Reuse Feasibility Study for Allentown State Hospital

PREPARED BY:
Michael Baker INTERNATIONAL
80 YEARS

September 30, 2020

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Acknowledgments

This study could not be completed without the contribution of project partners and stakeholders providing valuable and essential insight throughout the process.

PROJECT PARTNERS

City of Allentown
City of Bethlehem
Lehigh Valley Economic Development Corporation
Lehigh Valley Land Recycling Initiative

PROJECT STAKEHOLDERS

Allentown Economic Development Corporation
Allentown School District
CBRE, Inc.
Colliers International
Community Services for Children
Delaware & Lehigh National Heritage Corridor
Discover Lehigh Valley
East Side Youth Center
Feinberg Real Estate
Greater Lehigh Valley Chamber of Commerce
Lehigh County
Lehigh and Northampton Transportation Authority
Lehigh Valley Planning Commission
Lehigh Valley Workforce Investment Board, Inc.
Pennsylvania Department of Environmental Protection
Pennsylvania Secretary of General Services Curt Topper
Pennsylvania State Representative Mike Schlossberg
Pennsylvania State Senator Patrick M. Browne
United State Environmental Protection Agency - Region 3
Third Day Worship
Wildlands Conservancy

PLANNING AND DESIGN CONSULTANTS

Michael Baker International, Inc.
Vernon Land Use, LLC

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

This reuse feasibility study is being funded by an USEPA Brownfield Assessment grant and is being conducted independent of the disposition process being conducted by the Commonwealth of Pennsylvania for this property. Michael Baker International Inc. is not acting as an agent of the Commonwealth in any capacity in regard to this feasibility study or the Allentown State Hospital property.

INTRODUCTION

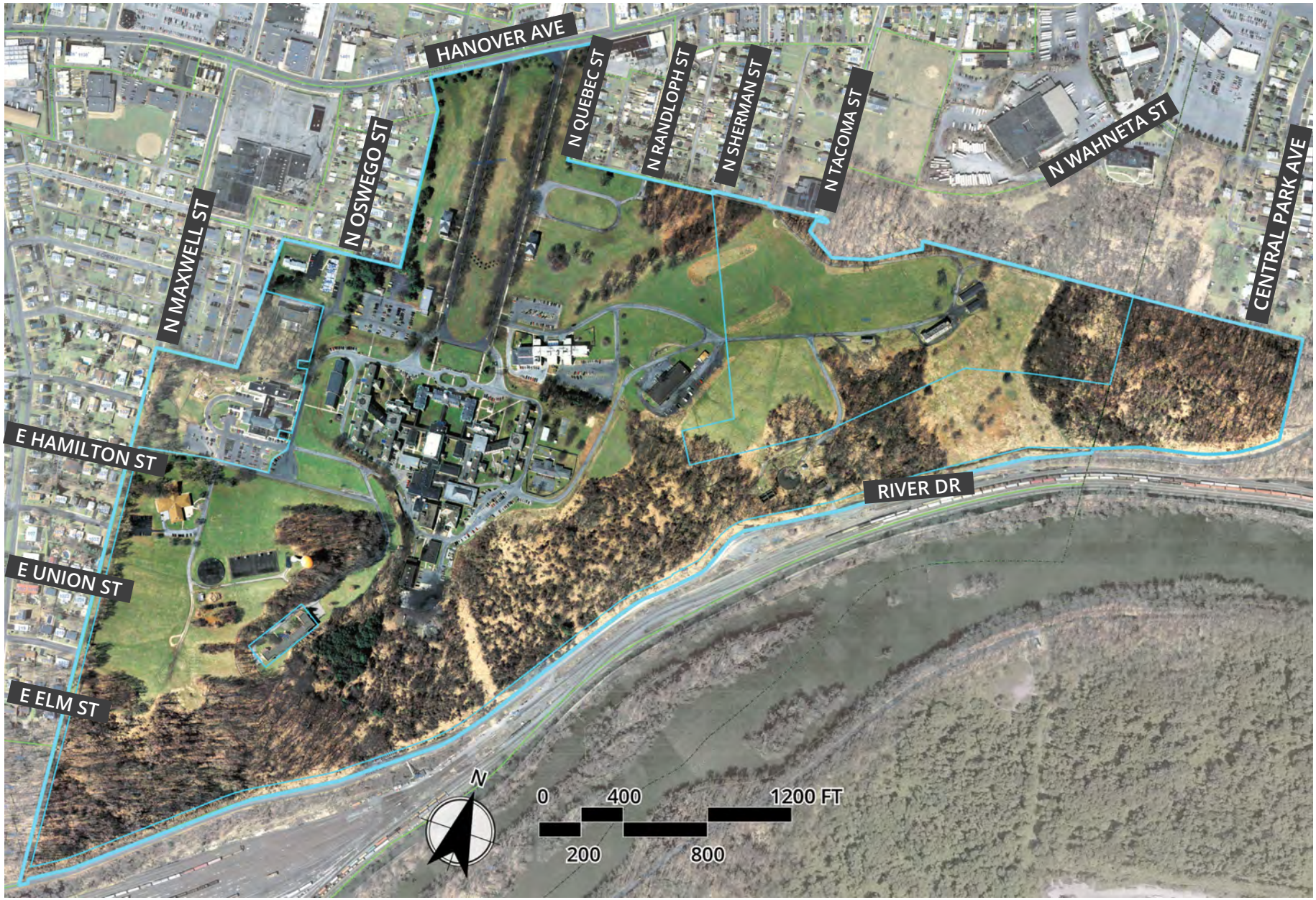
Study Overview

After 100 years of use by the Commonwealth of Pennsylvania and eight years of dormancy, redevelopment of the former Allentown State Hospital site (ASH, the site, or the ASH site) offers a "once-in-a-lifetime" revitalization and economic development opportunity for surrounding communities. This Reuse Feasibility Study builds upon local and regional economic development initiatives to provide a focused and strategic approach for evaluating potential redevelopment scenarios, as well as redevelopment recommendations for the approximately 195-acre property.

