September 6, 2022
Shining Hill Estate Collection Inc.
c/o Bazil Developments Inc.
2235 Sheppard Avenue East, Suite 903
Toronto, ON M2J 5B5
Attention: Mr. Paul Bailey
Shining Hill Estates Subdivision, Phase 3, Town of Aurora
Functional Internal Traffic Study

Dear Mr. Bailey:

This functional internal traffic study has been prepared for Phase 3 of the Shining Hill Estates subdivision. It builds upon the following reports previously prepared by Dillon:

- Shining Hill Estates, Phase 3, ${ }^{1}$ Towns of Newmarket and Aurora: Transportation Mobility Plan, October 2019
- Shining Hill Estates, Phase 3, Town of Aurora: Transportation Mobility Plan, March 2021
- Shining Hill Estates Subdivision, Phase 3, Town of Aurora: Transportation Mobility Plan Addendum, January 2022
- Shining Hill Estates Subdivision, Phase 3, Town of Aurora: Near-Term Roadway Modifications for St. Anne's School Opening, May 2022

It also references detailed design drawings for the Phase 3A roadway and engineering works, prepared by SCS Consulting Group Ltd. in August 2022.

### 1.0 Background

Shining Hill Estates is a multi-phase development that will straddle the boundary between the towns of Newmarket and Aurora.

- Phase 1 is located at Yonge Street and the new Bennington Road in Newmarket, and is comprised of a mixture of single, semi-detached and townhouse residential units.

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- Phase 2 is an enclave on the north side of St. John's Sideroad east of Cliff Trail in Aurora, and consists of single detached dwellings on a private roadway network.
- Phase 3 will consist of the central portion of lands in Aurora, and is currently proposed to be comprised of the following:
- 108 single detached and townhouse units; and
- A private school (St. Anne's School) for girls between grades 5 and 12, with a currently planned enrolment of 406 students, supported by 42 staff, by the school's seventh year of operations.

The remaining lands in Newmarket will be the subject of a future secondary plan application. The development scope has not yet been formally defined; a transportation assessment was previously undertaken by Dillon in 2019 based on a preliminary concept consisting of 3,500 residential units, along with ancillary commercial and institutional uses.

### 2.0 Proposed Road Network

Attachment 1 contains detailed engineering drawings illustrating the proposed street network and geometry of the roadways in Phase 3.

### 2.1 Proposed Collector Roads

Phase 3 will be served by a north-south collector road (Street " $A$ ") that will begin at the intersection of St. John's Sideroad and Willow Farm Way, and will extend northerly to the boundary of Aurora and Newmarket. The majority of residential units will front a number of local streets that will extend west and east from Street " $A$ ".

In the longer term, the subdivision is anticipated to extend into Newmarket. Street " $A$ " is anticipated to be extended northerly to Bennington Road, an east/west collector road that is proposed to be extended westerly to Bathurst Street from its current terminus west of Yonge Street. This will provide connectivity between the west, east and south.

### 2.2 Projected Traffic Volumes on Street "A"

Peak hour traffic volumes on Street "A" north of St. John's Sideroad were projected as part of preceding traffic studies (the 2022 addendum to the 2021 TMP for Phase 3, and the 2019 TMP prepared for the Shining Hill Estates development as a whole).

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For Phase 3, the following peak hour volumes were projected for Street " $A$ " north of St. John's Sideroad:

- AM peak hour: 333 vehicles southbound / 361 vehicles northbound
- PM peak hour: 121 vehicles southbound / 131 vehicles northbound

For the development as a whole, the 2019 projections on Street " $A$ " north of St. John's Sideroad were as follows:

- AM peak hour: 340 vehicles southbound / 100 vehicles northbound
- PM peak hour: 170 vehicles southbound / 400 vehicles northbound

The long-term traffic volumes on Street " $A$ " reflect the increased connectivity (e.g., the westerly extension of Bennington Road will offer alternate routes for Phase 3 traffic destined to/from Bathurst Street and Yonge Street). The long-term volumes also reflect an earlier development concept. The 2019 study volumes will be updated as part of the Secondary Plan being prepared for the Newmarket section of the development.

