



MEMORANDUM

TO: Bethany A. Card, Secretary, EEA
ATTN: Alex Strycky, MEPA Office
FROM: Lisa Berry Engler, Director, CZM
DATE: July 25, 2022
RE: EEA-16536, Alden Fire Station; Revere

The Massachusetts Office of Coastal Zone Management (CZM) has completed its review of the above-referenced Single Environmental Impact Report (SEIR), noticed in the *Environmental Monitor* dated June 24, 2022, and offers the following comments.

Project Description

The previously filed EENF proposed construction of a new 2-story 8,190 square-foot fire station to serve the Point of Pines neighborhood on a 0.35-acre vacant site that was the location of a previously demolished fire house. The project as proposed in the EENF required 4,592 square feet (SF) of land owned by the Department of Conservation and Recreation (DCR) on an adjacent parcel to be transferred to the city for access to the existing bus loop, construction of four of the proposed parking spaces, the subsurface infiltration system, and a dumpster. This proposed Article 97 land transfer is a portion of a larger land swap between the city and DCR. The project is located within and adjacent to land subject to coastal storm flowage (LSCSF), FEMA zone AE elevation 10 NAVD88, on a barrier beach within a coastal dune. Since the filing of the proposed EENF/EIR, changes have been made to the project to mitigate the potential impacts of coastal flooding and building on the barrier beach/dune. According to the SEIR, the proposed first floor elevation of the building has been raised from 11.5 NAVD88 to 13.25 NAVD88 to improve resilience to coastal storm events, providing 2 feet of freeboard above the 100-year flood plain elevation to meet Massachusetts State Building Code requirements for critical structures. Electrical outlets within the building have been raised to elevation 16.5 and floor outlets have been eliminated. All occupied portions of the apparatus bay such as bathrooms and gear rooms have been raised to a first-floor elevation of 14 feet NAVD88, and areas below elevation of 16.5 NAVD88 are proposed to be wet floodproofed. The transformer pad has been raised to elevation 13.25 NAVD88 and building mechanical systems are roof mounted. According to the SEIR, stairs, ramps, walls that support ramps, and granite block benches will be used as natural elements to dissipate wave energy in coastal flood events. The SEIR proposes to improve the proposed design by landscaping the site with native coastal vegetation to enhance site resiliency. The SEIR states that the floor of the apparatus bay cannot be raised beyond the originally proposed 11.5 NAVD88 elevation shown in the initial design without creating serious access/egress issues for the fire apparatus itself, so the elevation of this portion of the building is not proposed to change.

Project Comments

The SEIR maintains that the site is located within a barrier beach and dune, but the site itself is not a dune because it is fairly level and therefore not a natural hill, mound or ridge of sediment serving the purpose of storm damage prevention and flood control, it is not landward of a coastal beach, and the sediments on the site are not fine to medium well sorted sands typical of material deposited by wind action or storm overwash. The natural slope on coastal dunes that have been developed is often modified by previous construction activities, and the sediments identified in the



borings and soils report, specifically marine deposits consisting of gravel and sand, peat, and structural fill used during the construction of the previous fire station, are very typical of dune sediments on developed barrier beaches. Despite these alterations, dunes in areas of previous development can and do function to dissipate storm energy and provide storm damage prevention and flood control. It is important that the project protect these functions on the site to the maximum extent.

The SEIR incorporates several important improvements to the project to improve coastal resiliency, including additional first-floor elevation, elevation of electrical utilities, and placement of mechanical systems on the roof. Additional landscaping with native species will also improve flood damage protection and storm damage prevention on site. The SEIR also states that stairs, ramps, walls that support ramps, and granite block benches will be used as natural elements to dissipate wave energy in coastal flood events, but these structures may exacerbate flooding impacts by reflecting wave energy where it might otherwise be dissipated. The proponent should explore approaches that work with the resource area to reduce the velocity of flood waters and reduce erosion. Typically, reducing impervious areas, elevating structures wherever possible to allow floodwaters to pass under, and increasing native vegetation are effective methods of reducing flooding impacts.

As stated in CZM comments on the EENF, the sediments in the coastal dune will respond to moving floodwaters in a particular way. Specifically, the unconsolidated sediments on the coastal dune will move in response to flood related energy in a way that is likely to destabilize solid foundations. To address this and provide a more stable base, the project proposes to remove the existing dune sediments to a depth of up to ten feet and replace them with structural fill. These changes, along with the proposed solid foundation and impervious areas will reduce the dune's ability to dissipate storm damage and provide flood control and may reflect energy onto adjacent sites and structures. Because the site is located within and adjacent to LSCSF that is likely to be exacerbated by climate change impacts, these issues should be appropriately considered in the design of the building and the site. Examining how the project will affect floodplain function currently and for the design life of the project, including how floodwaters will flow across the site in a 100-year storm event and how that may change with the proposed fill and development, will help to ensure that the project design adequately protects these functions. The analysis should include and address any possible changes in velocity, direction, depth, and extent of coastal floodwater because of any proposed fill, grade changes, and solid project components within and adjacent to the site. This should be assessed for conditions during rain events and coastal storm events where there is a combination of rain and coastal flooding. Permitting documents should demonstrate that these considerations have been applied in the design of the building elevations and site approaches.

Federal Consistency Review

The proposed project may be subject to CZM federal consistency review and if so must be found to be consistent with CZM's enforceable program policies. For further information on this process, please contact Robert Boeri, Project Review Coordinator, at robert.boeri@mass.gov, or visit the CZM web site at <https://www.mass.gov/federal-consistency-review-program>.

LE/kg/rh

cc: Kathryn Glenn, Rebecca Haney, CZM
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