This study was initiated and requested by the City of Allentown. As a member of the Lehigh Valley Land Recycling Initiative (LVLRI), the City of Allentown requested funding for this Reuse Feasibility Study in order to guide future redevelopment plans and accelerate development on the ASH site. The City of Allentown intends to utilize this study as a resource when considering development plans, rezoning requests and fielding concerns from community members. This study was funded through a 2016 United States Environmental Protection Agency's (USEPA) Brownfield Assessment Grant received by the LVLRI and the Lehigh Valley Economic Development Corporation (LVEDC). The utilization of USEPA funding for reuse planning has a strong history of catalyzing redevelopment and leveraging significant implementation investment from both the public and private sectors. Further, the investment in this study creates forward momentum towards job creation, tax revenue generation, and community revitalization.

This Reuse Feasibility Study was conducted independent of the Commonwealth of Pennsylvania's disposition process for the Allentown State Hospital Campus.

Figure 1: ASH Site



Source: Google, City of Allentown

Project Partners

LVEDC and LVLRI selected Michael Baker International, Inc. (Michael Baker) in November 2019 to perform the Allentown State Hospital Reuse Feasibility Study funded through the USEPA's Brownfield Assessment Grant. Michael Baker's professional services were augmented and supported by Vernon Land Use, LLC, creating the planning and design consultant team. This study was a joint effort made possible by the following federal, regional, and local project partners.

Planning and Design Consultants

Project Approach

The project scope of work was divided into three distinctive phases culminating in the production of this Reuse Feasibility Study report. Within each project phase, specific objectives and tasks were identified. Stakeholder engagement was a critical component that spanned multiple phases of the study process. The project phases and associated tasks are presented on the following page. Specific outcomes of each of the tasks are provided in the subsequent sections of this report.

Due Diligence

(DECEMBER – MARCH)

Background Information and Data

- Review relevant studies and reports to understand the community's goals for reinvestment and economic development, as well as current local and regional initiatives.
- Review and incorporate public input collected during the City's comprehensive plan effort.
- Conduct one-on-one interviews with stakeholders.
- Facilitate a focus group session on Economic Development.
- Identify data gaps relative to information necessary to develop viable reuse options.

Existing Conditions Analysis

- Analyze site conditions and explore potential limitations for redevelopment through identification of potential physical barriers or site constraints including:
    - Environmental
    - Utility
    - Geological
    - Multimodal Connectivity

Real Estate Market Study

(JANUARY – MARCH)

- Conduct a market study to inform the feasibility of the three development concepts based on uses with viable market support; include square-footage by use for each concept.
- Incorporate the following as part of the market study:
    - Socioeconomic and employment trends
    - Economic clusters and target industries
    - Office, light industrial, and other workspace gap analysis
    - Retail gap analysis
    - Housing gap analysis

Development Scenarios

(MARCH – JUNE)

Development Scenarios

- Conduct a visioning session with stakeholders to explore plan concepts for three development scenarios.
- Outline three potential development scenarios based on zoning, site due diligence findings, market study findings, and community benefit and public use.
- Ensure development concepts meet four criteria: legal permissibility, physical possibility, financial feasibility, and maximum productivity.
- Present a site rendering for each development concept.

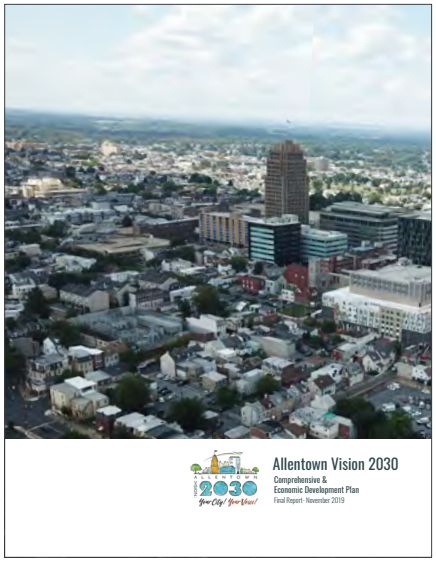
Reuse Feasibility Study Final Report

(JULY – SEPTEMBER)

- Summarize stakeholder input, existing conditions analyses, and market study findings.
- Provide description and renderings of three development concepts.
- Conduct a comparative analysis of the development concepts that includes build out cost estimates and recommended site improvements.

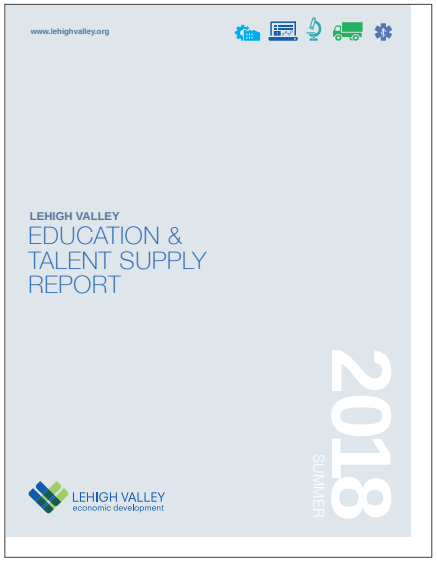
EXISTING PLANNING EFFORTS

A key component of the project approach was the review and incorporation of findings, as well as public and stakeholder input, from recently completed local and regional plans and studies. The following two efforts were specifically influential to the development of this study:



Allentown Vision 2030

The City of Allentown's Comprehensive and Economic Development Plan was adopted in December 2019 and features an extensive and active public engagement process, including input on ASH and potential reuse opportunities for the site. This study incorporates the input collected during the City's comprehensive plan effort, which was critical to understanding the community's goals for reinvestment and economic development.