Assuming that PM peak hour volumes comprise $10 \%$ of daily volumes, the anticipated AADT on Street "A" would be in the order of 2,500 to 5,700 vehicles per day, which falls within typically accepted ranges of capacity for collector roads.

### 2.3 Major Traffic Generators

The only significant traffic generator in the study area is the proposed St. Anne's School. This will be a private girls-only school that is anticipated to draw students from a wide area, with few (if any) students residing within walking distance; as such, it is expected that most students will be picked up or dropped off.

Access to the school will be via a driveway at the northwest bend on Street "B". Pickup and drop-off facilities will be provided on site. Time-of-day stopping prohibitions have been identified to mitigate against parents picking up / dropping off students onstreet rather than in the designated area on the school property (see Section 3.4).

In the longer term, as Street " $A$ " is extended northerly into Newmarket, it has been recommended that additional school access points from Street " $A$ " be pursued to reduce the volume of traffic on Street " $B$ ".

### 2.4 Roadway Cross-Sections

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Preliminary roadway widths and elements (sidewalk and bicycle facilities) were identified in the 2021 TMP, and have been subsequently refined by SCS Consulting Group Ltd. through discussions with Town of Aurora staff. Table 1 summarizes the cross-section elements for each street.

Table 1: Roadway Cross-Sections

| Street | ROW width | Pavement width* | Sidewalks |
| :--- | :--- | :--- | :--- |
| Street "A" | 23 m | 8.5 m | Sidewalk on west side <br> Multi-use trail on east side |
| Street "B" <br> (north section) | 15 m | 7.5 m | Sidewalk on south side |
| Street "B" <br> (west and south sections) | 18 m | 8.0 m | Sidewalk on east / north <br> side |
| Street "C" | 18 m | 8.0 m | No sidewalks (cul-de-sac) |
| Street "D" | 18 m | 8.0 m | No sidewalks (cul-de-sac) |
| Street "E" | 16.5 m | 7.5 m | Sidewalk on west / south <br> side |

*Pavement width does not include gutter width. Curb-to-curb width will be 0.6 m wider than pavement width.

One significant change since the 2021 TMP is the roadway configuration of Street " $A$ ". The roadway was originally proposed to have parking bays delineated through the provision of curb extensions at local street intersections. Based on discussions with Town of Aurora staff, the roadway has since been revised to a consistent 8.5-metre pavement width ( 9.1 metres curb to curb) without curb extensions.

### 2.5 Design Speed

There are three horizontal curves proposed on Street " $A$ ", with the following centre line radii:

- 115.5 metres north of Streets "B" and "D";
- 121 metres south of Street "C";
- 125 metres in the vicinity of Street " $E$ ".

These radii are slightly greater than the minimum of 115 metres as specified in the Town's 2019 Design Criteria Manual for Engineering Plans. They correspond to design speeds of approximately 46 to $48 \mathrm{~km} / \mathrm{h}$ assuming a normal crown (see MTO's Geometric Design Guide for Ontario Highways, Table C3-7, "Maximum Speed (km/h) at Given Superelevation for Resurfacing Projects").

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All local streets have been designed with centre line radii of approximately 90 metres, consistent with the Town's 2019 Design Criteria Manual for Engineering Plans. An exception is Street " E ", which was originally designed as a rear laneway and has a horizontal curve with a centre line radius of 76.45 metres. This corresponds to a design speed of approximately $38 \mathrm{~km} / \mathrm{h}$, compared to $41 \mathrm{~km} / \mathrm{h}$ for a 90 -metre radius. This is a reasonable difference given the low volume and laneway function of this street.

