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August 29, 2017

Michael Kulesza – Chairman
Town of Norfolk – Zoning Board of Appeals (ZBA)
One Liberty Lane
Norfolk, MA 02056

Re: Norfolk, MA – The Preserve at Abbyville/Abbyville Commons Comprehensive Plan

Dear Mr. Kulesza:

On July 27, 2017 we receive a peer review letter from BETA Group, Inc. The remaining BETA review comments are listed below with our responses immediately following the comment and are italicized.

Civil/Site

1) The roadway typical sections shown on sheet 88 and sheet 89 depict a 24 foot wide roadway and an 18 foot wide roadway. Traffic volumes for the development are anticipated to exceed an ADT of 1,500 vehicles for the Preserve and over 1,900 including the Commons. This would indicate that the main roads (Buckley Road, Eliot Boulevard, Annie's Loop and Mann's Loop) should be considered Primary Roadways.

   Recommendation: Given the volume of traffic anticipated, further discussion of waivers from the Subdivision standards for primary roadways is warranted.
   UCI: We anticipate the Zoning Board will discuss the primary roadway waivers at the traffic public hearing in August of 2017.
   BETA1: Refer to BETA's response to Item 2 below.
   UCI: See response to Item 2 below.

2) Designated rights of way are shown for the roadways within the Preserve. This indicates the possibility that the Town could be asked to accept the streets in the future. This should be a consideration in evaluating requested waivers for roadway geometry.

   Recommendation: Further discussion of waivers from the Subdivision standards for primary roadways is warranted.
   UCI: We anticipate the Zoning Board will discuss the primary roadway waivers at the traffic public hearing in August of 2017.
   BETA1: The applicant has confirmed its intention to request the Town accept the development right-of-ways and roadways at a future date, and has prepared & submitted a right-of-way/roadway summary table and development sketch that depicts the required and proposed right-of-way and roadway widths, as well as which roadways will be designated as one-way. The applicant has distributed these materials to the Zoning and Planning Boards, as well as multiple Town departments for their review and comment. The applicant also attended the Norfolk Planning Board at their July 19th hearing to present and discuss the proposed development roadway layout, and to solicit comments from that board on the same; the comments will be prepared by the Planning Board and provided to the Zoning Board for its consideration in the review process.
   In addition to any comments from the Planning Board and other town departments, BETA recommends that the applicant provide a truck turning analysis of the proposed roadways that demonstrates that all anticipated Town

vehicles, including emergency and maintenance vehicles, will be capable of accessing and negotiating all of the roadways with no departures from the paved roadway areas and minimal encroachment into oncoming lanes.
UCI: Refer to Green International response in attached letter dated August 28, 2017.

3) It appears that roundabouts are proposed at the Buckley Road/Annie Loop intersection and at the Eliot Boulevard/Mann Loop intersection. However, it does not appear that the roadway layout reflects the appropriate geometry for roundabouts. Given the volume of traffic anticipated on the main roadways, appropriate geometry should be incorporated for safety.

   Recommendation: Incorporate appropriate approach and departure angles and splitter islands into the roundabout design. This may affect the proposed right of way.

   UCI: The applicants traffic engineer Green International will discuss the roundabouts at the public hearing in August 2017.

   BETA1 We will reserve additional comments until such time as we have the opportunity to hear Green International's presentation at the August ZBA hearing, and will coordinate any resultant comments with the applicant / Green International.

   UCI: Revisions to the roundabouts have been included in the revised plans. Refer to Green International response in attached letter dated August 28, 2017.

4) With the exception of Green Circle, the various dead-end roads, while depicting circular right-of-way geometry at their termini, do not propose roadway cul-de-sacs; rather, the roads simply terminate, with adjacent head-in parking spaces that could theoretically serve as a T-turnaround.

   Recommendation: The proposed dead end roads should adhere to the geometric requirements for cul-de-sacs, and the proposed parking spaces thereby displaced should be relocated elsewhere in the development. It is noted that the Fire Chief's letter of June 16, 2017 indicates that the Applicant has agreed to:

   1. Connect Thomas Drive to Albert Circle
   2. Create a cul-de-sac at the end of Waite Circle
   3. Connect Wick Road to Morse Road
   4. Create a cu-de-sac at the end of Thayer Circle
   5. Create a cul-de-sac at the end of Daniel Drive
   6.

UCI: The roadways were revised by making Albert Drive and Wick Road through one way streets. The parking spaces were eliminated at all the cul-de-sac areas. The cul-de-sac pavement was expanded to a 47' diameter as required in the sub-division rules and regulations. The proposed ROW diameter is 48' and a waiver will be requested.
BETA1: The modifications to the roadways within the dead end right of ways conform to our recommendation, provided that the truck turning analysis verifies that the proposed roadways/cul-de-sacs can be accessed and negotiated by the applicable vehicle type and sizes. BETA suggests that various Town entities provide comment regarding waiver requests for the right of way widths, with the observation that any such waiver should account for the realistic land area outside of the paved roadways that will be needed by the Town for regular access and maintenance, if roads are ultimately to be accepted by the Town.