Lehigh Valley Education & Talent Supply Report

LVEDC in conjunction with Workforce Board Lehigh Valley completed the 2018 Lehigh Valley Education & Talent Supply Report as a strategic effort to identify workforce supply and demand issues and to partner with local stakeholders to align talent with industry needs. The report identified five target industry sectors based on current trends and future growth potential and included outreach with businesses and other regional stakeholders. To ensure consistency with regional strategies, findings from the report are included in this study and each of the five target industry sectors was analyzed for potential reuse compatibility.

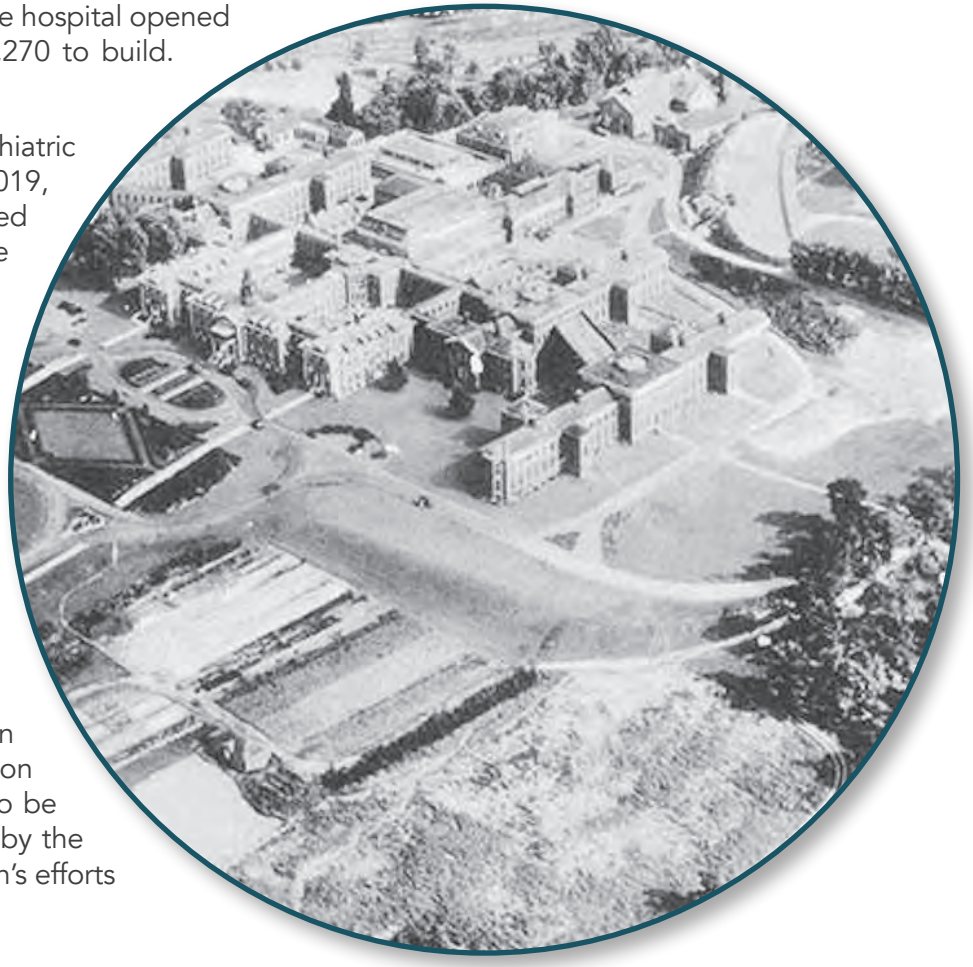
WHY PLAN?

Site History

The Allentown State Hospital was established in July 1901 through an act of the Pennsylvania General Assembly. The mission of the hospital was to provide psychiatric care for patients according to homeopathic treatment. After multiple funding-related delays, the hospital opened to receive patients on October 3,1913. The hospital cost $1,931,270 to build. Operations peaked in 1950 with 2,012 patients.

Nearly a century later, due to the sharp decline in the need for psychiatric hospitals, the facility closed on December 17, 2010. On July 2, 2019, Governor Tom Wolf signed Senate Bill 701 (Act 71), which established a process for disposition of the ASH site and a disposition committee to oversee a competitive solicitation for the property. The Act 71 Committee includes State Senator Patrick M. Browne, State Representative Mike Schlossberg, a representative of the City of Allentown, and the Secretary of the Pennsylvania Department of General Services (DGS). A Developer Request for Proposals is being prepared by DGS and is expected to be released in late 2020. This study will provide the Act 71 Committee with potential reuse options for the ASH site ahead of the Committee's review of applications to purchase the property. The Act 71 Committee will review the Developer Proposals and recommend a buyer to DGS.

Act 71 also prescribed that DGS prepare the site for disposition including demolition of all of the buildings on the site and remediation of environmental impairments throughout the property. The demolition and remediation activities began in July 2020 and are estimated to be completed by the end of 2021. This study was not commissioned by the Commonwealth of Pennsylvania, nor is it part of the Commonwealth's efforts to prepare the site for disposition.



Aerial view of Allentown State Hospital, 1938

Site Location and Planning Context

Owned by the Commonwealth and located in East Allentown, equidistant from the downtowns of both the City of Allentown and the City of Bethlehem, ASH spans approximately 195 acres, representing the largest site available for development in the City of Allentown. As shown in Figure 2, the site consists of the following tax parcels in the City of Allentown, with a small portion also located in the City of Bethlehem:

- 641726847797 – 1520-1600 Hanover Avenue - 165.85 acres
- 641746460329 – 1900 East Allen Street (Lot 2) - 29.32 acres

The site is currently improved with 44 buildings that were part of the hospital campus, and which are contracted to be demolished. A Pennsylvania Department of Environmental Protection (PADEP) Air Monitoring Station is located on the site and will remain in the future. The PADEP Air Monitoring Station is shown as a separate interior parcel in the southwestern portion of the property. Property currently owned and occupied by Community Services for Children to the west of the site at 109 North Maxwell Street will remain. Additionally, townhouses built to the north of the Community Services for Children property will also remain. Unique to ASH, as well as some of the surrounding neighborhoods, is its high elevation. The vistas at the apex of the site near Dutch Hill are impressive with views of surrounding mountains and the City of Bethlehem.

