 PROPOSED PARKING SUPPLY

Overall a parking ratio of 1.5 spaces per unit has been proposed for the site. This translates to 1575 parking stalls. Of these, 1,365 will be for residents (1.3 spaces per unit) and 210 for visitors (0.2 per unit).

Given topographic constraints, it is not feasible to provide all of the resident parking spaces in such a way that each stall is directly accessible from the residents building. Approximately 1,260 parking stalls will be directly accessible to the residential units (1.2 spaces per unit). The remaining resident stalls (105 spaces) referred to as ‘remote’ stalls, will be located a short walk from each building. This will allow some flexibility in assigning parking, and reduce the possibility of overbuilding structured parking. A discussion of this arrangement is covered in Section 4.0 of the report.

With all owners having a minimum of one vehicle, assigning 1.3 stalls per resident would allow 30% of the owners to have a second car. If 5% of residents owned no vehicle, this would allow 35% of units to have a second vehicle.

It is understood that up to 30% of the parking stalls will be designated as ‘small car’ stalls. The potential for some of these to be defined as ‘micro’ stalls, to accommodate sub compact cars such as the ‘Smart Car’ is discussed in section 4.0.

2.0 CITY OF VERNON BYLAW REQUIREMENTS

2.1 BYLAW REQUIREMENT

Under the City of Vernon’s Zoning Bylaw, the parking requirements for multi-family developments are based on the number of bedrooms provided. This ranges from 1.0 space per unit for Bachelor units through to 2.0 spaces per unit for units with three or more bedrooms. An additional 1.0 space per seven units (0.14 stalls per unit) is required for visitor parking (150 stalls).

As shown in Table 3, applying the City’s Bylaw requirements to the development as planned gives an overall requirement of 1,893 spaces for the 1,050 units (1.80 spaces per unit). The 1,575 parking spaces proposed, based on 1.5 spaces per unit is 318 spaces (17%) below the requirement as per the Bylaw. A discussion of the basis for reducing the requirements is covered in Section 4.0.

TABLE 3: CITY OF VERNON PARKING REQUIREMENTS			
Units	Bylaw	Units	Spaces
Bachelor	1.0 per unit	-	-
1 bedroom	1.25 per unit	130	163
2 bedroom	1.50 per unit	519	779
3 or more bedrooms	2.00 per unit	401	802
Resident Parking	1.66 per unit	1050	1,743
Visitor	One space per 7 units		150
Total	1.80 per unit	1050	1893
Proposed	1.50 per unit		1575

3.0 FLEXIBLE UNIT PARKING

3.1 DEFINITION OF FLEXIBLE UNITS

Approximately 20% of the units (225 units) will be designated as “flex apartment” units. These are three bedroom units, that will be designed such that a single unit can be converted into two separate units (a one-bedroom and two-bedroom unit). This arrangement will allow for the changing space requirements for families. When an owner initially takes occupancy, they may choose to rent the second unit out. As a family grows up, it may require use of all of three bedrooms. As children move out, the unit could again be split, or be used to house elderly relatives.

In calculating the parking requirements under the Bylaw, these “flex” units were treated as a three-bedroom unit. The parking requirements for the flex units with each unit separated into two independent units is shown in Table 4.

If all 225 flex units are treated as three bedroom units, this gives a parking requirement of 450 parking spaces for residents and 32 spaces for visitors (482 spaces). If all of these units were split into one and two-bedroom units, the requirement increases to 683 spaces, an increase of 200 spaces (2043 total). With 50% of the units split into flex units, which is more realistic, as not all owners will wish to split these units, 582 spaces would be required (534 resident stalls and 48 visitors). Under the latter arrangement, the overall parking requirement for the development would increase by 100 spaces to 1993.