### 2.6 Sight Distance

Intersection sight distance was reviewed as part of the January 2022 addendum to the March 2021 TMP. It was found that adequate intersection sight distance for a $50 \mathrm{~km} / \mathrm{h}$ design speed was available for all stop-controlled movements, except as follows:

- At the north intersection of Street "B" and Street "A", the sight line to the north could be affected by cars parked on the west side of the street due to the horizontal curvature of Street " $A$ " north of the intersection. This will be addressed by prohibiting parking on the west side of Street " $A$ " and locating the parking lane on the east side of the street.
- At the south intersection of Street "B" and Street "A", the sight line to the south is affected by the horizontal curve south of the intersection. The 50 $\mathrm{km} / \mathrm{h}$ design speed sight line passes through private property and therefore could be blocked by a fence or other objects within the residential lot. However, the sight distance exceeds what would be required for a $40 \mathrm{~km} / \mathrm{h}$ design speed. This is reasonable in this case because northbound motorists will have an average speed below $50 \mathrm{~km} / \mathrm{h}$ in this section (having just completed a left or right turn from St. John's Sideroad). To further improve sight distance, parking will be prohibited on the west side of Street " $A$ " and the parking lane will be located on the east side of the street.
- Similarly, at Street " $E$ " and Street " $A$ ", the sight distance to the south is less than 105 m , because Street " $E$ " is less than 105 metres north of St. John's Sideroad. The available sight distance extends south to the Street " $A$ " and St. John's Sideroad intersection.

The sight line assessments have been updated to reflect the current roadway design and are provided in Attachment 2.

### 2.7 Intersection Spacing

The majority of intersections along Street " $A$ " have a centre line spacing of 90 to 95 metres.

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Between Street "B" and Street "E", the intersection spacing is 62 metres. Street "E" was formerly configured as a laneway between those two streets (to provide rear access to units fronting on St. John's Sideroad); although it has since been reconfigured as a local road to address comments from the Town of Aurora, it still serves a laneway function. The shorter spacing stems from that function.

The intersection spacing along Street " $A$ " is consistent with TAC guidelines for collector roads (a typical minimum spacing of 60 metres).

The block between Street " $E$ " and St. John's Sideroad is estimated to accommodate a storage length of approximately 70 metres. In the 2019 TMP, the southbound queue length on Street "A" at St. John's Sideroad was projected to be 36 to 37 metres; the 2022 addendum to the 2021 Phase 3 TMP projected a southbound queue of 84 metres during the AM peak hour and 32 metres during the PM peak hour. With the exception of the AM peak hour queue calculated in the 2022 analyses, these can be accommodated within the distance between Street "E" and St. John's Sideroad. The 84 -metre queue would extend north of Street " $E$ ". The queue at that time is related to a short period of drop-off activity at St. Anne's School. This is not a significant issue given that most Street " $E$ " traffic will be making an eastbound right turn to Street "E" and little to no traffic is expected to make a northbound left turn from Street " $A$ " at that time.

### 2.8 Cul-de-Sacs and Temporary Turnarounds

Streets "C" and "D" are cul-de-sacs, measuring 75 and 90 metres in length, respectively (measured from the Street " $A$ " centre line to the far side of the cul-de-sac bulb). The curb geometry is consistent with Town standard drawing R-205.

Street " $A$ " will be extended to a temporary turnaround at the Newmarket / Aurora boundary. The temporary turnaround shown on the design drawings is consistent with Town standard drawings R-221.

### 2.9 Future Transit Service

Transit service is not proposed on Street " $A$ " for Phase 3, since Street " $A$ " will be a dead end until development continues farther to the north.

Once Street " $A$ " is extended into Newmarket and connects to Bennington Road, it will be a candidate for potential local transit service. Potential service expansion concepts were developed by Dillon in the 2019 TMP for the overall development. Potential

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service concepts and stop locations would still need to be confirmed with YRT as the development concept in Newmarket is refined.

### 3.0 Internal Street Traffic Control

### 3.1 Intersection Control

The intersection of St. John's Sideroad and Street "A" / Willow Farm Lane is being reconfigured:

- Left and right turn lanes will be provided on St. John's Sideroad for movements leading to Street " $A$ ".
- Traffic signals will be installed to accommodate peak pick-up and drop-off traffic associated with St. Anne’s School.

The remaining intersections within the site will operate under two-way stop control.