ASH is currently zoned for institutional use and is bounded by three residential zoning districts and two commercial districts as shown in Figure 3. While the residential districts vary in density, the area's predominant use is single-family residential. Development along Hanover Avenue at the northern boundary of ASH is a mix of commercial, residential, and institutional uses. The southern boundary of the site abuts an industrial zoning district and freight rail along River Drive.

View of Allentown State Hospital from Hanover Avenue.

Figure 2: ASH Parcels

Source: Google, City of Allentown

The future of ASH and the surrounding area was an emphasis of the City's 2019 comprehensive planning process, Allentown Vison 2030. A key action identified in the plan is a comprehensive zoning code update that allows for a more integrated approach to land use. ASH is identified as an area suitable for this approach that could support a mix of land uses and zoning classifications. Additionally, changes in zoning to support industrial uses are already underway in the City. These changes are intended to bolster economic development focused on industrial uses, which was an objective of the City's re-industrialization strategy completed in 2014.

View of the main entrance of the site facing Hanover Avenue.

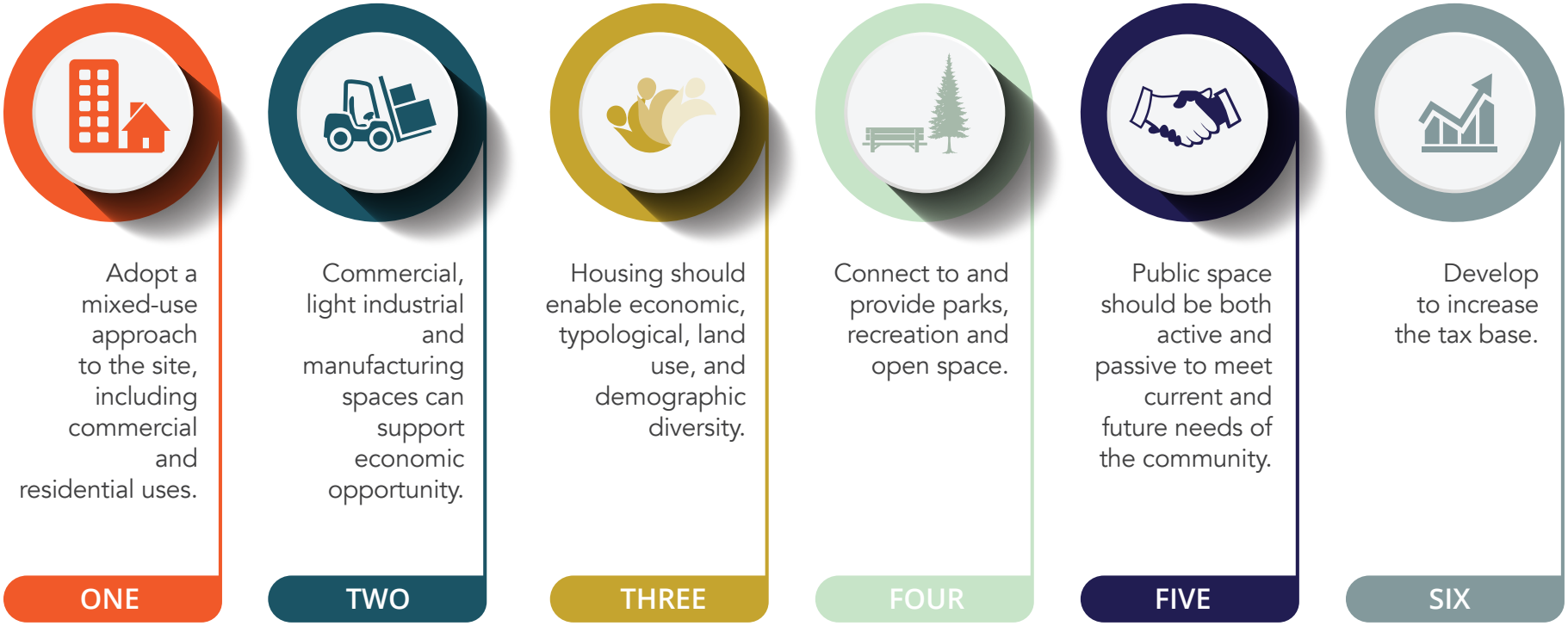
Figure 3: City of Allentown Existing Zoning Districts Surrounding ASH

This map is a part of the Zoning Ordinance for the City of Allentown, Pennsylvania, Ordinance 14835, passed by City Council and signed by the Mayor on November 5, 2010, effective November 15, 2010.
Attest: Michael P Hanlon
Michael P. Hanlon, City Clerk

Source: City of Allentown. https://www.allentownpa.gov/

Allentown Vison 2030 identified ASH as a key project in the East Allentown neighborhood. The plan's vision for this area includes prioritizing transit, destinations improving the neighborhood's sense of place, and redevelopment that includes amenities and adds to the local economy. A high-level, conceptual redevelopment framework was prepared for ASH including establishing a grid network tying into existing neighborhood roads, creating a park and trails, and identifying developable area. It was accompanied by several development principles.

Development Principles



Source: City of Allentown, Allentown Vision 2030

FutureLV, the regional comprehensive plan for Lehigh and Northampton Counties developed by the Lehigh Valley Planning Commission, also highlights ASH and the surrounding area as a redevelopment opportunity. The site is located along a corridor identified for future redevelopment, which would include enhanced bus service and accessibility for pedestrians, cyclists, and other means of mobility. Regional priorities also include concentrating future development in mixed-use areas with access to multimodal transportation options to further strengthen accessibility, diversity of housing, amenities, and active lifestyles. Increasing density and infill development is another focus, which limits development of farmlands and open spaces and capitalizes on existing infrastructure.