UCI: Revisions were made to three cul-de-sacs. Refer to Green International response in attached letter dated August 28, 2017.

5) The proposed site grading indicates that there will be significant cuts and fills throughout the site, and based on a conversation with the applicant's designer, it is anticipated that the project will generate a significant volume of excess material.

   Recommendation: The applicant should perform a site-wide cut and fill analysis and assess the potential impacts of removing significant volumes of material from the site via adjacent local roadways. Evaluation should at include at a minimum:

   - Effect on ground water table

- Number of construction trucks per day anticipated and the duration of the earthwork operation
- Blasting requirements/ledge removal, if any
- Construction routes and impact to the existing bridge over Bush Pond.

UCI: Refer to the project phasing and proposed phasing schedule for construction and site work in Appendix H.

BETA1: The following are our responses to the individual sub-items above, followed by a summarization of our overall observations pertaining to this item:

- Ground Water (Sub-section1): Observations from the significant number of deep soil borings performed throughout the site (typically to depts. Well below the proposed finish grading) indicate that groundwater will not be encountered at or near the proposed finish grades in most locations.

UCI: No comment.

- Construction Trucks (Sub-item 2): the referenced materials provided by the applicant include a color-coded sketch of the proposed phasing of the overall site development, as well as a summary table listing the total number of phases (7), the estimated duration for each ((either 12-18 of 18-24 months), the number of units and length of roadway per phase, the total cut and fill volumes (in cubic yards) per phase (net total approximately 1,330,000 CY), and the estimated range of daily truck trips. Those ranges indicate that the anticipated truck traffic from the site will be between 2-3 trucks per hour for the least intensive phase (V) and 4-7 trucks per hour for the most intensive phase (III). It is noted that the initial list of waivers requests included a requested waiver from the Town's Earth Removal Bylaw.

UCI: No comment.

- Ledge Removal
  (Sub-item 3): Based again on observations from the site-wide deep soil borings, the applicant has stated that the grading plan has been developed to avoid the need for excessive ledge removal to the extent possible.

UCI: No comment.

- Construction Routes (Sub-item 4): The applicant has stated that the majority of construction traffic will travel to and from the site along Lawrence Street easterly to Park Street. In addition, as stated previously in the general comments, the applicant is aware of the deficiencies in the existing Lawrence Street bridge over Bush Pond, and understands that significant structural improvements will need to be made to it before the trucing associated with the site can take place. The Board should consider having a designated truck route to the nearest major highway to control construction traffic to and from the site.

UCI: No comment.

To summarize, the applicant has provided the requested supplemental information called for by our original recommendations. That information confirms that the project design will include a very significant earthwork/earth removal component, and there will likely be corresponding ancillary considerations/impacts associated with that magnitude or earthwork, including:

Bush Pond bridge deficiencies & Lawrence Street Road Condition. *UCI: Masswork grant applied for. Discussion ongoing. .*

Lawrence Street traffic capacity during construction. *UCI: Addressed by Green International.*

Noise/dust from truck traffic during construction. *UCI: Offsite trucking will be limited to 7-5 Monday through Friday. Noise levels will be in compliance with state regulations. Lawrence Street will be swept weekly or more frequently if necessary. Water will be applied as necessary to control site dust during construction.*

As noted in previous items, the applicant has indicated that they are currently working cooperatively with the Town to address the first item, and in any case, both the bridge and the affected portion of Lawrence Street will be reconstructed as part of the development. For the second and third items, a phasing plan has been developed for the project. Constructing the project in phases will moderate to some extent, the concentration of the truck traffic and the associated ancillary impacts on Lawrence Street and nearby properties and neighborhoods. Given the magnitude of the potential earth removal from the site, we suggest that the applicant prepare a traffic management plan for review by the Board to include, as a minimum, proposed phasing, anticipated volume of construction traffic, days/hours of operation, dust/noise control methods.

UCI: The applicant is working cooperatively with the Town to secure a grant for the Lawrence Street work. The applicant is also working cooperatively with the Town to address off site mitigation of Lawrence Street. Green International has addressed the construction traffic volumes. See response to above items for noise, dust days and hours of operation.

6) The proposed roadway profiles do not appear to take advantage of the maximum grades allowed in the Subdivision Regulations. This contributes to the significant earthwork required for the roadway construction, as well as, the lot construction. This also effects the grading of abutting lots.

   Recommendation: Evaluate the proposed profiles, particularly along Elliott Boulevard, Mann's Loop and Annie's Loop, and the proposed lot grading to better utilize the existing topography and reduce earthwork quantities.