### 3.2 Pedestrian Crossings

South of Street "D", there are no complementary uses that would be expected to generate a significant pedestrian desire line across Street " $A$ ", and no pedestrian crossings are proposed.

St. Anne's School is anticipated to draw most if not all of its students from outside Phase 3, and therefore it is anticipated that it will not result in pedestrian crossing demand across Street " $A$ " at Street "D".

Depending on the nature of trail connections and residential streets east of Street " A " within the Newmarket lands, it is possible that there may be some minor pedestrian crossing demand north of Street "D". The need for a pedestrian crossing of Street "A" north of Street "D" (e.g., a pedestrian crossover) can be re-evaluated once the Newmarket portion of the development is further refined.

### 3.3 On-Street Parking

On-street parking will be permitted on one side of all streets. Typically the Town of Aurora would prefer that on-street parking be permitted on the same side of the street as the sidewalk; however, the parking lane can be provided on the opposite side of the street depending on other circumstances (e.g., parking generators on the opposite side of the street; differences in on-street parking availability).

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On the north leg of Street "B", Town staff indicated a preference for parking to be permitted on the north side of the street, adjacent to the park. This side of the street would also have greater parking availability due to the absence of driveways.

The availability of on-street parking was reviewed on both sides of all local streets to determine whether parking availability would be a factor influencing the location of the parking lane. This review was undertaken using the following dimensions:

- Town of Aurora parking by-law requirements:
- No parking within 15 metres of a street intersection;
- No parking within 3 metres of a fire hydrant; and
- No parking within 0.6 metres of a driveway;
- A vehicle length of 5.2 metres, with consideration for a reduced length of 5.0 metres in cases where a 5.2-metre vehicle cannot be accommodated; and
- A 1.0 metres separation between parked vehicles.

A similar exercise was undertaken in 2018 for Phase 1 of Shining Hill Estates in Newmarket. The vehicle length was established through a review of the 30 highestselling passenger vehicles in Canada in 2018. It was found that all of these vehicles (with the exception of larger pick-up trucks) are 5.2 metres long or less, and all of these (with the exception of minivans) are 5.0 metres long or less. The 1.0-metre vehicle separation distance was established based on an air photo review of on-street parking characteristics in Newmarket.

Attachment 3 contains a figure illustrating the potential parking supply available on each side of each street given the above parameters.

Table 2 presents the number of parking spaces available on each side of local streets, and the recommended side for parking to be permitted.

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Table 2: On-Street Parking Availability

| Street | Parking availability | Other considerations | Recommendation |
| :---: | :---: | :---: | :---: |
| Street "A" (north of Street "D") | 17 (west side) <br> 17 (east side) | Sidewalk on west side Multi-use trail on east side <br> Park on west side Potential for west side parking lane to obstruct sight lines on eastbound Street "B" (north intersection) | Parking permitted on east side |
| Street "A" (between <br> Street " $D$ " and Street " $E$ ") | 12 (west side) <br> 23 (east side) | Sidewalk on west side Multi-use trail on east side <br> Potential for west side parking lane to obstruct sight lines on eastbound Street "B" (south intersection) | Parking permitted on east side |
| Street "A" (south of Street "E" | $\mathrm{n} / \mathrm{a}$ | Roadway cross-section to include 2 southbound lanes approaching St. John's Sideroad; insufficient road width to accommodate parking lane | Parking prohibited on both sides |
| Street "B" (north section) | 16 (north side) <br> 8 (south side) | Sidewalk on south side <br> Park on north side | Parking permitted on north side |
| Street "B" (west section) | 9 (west side) <br> 5 (east side) | Sidewalk on east side | Parking permitted on west side |
| Street "B" (south section) | 13 (north side) <br> 8 (south side) | Sidewalk on north side | Parking permitted on north side |
| Street "C" | 1 (north side) <br> 2 (south side) |  | Parking permitted on south side |
| Street "D" | 4 (north side) <br> 2 (south side) |  | Parking permitted on north side |
| Street "E" | 18 (north side) <br> 4 (south side) | Sidewalk on south side; residential frontage on south side only | Parking permitted on north side |