Goals and Benefits of Reuse Feasibility Concepts

Spanning approximately 195 acres, the ASH site is vast and offers a significant redevelopment opportunity that could support a wide range of land uses and reuse visions. The goal of this study is to develop feasible reuse concepts for the site that leverage existing planning efforts, advance economic development strategies, incorporate community needs and visions, and address local priorities.

A critical component to concept development is community and stakeholder engagement. Working together with the community and project partners helps build a united vision for the site and a better understanding of the magnitude of redevelopment it could support. Concepts are tested by four essential criteria: legal permissibility, physical possibility, financial feasibility, and maximum productivity. Additionally, the assessment of real estate market conditions tests the market receptivity of the various potential reuses so that reuse feasibility concepts are grounded in market realities.

This comprehensive study process affords a careful and strategic approach to redevelopment opportunities. Concepts developed through this effort are influenced by both local community and regional priorities and built with careful consideration of physical site conditions, estimated development costs, and real estate market support. These concepts can be used to both inspire and inform future redevelopment on the site. Preparing for redevelopment in this way helps foster strategic investment and implementation that advances economic development and community revitalization.

Former ASH Main Campus Building. Source: The Morning Call, Nov 30, 2018

SITE CONDITIONS:
STRENGTHS AND LIMITATIONS

Environmental

The analysis of existing environmental conditions at ASH was developed through review of multiple publicly available environmental assessment reports. A list of these reports is included in Appendix A. Since it is the current property owner's (DGS) intention to mitigate environmental concerns as part the site demolition/remediation contract, the scope of work for that contract (DGS SOW) was also reviewed to determine if all previously identified Recognized Environmental Conditions (RECs) are being mitigated. The following sections provide a summary of this analysis. Appendix A provides the full, detailed analysis of existing environmental conditions.

RECOGNIZED ENVIRONMENTAL CONDITIONS

There have been multiple Recognized Environmental Conditions (RECs) identified in both the main hospital campus buildings and throughout the property itself. Appendix A includes a matrix of RECs as identified by each previous investigation and several figures which detail the locations of each REC. If left unabated, these RECs would have the potential to significantly impede redevelopment of the property or limit the types of uses that could be supported at the site.

Main Campus RECs

Many of the buildings on the main campus have been identified as having Asbestos Containing Materials (ACM) and/or Lead-Based Paint (LBP). Other RECs identified with or around the buildings include:

- The laundry facility in building 29 may have had dry cleaning operations.
- A Fire Training area east of the onsite wastewater treatment plant (WWTP).
- Use and storage of chemicals, oils, and evidence of vehicle maintenance present in electric shop and maintenance shop.
- Several concerns related to historic operations of the WWTP including disposition of sludge and the presence of leaking drums and containers inside the sludge filter building.
- Evidence of an undocumented underground storage tank (UST) was observed at the former WWTP located at the southeast end of the site. Also identified were two 1,000-gallon fuel oil aboveground storage tanks (ASTs) at the subject site, one located to the south of the electric shop and the other located between buildings 25 and 26. One 500-gallon diesel AST was also observed to the northeast of the maintenance building. A 4,000-gallon gasoline UST was located to the northeast of the maintenance building.

Off-Campus RECs

Additional RECs have been identified in the "off campus" section of the ASH property as well. In the area northeast of the main hospital building campus, several areas of unregulated landfilling-type activities and soil contamination have been identified and investigated. These areas include:

- Coal ash and dioxin soil contamination in area of former incinerator; dioxin contamination of soils in this area have been confirmed.
- Three unregulated landfill areas: south of boiler plant area, southeast of incinerator and pipe building, in wooded area east end of the site.

DGS REMEDIATION SCOPE OF WORK

The DGS SOW generally consists of abatement, remediation, termination of utilities, and demolition of the existing buildings/ structures and restoration of ASH. In order to develop the DGS SOW, DGS commissioned two environmental studies:

- Phase 1 Environmental Site Assessment, prepared for DGS by KCI Technologies, Inc., November 8, 2018 - The subject site of this study was the two parcels of land that comprise ASH totaling approximately 195 acres; improved with 30 vacant hospital buildings located near the center of the site and several vacant agricultural and maintenance buildings located on the eastern portion of the site.
- Screening Level Phase 2 Environmental Site Assessment, prepared for DGS by KCI Technologies, Inc., November 20, 2018 - The investigation was both targeted and limited in nature and was conducted to gather additional information concerning the issues referenced below. KCI did not investigate other areas of the site or other issues. The Screening Level Phase II ESA was conducted to further investigate:

    a. Dioxin-impacted soils located south of the former incinerator; and

    b. Two diesel ASTs and one decommissioned UST located on the site.

The findings of these two studies confirmed the RECs that had been identified through previous studies and further defined the nature and extent of the landfilled areas. This information was used to develop a remediation scope of work to address all of the confirmed RECs within the ASH property. The DGS SOW includes the following remediation:

- Abatement of ACM, LBP and any hazardous materials prior to demolition of the buildings;
- Removal of above and underground storage tanks;
- Mitigation of any issues related to the WWTP;
- Excavation of dioxin-contaminated soils;
- Excavation of landfilled materials; and
- Backfilling of any excavated areas.

The matrix included in Appendix A provides the remediation effort that is intended to address each of the previously identified RECs. Based on a review of available environmental reports and the DGS SOW, it appears that all previously identified RECs will be addressed during the planned site preparation work.

CONSIDERATIONS FOR REDEVELOPMENT

While the DGS SOW appears to address the previously identified RECs, some potential uncertainty remains in terms of potential impacts to redevelopment. Future property owners and potential developers will need to confirm whether the resulting environmental conditions will support the proposed end uses in their redevelopment plan.