TABLE 4: PARKING REQUIREMENT FOR FLEX UNITS (225 UNITS)				
Type	All units treated as 3 bedroom units		Split between 2 bedroom and 1 bedroom	
	Units	Spaces	Units	Spaces
1 bedroom	--	--	225	281
2 bedroom	--	--	225	338
3 bedroom	225	450	--	--
Total	225	450	450	619
Visitor	225	32	450	64
Total	225	482	450	683

4.0 BASIS FOR PARKING REDUCTION

4.1 ALTERNATIVE BASIS FOR CALCULATION

The City’s Bylaw requires a minimum of 1.0 space per unit and a maximum of 2.0 spaces per unit for units with three or more bedrooms. As some of the three bedroom units are actually smaller in size than the two bedroom units, this could result in a large two bedroom unit requiring less resident parking than a smaller three bedroom unit. To reflect this, the parking requirements were also calculated a ‘sliding scale’, whereby the requirement increases directly in proportion to the floor area of the unit as opposed to the number of bedrooms. While this approach acknowledges that parking demand increases in proportion to the size of a unit, by basing the requirement on floor area, it also recognizes that not all units with the same number of bedrooms will generate the same parking requirement. This approach also indirectly captures the relationship between income and car ownership – the larger the unit, the higher the price and therefore the higher likelihood of residents owning multiple vehicles.

Based on the current site plan, the average unit size for the 1,050 units is estimated at 107 m² (1,150 ft²). To be consistent with the City’s bylaw, the sliding scale approach assumed that a minimum of 1.0 and a maximum of 2.0 spaces per unit be applied. Based on a review of other municipalities where a sliding scale approach is adopted (primarily City of Vancouver), a ratio of 0.5 spaces per unit plus 1.0 spaces per 100 m² floor area was used with a maximum of 2.0 spaces. Units greater than 50 m² would be required to provide a minimum of one space. The maximum threshold for the two spaces would be 150 m².

Units were designated as either ‘medium’ or ‘large’ size, with the threshold being 90 m². Based on the current site plan, 397 of the 1,050 units are expected to be below 90 m², and 653 above 90 m².

TABLE 4: PARKING REQUIREMENT BASED ON AREA				
Unit	Number of Units	Average Size (m ²)	Rate	Parking
Small	0	<	0	--
Medium	397	70.7	1.21/unit	479
Large	653	128.6	1.79/unit	1,169
Total Residential	1,050	107	1.56/unit	1,648
Visitor			0.14/unit	150
Total			1.71/unit	1,798

Using this ratio results in a lower overall parking requirement compared with the Bylaw – resident parking would require 1,645 parking spaces (1.56 per unit). With 150 spaces assigned to visitor stalls, (as per the current Bylaw) the total requirement is reduced to 1,795 spaces. This is 100 spaces less compared with 1,893 spaces under the Bylaw.

Using this basis to estimate overall parking requirements indirectly acknowledges that vehicle ownership, and thus parking demand, is closely tied to income. However, the resulting parking requirements would be 220 spaces higher than is proposed.

4.2 URBAN AREA PARKING REQUIREMENTS

A second alternative estimate was used by considering the rates recently applied to the City of Vancouver’s South East False Creek development. This site is on the edge of downtown Vancouver and is in close walking distance of a number of community and commercial services. Parking rates for this community comprise a **minimum and maximum ratio**, based on the unit size. The minimum resident parking ranges from 0.5 per unit for units of 50 m² to 1.0 per unit for units 90 m² or larger. The maximum permitted parking ranges from 1.0 per unit for the same 50 m² unit to 2.0 for units large than 190 m².

Applying these ratios to the average sized unit for the Hesperia development yields an overall minimum resident parking requirement of 1.0 space per unit and a maximum of 1.43 spaces per unit. Visitor parking, ranges from a minimum of 0.1 to a maximum of 0.2 spaces per unit, and is additional to this.

The results of applying these progressive parking ratios is shown in Table 5. This indicates that at 1.5 spaces per unit, the proposed parking ratio for the Hesperia site is below the maximum that would be permitted in the SEFC development, but well over the minimum required for that community.

TABLE 5: PARKING REQUIREMENTS BASED ON SEFC GREEN BUILDING								
	Size	<50	50-90	90-190	>190			
	Units	0	397	653	0			
	Aver	0	71 m	129 m	0	Resident	Visitor	Total
Minimum	0.5 per unit up to 50 m ² to max 1.0 per unit over (90 m)	0.5/unit	0.75/unit	1.0/unit	1.0/unit	950	0.1/unit (105)	1055
Maximum	1.0 per unit up to 50 m ² to max of 2.0 per unit over 190 m ²	1.0/unit	1.14/unit	1.55/unit	2.0/unit	1500	0.2/unit (210)	1710

A comparison of the various bases for calculating requirements using the range of approaches described above is shown in Table 6.