UCI: The roadway profiles were created based on the perimeter development extent existing grades. The primary roadways have been proposes to have slopes in the vicinity of 3 percent to allow for the roadway and driveway connections to occur with leveling areas as required by the subdivision regulations.

BETA1: We recognize that there are geometric requirements and constraints that affect, and in some cases dictate, the roadway profile grading. We also recognize that the approach of holding approximately 3% roadway slopes may facilitate grading of the adjoining parcels. Our recommendation was intended to point out that in areas where geometric requirements/lot grading considerations allow, it would be possible for the applicant to increase the roadway slopes, keeping them in conformance with the Subdivision Regulations, to potentially reduce the volume of material that will need to be removed from the site.
We therefore suggest that the applicant, without actually redesigning the roadways/site grading, could perform an earthworks estimation to approximate the reduction in cut volume that could be achieved by using greater roadway slopes. The exercise would consist of identifying any roadway areas where 6% roadway slopes could be achieved without conflicting with other roadway geometric requirements, then calculating the earthwork volumes if the roadway slopes in those areas were to be modified. This would allow the Board to evaluate the magnitude of potential benefit (in the form of reducing in net volume to be removed from the site) that could be achieved by modifying the roadway profiles.

UCI: We have completed this analysis and the plan and memo are attached.

7) The plans depict a connection of Elliott Boulevard to land owned by the Town.

   Recommendation: The Board should determine whether this connection provides a future benefit to the Town.

UCI: No comment.
BETA1: It is BETA's understanding that the roadway was depicted specifically to facilitate the potential for future development or the parcel by the Town, and the applicant will coordinate the need for the access road with the Town.
UCI: No comment.

8) The project includes 148 single family units and 48 rental units. All the units will utilize subsurface disposal systems for sanitary disposal. Given the density of the development and the relatively small lot size, there is concern regarding the overall potential impact of the subsurface disposal systems on groundwater, adjacent private wells and Bush Pond.

   Recommendation: The project needs to be in conformance with the guidelines in Title V for Aggregation of Flows and Nutrient Loading as outlined in 310 CMR 15.216. The applicant should provide a hydrogeological analysis of the site development to evaluate groundwater flow, water table depth, the potential nutrient loading and any associated impacts to abutting private wells (within 400 feet of the site), wetlands or Bush Pond.

UCI: A hydrogeological analysis is forthcoming.
. BETA1: We shall review and evaluate the hydrogeological analysis when it is submitted.
UCI: No comment.

9) A previously noted, the ownership units are proposed to have septic systems on individual lots. It is not clear how the size of the systems shown on the plans was determined. Percolation tests will be required to determine the necessary size of the systems. However, given the potentially significant change in grade these tests may not be able to be conducted until the general grading is complete. Given the proposed lot areas/layout, there is limited area on the lots for the systems. An increase in the size of the system may affect the constructability of certain lots. Also, a number of systems are located close to proposed or existing slopes. Breakout distance will be a consideration in the design of these areas and may affect the constructability of these lots if significant changes to the layout of the septic systems are required.

UCI: Upon approval of the project septic system testing and designs will be completed for each of the lots and will be done in conformance with Title V.
BETA1: We recognize and acknowledge that the septic system testing and design process can only take place at a later date, once site grading has been completed, but we reiterate the observation that that process may result in alterations to the depicted systems that could affect the layout and potential visibility of some lots.
UCI: The applicant is proposing to construct a sewerage treatment plant. Individual septic systems are no longer proposed.

11) There are multiple locations where proposed water mains and appurtenances will cross and/or occupy portions of proposed private lots. The Plan of Land sheets, which depict the proposed right-of-way and lot geometry in detail, do not indicate any proposed utility easements for the water system.

Recommendation: The applicant should depict adequately sized (i.e. sufficient for the utility owner to perform its operation and maintenance of the water system) utility easements in any locations where common infrastructure will be located on private lots.
UCI: Easements were added at the water main locations that are located on private lots.
BETA1: The revised plans submitted do not include the Plan of Land Sheets, and the revised Grading and Utility Plans that were provided do not appear to depict the proposed easements. However, assuming that the easements are depicted on the Plan of Land Sheets, they should be provided along with sample easement language to the Norfolk Water Department for review and approval. We will reserve further comment until such time as the materials are provided to and coordinated with the water department.
UCI: The easements were provided on lots 128 - 131 and the label can be found in Lot 130 and an easement is also located on Lots 91, 92 and 95 with the label being located in Thayer Circle. We will provide updated plans of land depicting the easement locations once the Water Department has commented.

Preliminary Drainage Report & Stormwater Management Design

12) **Background, Page 1** – This section states the following:

'A portion of the overall site was previously used for textile manufacturing, which has been abandoned and the building demolished.'