For example, one issue not addressed by the DGS SOW is whether or not the remediated areas will be taken through the PADEP Land Recycling Program (LRP) to receive a Relief of Environmental Liability. Any potential purchaser of the ASH property will, of course, conduct their own environmental due diligence, however, in the absence of completing the PADEP LRP process, there may be no protection from environmental liability for future property owners or end users.

Also not identified in the DGS SOW is the level of cleanup standard to be achieved. PADEP's Relief of Environmental Liability is secured based on the type of cleanup standard that has been attained by the remediator. The appropriate cleanup standard is based on the intended end use of the site and can be different for each part of the site if multiple types of end uses are proposed across the property. The PADEP LRP allows for achievement of less stringent "non-residential" standards for end uses such as industrial or commercial facilities. Parcels that are proposed for recreational or residential end uses (as defined by PADEP) must achieve a higher "residential"

standard for remediation. While the DGS SOW addresses the previously identified RECs, it does not indicate whether the remediation will attain a residential standard or a non-residential standard. Potential developers will still need to confirm whether the resulting environmental conditions will support the proposed end uses in their redevelopment plan.

Finally, the DGS SOW includes excavation and backfilling of contaminated soil and previously landfilled areas. Compaction testing may be necessary in the backfilled areas to confirm buildability.

Demolition

It is the intent of the current property owner to conduct site preparation work, which will result in a "pad ready" site for redevelopment. Part of the site preparation work includes extensive demolition of existing structures and buildings. The following section discusses the expected resulting site conditions and any remaining issues related to site redevelopment.

DGS DEMOLITION SCOPE OF WORK

DGS has contracted with a Design Build Contractor (DBC) to complete the DGS SOW described in the Request for Proposal [Pennsylvania Department of General Services, Request for Proposal for a Design Build Contractor, Project No. DGS-C-0501-0022, Project Manual, Appendix Q, Statement of Work, August 29, 2019 (DGS SOW)]. The construction duration of the demolition project is 546 days. This includes an estimated four months for design and 14 months for abatement, utility termination, demolition, removal, fill, and seeding. Activities were expected to begin in the summer of 2020.

Demolition included in the DGS SOW generally consists of termination of utilities and demolition of the vast majority of existing buildings/structures. There are 44 existing buildings, including ancillary structures such as sheds, gazebos, dumpsters, etc., located throughout the approximately 195-acre site. There is also a system of utility tunnels throughout the main grouping of buildings along with one inactive and two active water reservoirs that currently hold approximately 1.5 million gallons of water.

There are several structures and a building on the main hospital campus that are not included in the DGS SOW. The structures and buildings to remain include the existing sidewalks and parking lots (not integral to the top of the utility tunnels), the PADEP weather station (nor its power service), the Community Services for Children buildings, and townhouses.

The DGS SOW describes the demolition activities as follows:

"… buildings will be removed down to their foundation walls. Once the buildings/tunnels are removed any remaining foundation walls will be demolished to below four (4) feet from finished grade. Along with the limited foundation wall demolition any basement slab will be cracked full depth in several locations. This is to allow water infiltration to drain out of the remaining foundation/slabs. Throughout the site there is a system of utility tunnels that will also need to have selective demolition completed. Once the tunnels are abated and piping and appurtenances disposed of, they will have the top portion demolished and the bottom slab cracked full depth."

The DGS SOW also provides details as to the final condition of the site and supporting infrastructure once the work has been completed:

" … the DBC shall only grub to the extent required to perform the demolition of the buildings, structures and abatement of environmental hazards. All trees located along the main ingress/ egress roads shall not be removed. Demolished buildings, sub grade voids i.e. basements, tunnels, areas of contaminated soil and UST shall be filled with approved fill. These areas shall be filled in two (2) foot lifts and compacted to ninety-five (95) percent compaction. Any portion of existing sidewalk that was removed to abate and demolish the tunnels shall be replaced to match existing. If any portion of tunnel runs under the roadway, the roadway shall be repaired in accordance with Penn DOT standards. The disturbed areas of the project site shall be seeded in accordance with NPDES permit requirements."

CONSIDERATIONS FOR REDEVELOPMENT

The current main ingress and egress roads will remain as will all mature trees along these roads. It is likely that a new site plan will require new roadways and may not include all the mature trees. Additional site preparation work is expected to support the new end uses.

All onsite utilities will be terminated and supporting utility tunnels demolished. Significant utility infrastructure – including water and sewer – will be needed to support a new redevelopment.

Some foundations and basement slabs will be demolished and left in place. This may require additional excavation and removal of construction debris during new construction. Also, given that building debris will be backfilled into basement areas of buildings during demolition, buildability of former building footprints should be confirmed prior to new construction.

Topographic and Geological

SITE TOPOGRAPHY

Despite the 195-acre parcel size of the ASH site, topography limits the use of a substantial portion of the property. Figure 4 presents a topographical map of the site.

Steep slopes along the southern border and throughout the eastern portion of the site are prohibitive to redevelopment. It is estimated that topography eliminates approximately 97 acres, or nearly half the site acreage, from development. The remainder of the site is rolling topography with elevation generally building north to south until the southern border slopes. This rolling topography should allow for development with varying sightlines.

View of sloping topography on the ASH site.

Figure 4: Site Topology

Source: Final Minor Subdivision Plan of Allentown State Hospital. City of Allentown, Bureau of Engineering, Department of Public Works. 2007.