TABLE 6: COMPARISON OF RESULTS			
Unit	Residential	Visitor	Total
Proposed	1365	210	1575
Bylaw Non-flex	1743	150	1893
Bylaw Flex 100%	1911	182	2093
Sliding Scale	1645	150	1795
City of Van Min	950	105	1055
City of Van Max	1500	210	1710

Depending on the approach, the required parking ranges from a low of 1055 (City of Vancouver minimum) to a high of 2093 spaces (City of Vernon with 100% flex units). The proposed supply (1575 spaces) is midway in this range.

4.3 OTHER OKANAGAN MUNICIPALITIES

Parking requirements for other municipalities in the Okanagan and interior BC were also reviewed. This covered Kelowna, Penticton and Kamloops. In general the requirements under the Zoning Bylaws in these communities are similar to this for Vernon. The primary difference is the treatment of visitor parking, i.e. whether this is included in the overall per unit rates, or additional. In both Kelowna and Penticton, the parking requirements for multi-family developments on a per unit basis are similar to Vernon; however, in both cases, the rates are inclusive of visitor parking. Rates of one visitor space per seven units are used in both of these communities.

If the visitor parking were to be included in the per unit rate for the Hesperia site, the overall requirement as per the Bylaw would be reduced by 150 spaces. Discounting the flex unit parking requirements, this would reduce the overall requirement to 1743 spaces (1.66 spaces per unit). This compares with 1550 spaces that would be provided using the 1.5 spaces per unit rate as proposed.

4.4 VISITOR PARKING

The City of Vernon parking bylaw requires one visitor stall per every seven units. This translates to approximately 0.14 stalls per unit. As noted above, while a similar rate is adopted in other Okanagan municipalities, the visitor requirement is not consistently identified as additional to the resident requirement.

Where visitor parking is treated additional to resident parking, parking ratios of between 0.1 and 0.2 spaces per unit are applied. The rate of 0.14 spaces per unit proposed for the Hesperia development is therefore within the range that is applied elsewhere. Assuming a ratio of 0.10 visitor spaces per unit would reduce the visitor parking requirement to 105 stalls, 45 stalls fewer than required under the Bylaw.

Many of the roadways in the Hesperia site will be designed to accommodate on-street parking. While on-street parking is not generally acknowledged as part of a development's overall parking supply, given the location of the Hesperia site, it is unlikely that the available on-street parking would be used by anyone other than residents and/or visitors to this development. As such, the on-street parking would be used almost exclusively by the development. Acknowledging this, this would allow the off-street requirement to be reduced. The specific reduction in off-street parking that could be attributed to available on-street parking will depend on the ultimate design of the site, in particular the location and density of any driveways serving off-street parking. If 45 on-street parking spaces area available to visitors, this would allow the visitor parking ratio to be reduced to 0.10 spaces per unit.

4.5 CAR SHARE PROGRAM

To discourage car ownership, and reduce off-street parking requirements, it is recommended that a formal car-share program is implemented for the site. Under this program a small fleet of community vehicles would be available to residents for a nominal charge. These would be booked in a similar fashion to a rental car, with the exception that the vehicles would be available directly on-site. Residents would reserve the car for a specific period and per use fee.

The car-share program is intended primarily to discourage second vehicle ownership. Residents who have only occasional use for a second vehicle could avoid the costs of ownership by accessing the car share on an as-and-when required basis. This would reduce the demand for parking. For larger developments, such as the Hesperia site, having multiple car-share vehicles will allow a range of vehicle types to be included in the car share fleet, which will further encourage reductions in car ownership.

The concept of including car-share vehicles dedicated to specific developments is a relatively new phenomenon. Determining the ratio of car share vehicles per unit varies between municipalities. In the SEFC development, a ratio of one car-share vehicle per 100 units has been adopted. As the car-share concept has been more actively embraced in the Vancouver area, this is considered to be an unrealistic ratio to be applied for the Hesperia site. A ratio of one car share per 150 units is considered to be a more reasonable threshold for the Hesperia development. At this level, the 1050 units in this development would support up to seven car share vehicles.

In locations where Car Share vehicles have been accepted as a means of supporting parking relaxations, a reduction of four regular parking stalls per car share vehicle is typically applied, i.e. one car share vehicle is considered to be equivalent to five standard spaces. By providing seven car share vehicles, this would reduce the regular parking requirement by 28 spaces.