BETA understands that there is an AUL (Activity & Use Limitation, RTN #2-3000173) over a portion of the site, associated with the prior manufacturing activity thereon. Further, based on information gathered from the site walk, the area of the AUL appears to be relatively close to and downgradient of proposed Infiltration Basin 1. The AUL is not directly referenced or discussed in the drainage report, nor is it depicted on the post-development watershed map.

Recommendation: The applicant should provide any relevant excerpts from the AUL that could have bearing on the stormwater management for the development, and should assess any potential impacts that the use of infiltration close to the AUL could have on the contaminated materials within the AUL.
UCI: The AUL documentation was forwarded by the applicant to the ZBA as well as BETA. Please refer to the Infiltration Basin 1plan and profile referenced in Appendix L.
BETA1: The review of the AUL documentation is ongoing, and will be coordinated with the hydrogeological report to be prepared and provided by the applicant. We will reserve further comment until such time as those reviews are completed.
UCI: It is our understanding that BETA had a review of the AUL completed in house and that they prepared a report that was submitted to the Zoning Board of Appeals. The hydrogeological report is forthcoming.

15) HydroCAD Printouts – 100-Year Storm – The drainage report presents the results from the HydroCAD analysis for just the 100-year storm, which all of the basins have been sized to handle without overflows. However, Table 2 – Discharge Analysis in the System Performance section lists the peak elevations in each of the proposed basins for the 2, 10, 25, 50 and 100-year storms. The report does not contain the HydroCAD report printouts to support the results in Table 2.

Recommendation: The applicant should provide HydroCAD summary printouts for each of the other analyzed storms (2, 10, 25 and 50) for just the sediment forebays and infiltration basins.

UCI: The 2yr, 10yr, 25yr and 50yr Sediment Fore-bay and Pond reports have been included in Appendices A through D.
BETA1: The requested materials have been provided; however, the analysis and output for all analyzed storms reflect modifications to the stormwater design since the initial review, and the values no longer correspond to the summarized values listed in the narrative report. Therefore, we suggest that the applicant also update and submit Table 2 – Discharge Analysis.
UCI: We have revised the drainage calculations to reflect the changes to the unit count, roundabout and cul-de-sac revisions as well as the elimination of Sediment Fore-bay A. The revised calculations, including an updated Table 2 are being provided.

22) Infiltration Basin 2/Forebay 2 – This basin and its forebay occupy portions of lots 7, 8 and 9. The Town of Norfolk requires that off-road stormwater management measures be sited on independent undeveloped lots, rather than on portions of other developed lots.

Recommendation: The applicant should revise this pond and/or the lot layout to site it completely on its own dedicated parcel.
UCI: Infiltration Basin 2 was revised in size and shape. The lot line has also been revised.
BETA1: The revisions to the basin size and shape are acceptable. The lot line revisions do keep the entirety of the basin outside of any proposed development parcels, and appear to make the basin part of the open space (basins1 and 3 also appear to be within the open space area). We suggest the applicant coordinate with the Town to determine if it is desirable for the stormwater basins to be part of the open space or if it would be preferable to for them to occupy their own dedicated development parcels.
UCI: We have the option to provide individual parcels or easements as may be required by the Town. We anticipate the Zoning Board will make this decision and the plans will be updated accordingly.

24) Sediment Forebay "A" – This forebay, which discharges to Infiltration Basin 3, is located at the southeast corner of Elliot Boulevard and Annie Loop. It is relatively large and deep (8 feet relative to Elliot Blvd., 14 relative to Annie loop). It is unclear why an additional forebay is required for IB 3, as there is a forebay proposed immediately adjacent to that basin.

Recommendation: The applicant should evaluate the need for the forebay to provide pre-treatment for IB-3, and if it is required, consider alternative subsurface pre-treatment devices that would not require the creation of such a large and deep pond in such a central location within the proposed development.
UCI: Sediment Forebay A has been designed to allow for treatment of the roadway runoff prior to the discharge into Infiltration Basin 1. The depth of the sediment forebay was designed to allow the inlet drainage pipes for the catch basin system located at the low spot of Elliot Boulevard. The sediment fore bay located adjacent to the Infiltration Basin is for a small area of roadway runoff from the Richard Road area.
BETA1: Per coordination with the applicant subsequent to the development of the comment responses, the applicant will evaluate the possibility of installing an underground junction structure instead of the deep fore-bay. BETA will reserve additional comment until any revision to the design are submitted.
UCI: The sediment fore-bay has been eliminated and the piping has been revised. We have provided the revised drainage calculations, roadway profiled and grading and utility sheets to reflect these revisions.

If there are any questions regarding the revision please feel free to contact my office at 508-384-6560.

Sincerely,

Richard Goodreau
Project Manager