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### 3.4 Stopping Prohibitions

At most times of the day, parking will be permitted along the north side of the northern section of Street "B" (the section adjacent to the proposed park). This will be a lowvolume local street at most times of the day, but will experience brief surges in traffic associated with parents dropping off and picking up students at St. Anne's School. Following discussions with Town staff, it is recommended that time-of-day stopping prohibitions be implemented in this section during pick-up and drop-off times at St. Anne's School. A dedicated pick-up and drop-off area will be provided within the school. Implementing a time-of-day stopping prohibition is intended to discourage parents from dropping off children on-street to avoid having to queue within the school property, and to facilitate traffic flow during peak pick-up and drop-off times. For illustrative purposes, 7:00 AM-9:00 AM and 3:00 PM-5:00 PM have been suggested preliminary times for the stopping prohibition, to be confirmed once the arrival and dismissal times are known.

### 3.5 Traffic Signage

A pavement marking and signage plan has been developed to reflect the traffic control and parking recommendations outlined in Sections 3.1 and 3.3. The pavement marking and signage plan is provided in Attachment 4.
"No parking" and "no stopping" signs have generally been located using 50-metre spacing as an initial guide, based on guidance in the 2022 edition of OTM Book 5 ("Regulatory Signs") ("in urban areas, signs should be spaced at 50 metres or less"). It is noted that this guidance is less restrictive than the 2000 edition, in which the 50metre spacing was a "must" condition; the updated guidance allows for some flexibility and judgement based on the site-specific context.

To reduce clutter, traffic signs will be attached to street light poles where reasonable.

Roadways will be signed with a posted speed limit of $40 \mathrm{~km} / \mathrm{h}$, which matches the design speed of local streets and is $10 \mathrm{~km} / \mathrm{h}$ lower than the design speed of Street " A ".

Wa-31 ("No Exit") signs will be installed on Street "A" at St. John's Sideroad and at Street "D" on a temporary basis, until the full collector road is in place on the Newmarket side of the development. Standard-dimension signs ( $450 \times 450 \mathrm{~mm}$ ) are proposed in all cases, except that oversized ( $600 \times 600 \mathrm{~mm}$ ) signs are proposed at Street " $D$ " given that it may not be readily evident at that point that Street " $A$ " is not

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continuous. The temporary turnaround will be further reinforced with a checkerboard sign at the end of the bulb.

### 3.6 Pavement Markings

A centre line is proposed along Street " $A$ ". The centre line will be offset from centre to reflect the parking lane on the east side. The proposed dimensions are:

- Southbound lane: 3.2 m ( 3.5 m to face of curb)
- Northbound lane: 5.3 m ( 5.6 m to face of curb) including parking lane

At the south end, the centre line will transition into the southbound left turn lane proposed as part of the intersection design at St. John's Sideroad.

At the north end, the centre line is proposed to terminate approximately 50 metres north of Streets "B"/"D" (ie., prior to reaching the cul-de-sac bulb) as a positive guidance measure that indicates to motorists the change in function of the road and the upcoming cul-de-sac.

Crosswalks and stop bars are proposed to be installed on all side streets intersecting with Street " $A$ ". In particular, the crosswalk and stop bar on the west legs of these intersections will guide motorists to stop in advance of the sidewalk, which has a greater setback from the roadway than other roadways.

Should you have any questions, please contact me at (416) 229-4647, extension 2373, or at bhooton@dillon.ca.

Yours sincerely,

## DILLON CONSULTING LIMITED

Bunt Horn
Brent Hooton, Dipl.T.
Transportation Engineering Technologist

Our File: 21-1332

## Attachment 1:

Proposed Phase 3 Street Network


## Attachment 2:

Sight Line Assessments






Attachment 3:
Parking Availability Assessment


## Attachment 4:

Proposed Pavement Marking and Signage Plan



[^0]:    ${ }^{1}$ At the time this report was prepared, "Phase 3 " was intended to refer to the remaining undeveloped Shining Hill lands in Newmarket and Aurora, rather than just the portion within Aurora.