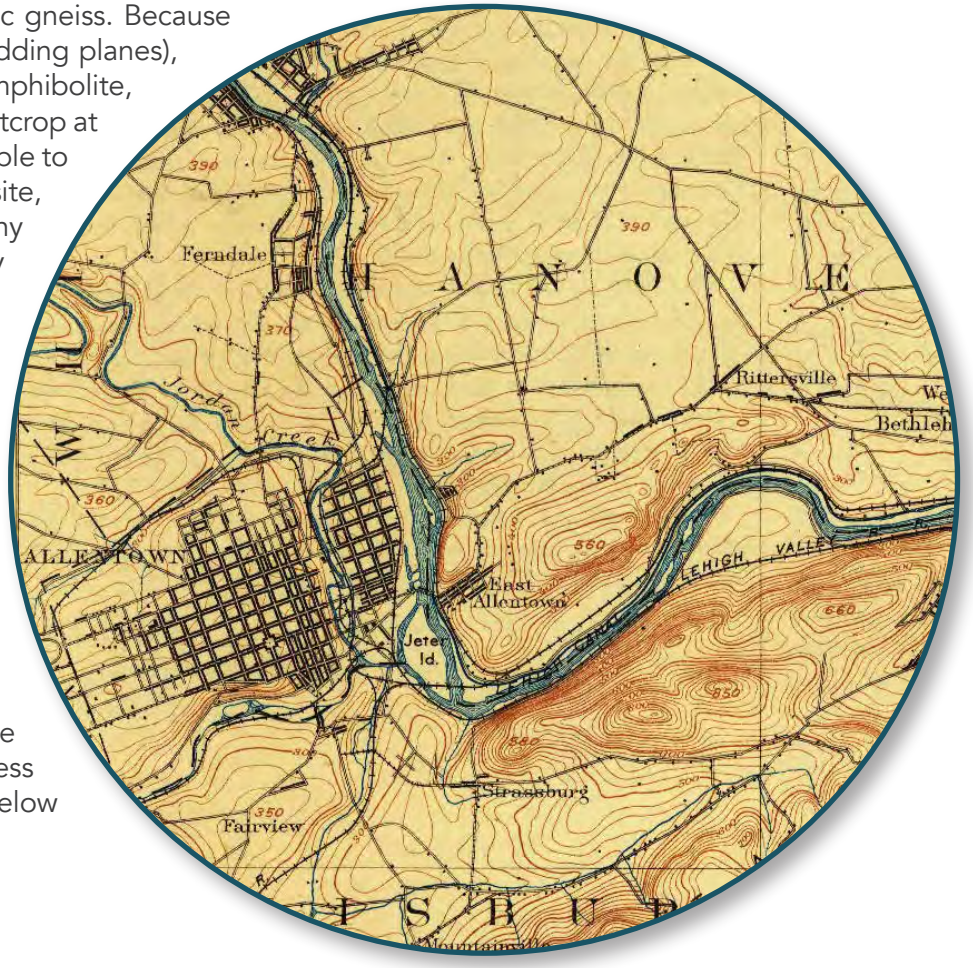
GEOLOGICAL

Based on previous subsurface investigations completed at the site, the overburden material (soil) exists from nine to 14 feet below ground surface (bgs) before weathered bedrock is encountered. At various locations spread across the site, test pits have been completed where weathered bedrock was not encountered. Weathered bedrock is the top 10 to 50 feet of usually solid rock below a site, the term weathered indicates that the bedrock formation has been eroded either physically or chemically and does not maintain the same parameters as competent bedrock. Weathered bedrock is often more fractured and less competent.

The bedrock geology underlying the site is comprised of a granitic gneiss. Because the topography and strike and dip (or direction of the bedrock bedding planes), multiple formations outcrop at the site. Microperthite alaskite, Amphibolite, and the Hardyston Formation are the three major formations that outcrop at the site. These formations are relatively competent and not susceptible to extreme weathering. The evidence of such geology is visible at the site, where rolling upland topography is prevalent. The step topography is due to the continued erosional efforts of the Lehigh River slowly eroding the bedrock, and the bend in the Lehigh River is directly related to a thrust fault.

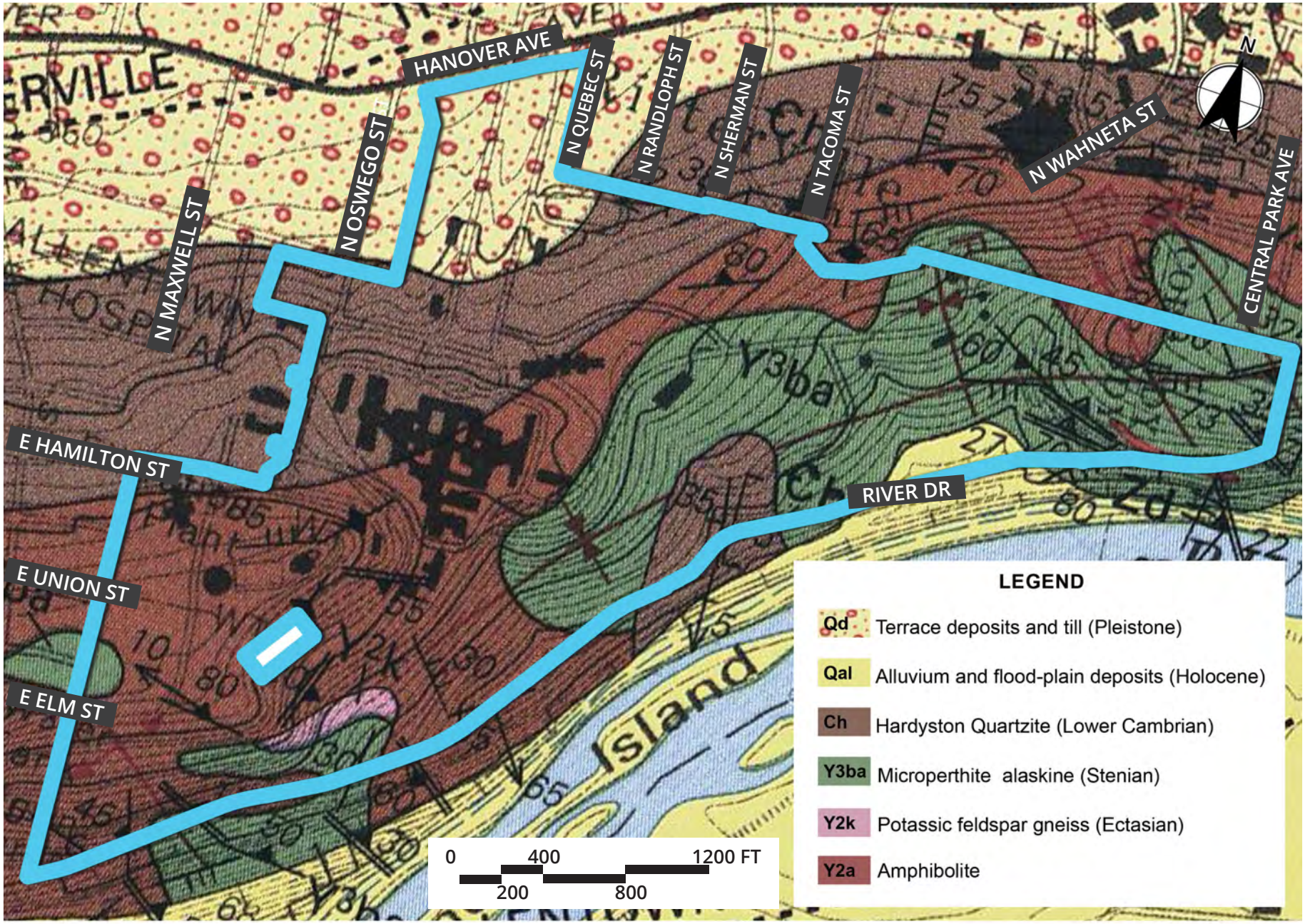
During a 2010 Targeted Brownfields Assessment, five borings were completed onsite in the eastern portion of the site. This part of the site was used primarily for agricultural purposes serving the hospital until the 1960s. The area was being operated as a landfill in the late 1970s and 1980s. The five borings surrounded the landfill area and were completed in bedrock. Borings were completed to 49, 62, 55, 37 and 39 feet bgs. Very weathered bedrock was encountered between 16 and 20 feet bgs. Bedrock was described as weathered for the extent of all borings.