To promote use of the car-share vehicles, it would be preferable if these vehicles are all parked in a publicly accessible area. This would allow access to car share members not living in the Hesperia development. Management of the car share program could take place via a third part, or through the strata.

4.6 TRANSIT SERVICE

A second rationale for reducing parking requirements for multi-family developments relates to transit access. In more urbanized areas which are in close walking distance to frequent transit service (bus service of 10 to 15 minute headway in weekday peak hours), parking demands can be reduced as residents who might otherwise purchase a second vehicle are able to complete many of their travel requirements using the available transit. Typically reductions of parking requirements by 10 to 15% in areas of high transit service have been supported by some municipalities.

To be effective in reducing vehicle ownership in this site, would require frequent all day transit service with service operating through the development. While there will be some transit access to the proposed development, it is unlikely that the level of service will be sufficient to support a significant reduction in parking requirements, particularly in the initial phases of the development. It is therefore not considered realistic to expect transit usage by residents of the Hesperia development to be sufficient to warrant reducing parking requirements by any more than two to three percent (30 spaces).

The availability of transit service could help reduce parking demands for the secondary units of flex units, particularly if these units are rented out to local students. With the car-share program in place, the need for students to have access to a vehicle would also be reduced. As such, the availability of transit near the site could result in a lower parking requirement for the flex units than implied by the Bylaw.

4.7 REMOTE PARKING

As noted, not all of the available on-site parking spaces will be directly accessible from individual buildings. It is proposed that approximately 7% of the resident parking (0.1 spaces per unit) is

provided a short walk from each building. These remote stalls would be assigned to a particular owner, and not be available to visitors. They could be used in part to accommodate the varying demand from owners of the flex units.

While the concept of remote parking for residential uses is not widely applied for residential developments, many larger multi-family/multi-building developments where parking is provided in large underground parking structures, indirectly include this feature. The same underground parking facility may serve more than one building. Furthermore, multi-level parking structures require additional access time from a residents unit to the parkade, often involving switching elevators. For many residents, the time to access to underground parking area and travel to their unit by elevator in a large multi-unit development results in a travel time that is similar to that which would be experienced when walking from the remote parking area to their unit in the Hesperia development. Provided that the remote parking is located within a short distance of the owners unit (up to 150 metres), this is not considered to be an unreasonable approach to accommodating on-site parking.

Few cities formally acknowledge the use of remote parking as a means of addressing shortfalls in on-site parking. The City of Vancouver Parking Bylaw does specifically include a provision to allow off-site parking by defining the maximum distance that is considered acceptable for remote parking. Under the Vancouver Bylaw, a maximum distance of 100 metres from a building or development they are intended to serve are acceptable.

While the specific location for the remote parking areas has not been designated on the site plans for the Hesperia development, it is understood that it should not be a problem achieving this 100 metre maximum distance on this site.

Although the use of remote parking is not directly intended to be used as a means of discouraging car ownership, this arrangement may indirectly contribute to a reduced car ownership on site by introducing some inconvenience for those units that are not assigned two parking spaces within their own building. This will therefore support the lower parking ratio as proposed relative to the City Bylaw.

Providing remote parking would also help in unbundling parking spaces from units – purchasers would automatically be assigned one stall with each unit, but would have the option of purchasing a second stall. The cost of the second stall could be discounted if it is remote from their building as opposed to being integrated in the building.

4.8 MICRO STALL PARKING

Many municipalities permit up to 30% of on-site parking spaces to be assigned for small cars. These stalls are typically narrower and shorter than a regular stall. The primary benefit of providing small car stalls is to reduce the manoeuvring aisle between two rows of parking. As the proposed development is residential, there is more ability to control the assignment of small car stalls such that there is a low likelihood of small car stalls being abused through use by larger vehicles.

Given that the width of small car stalls is generally in the order of 0.2 metres per stall smaller than a standard stall converting regular stalls to small car stalls does not generally result in a significant increase in the overall parking supply. Although maximizing the number of small car stalls will partially help in offsetting the reduced parking requirements relative to the City Bylaw requirements, and should be encouraged, there is limited potential to increase the overall parking supply on account of this. The shorter length required for small car stalls maybe more appropriate for the remote car stalls.

In recent years there has been a growing trend to smaller vehicles such as the 'smart' car. These vehicles require considerably less room to park than a standard vehicle. While many jurisdictions acknowledge small car parking stalls, few have developed specific requirements and guidelines for micro cars. It is understood that the City of Duncan has recently introduced 90 degree smart car parking on some local streets within downtown. As with small car stalls, the primary benefit of designating stalls as micro car stalls is to reduce the length of each stall. Based on a review of dimensions of a range of vehicles, it is expected that up to 1.0 metre could be saved by designating selected stalls as micro car spaces. The smallest of these cars would actually fit within the width of a regular parking stall.

At present only a small proportion of the overall vehicle fleet is considered as micro car type vehicles. Although this may increase over time, it is unlikely that any more than 3% of the stalls within the Hesperia development could be designated under this category. At this level, based on the proposed ratio of 1.4 stalls per unit for residents, the maximum number of micro stalls that could be considered for this site is in the order of 40 micro stalls. As these would be spread throughout the development, the micro stalls would likely be placed at points where site constraints limit the ability to provide a regular or small car parking stall. The provision of micro stalls may therefore result in a slight increase in the parking supply compared to a small car stall.

Opportunities to specifically accommodate micro car parking stalls should be pursued in the design of the overall site.

5.0 CONCLUSION/RECOMMENDED STRATEGY

This review was undertaken to determine an appropriate parking ratio for the Hesperia development, and to identify strategies that should be pursued to minimize the number of parking stalls provided.

- The study was based on a total of 1050 primary units developed on the site. Of these 225 units would be designated as flex units.
- Parking requirements for 225 flex units were considered separately
- Under the City of Vernon Parking Bylaw, the 1050 primary units are required to provide 1893 parking stalls. Of these 150 are required for visitor parking. The City's requirement translates to a ratio of 1.80 spaces per unit.

- The developer has proposed a parking ratio of 1.5 stalls per unit (1.3 per unit for resident stalls and 0.2 for visitors).
- The proposed parking ratio will permit up to 30% of owners to have two vehicles. This is not considered unreasonable level of car ownership for multi-family type developments.
- It is proposed that 7% of the resident stalls (0.1 per unit) are designated as remote stalls. These would be not directly accessed from each building but would be within close proximity to each building.
- The remote stalls should be assigned to a specific unit, and located within 100 metres walking distance of the buildings they serve.
- Under the parking bylaw, parking for the flex units would require addition of up to 200 parking spaces
- In practice not all flex units will be 'converted' at the same time.
- The vehicle ownership for tenants in the flex units is expected to be considerably lower than for those occupying the primary space.
- Providing parking for flex units in the remote parking spaces may discourage some tenants to own a vehicle;
- Calculating parking requirements on the basis of unit size (0.5 per unit plus 1 spaces per 100 m² floor area), could reduce parking requirements by approximately 10% compared to the requirement under the zoning bylaw;
- Up to seven car-share vehicles should be available on-site. This could reduce regular parking requirements by up to 28 spaces.
- There is limited opportunity to reduce parking on account of transit ridership. Access to transit is likely to be more of a factor for tenants in the rental units.
- With available street parking that would be used primarily by residents, adopting a visitor parking ratio of 0.1 spaces per unit could be considered. This would allow for increased resident parking (1.4 spaces per unit with 0.1 per unit as remote stalls).
- Maximizing the proportion of small car spaces may not add to the overall parking supply, but will add a degree of flexibility and may provide flexibility in designing the remote parking spaces.
- Creating up to 40 micro car stalls (up to 3% of the supply) should be considered as a means of more efficiently accommodating overall parking. The micro stalls could be located in areas that would not be capable of accommodating a regular parking stall.

By implementing a car share program, maximizing the proportion of small car stalls, permitting on-street parking, reducing visitor parking to 0.1 spaces per unit, designating up to 40 micro size car stalls, and providing remote stalls, a parking ratio of 1.4 resident stalls per unit and 0.1 visitor stalls is not considered unreasonable.

I trust that this provides the information that you require. Do not hesitate to call if you have any questions.

Yours truly,

WARD CONSULTING GROUP

A Division of EBA Engineering Consultants Ltd.



Stephen Gardner, M.Sc.
Transportation Planning Specialist
604.608.8909
sgardner@wardconsulting.ca



Daniel B. Ghile, M.Sc.
Traffic/Transportation Planner
604.688.8823
dghile@wardconsulting.ca

c. Matthew Roddis, VIA Architecture