Based on the limited geotechnical investigation completed at the site and the existing topography, future development will have to address weathered bedrock and pinnacles of competent bedrock that exist below the surface at the site.



Historical topographic map of the City of Allentown and the ASH site as surveyed in 1893.
Source: USGS, 1919

Figure 5: Bedrock Geology



Source: Geological Map of Allentown East Quadrangle, Lehigh, Northampton, and Bucks Counties. Pennsylvania. USGS

Utility

While ASH is serviced by local utilities at specific points of connection, the utilities throughout the site that serve each building are "private," owned by DGS. Table 1 outlines each utility that services ASH, as well as how each utility will be impacted per the demolition contract.

STORMWATER MANAGEMENT

The ASH site currently has no stormwater management facilities and only conveys stormwater with no management of rate, infiltration, or quality of runoff. As the site is developed, the designers must consider the new impervious area created and manage the stormwater runoff in accordance with the City ordinances. It is recommended that stormwater be managed as close to the source of the runoff as possible. For example, use infiltration swales, underground detention/retention, and pervious paving to manage parking lot runoff rather than conveying to a large basin to manage runoff.

In addition to constructing to appropriate infrastructure to manage the stormwater quantity and quality the development will need to pay annual fees to the City of Allentown under their MS4 program. The current rate is $20.00 per billing unit where the billing unit is equal to 500 square feet of impervious coverage. There are opportunities in redevelopment to provide credits to reduce this annual fee.

Figure 6: ASH Utilities

Sources: PPL Electric Utilities, LCA

Table 1: Summary of Existing Utility Conditions

Utility Type	Provider	Existing Conditions
Electrical	PPL Electric Utilities 827 Hausman Road Allentown, PA 18101 888-220-9991	The existing power to the site from PPL is via a 12.47 kV distribution line, which would provide a maximum of 10-11 MVA. If more the 10-11 MVA are required to service redevelopment at the ASH site, a second distribution circuit would be required. The substation and on-site distribution lines will be removed as a part of the demolition contract.
Sanitary Sewer	Lehigh County Authority (LCA) 1053 Spruce Road Allentown, PA 18106 610-398-2503	There are two existing connection points to the LCA sewer system. One is at East Allen Street and North Quebec Street, and the second is at East Allen Street and North Saul Street. In addition, there is an abandoned WWTP on-site. The existing on-site collection system and WWTP will removed as a part of the demolition contract. The sanitary sewer from this site flows to the Kline Island Sewer System (KISS), which recently submitted an interim Act 537 plan to PADEP for approval due to the hydraulic overloads for three consecutive months in 2019. The hydraulic overloads have been related to excessive storm events causing rain derived inflow and infiltration to increase flows to the wastewater treatment plant. The interim plan does account for a flow rate of 95,200 GPD or 400 EDUs from this site. Any flows above that will require additional sewerage planning.
Domestic Water	Lehigh County Authority (LCA) 1053 Spruce Road Allentown, PA 18106 610-398-2503	The ASH site is currently serviced by one connection via an 8" meter. This service provides both domestic water and fire protection for the site. Current site improvements provide for water storage, which will be removed during demolition. Further study will be required to determine if a new water storage tank or tower will be required to meet water demands for redevelopment on the site.
Natural Gas	UGI Utilities, Inc. (UGI) 2121 City Line Road, Unit 1 Bethlehem, PA 18017 800-276-2722	The ASH site is not currently serviced by natural gas, but natural gas is available on the surrounding streets. UGI has natural gas mains at the following locations: • Hanover Street – 4-inch medium pressure line • Osewago Street – 2-inch medium pressure line • North Quebec Street – 2-inch medium pressure line • North Randolph Street – 2-inch medium pressure line UGI would most likely have capacity to service a mixed-use development at the ASH site to provide heating, hot water, and kitchen type facilities. However, any development requiring a load more than 2,000,000 BTUs would require review by UGI to determine if any offsite upgrades would be required and to determine any shared costs related to those upgrades.

Sources: PPL Electric Utilities, LCA, UGI

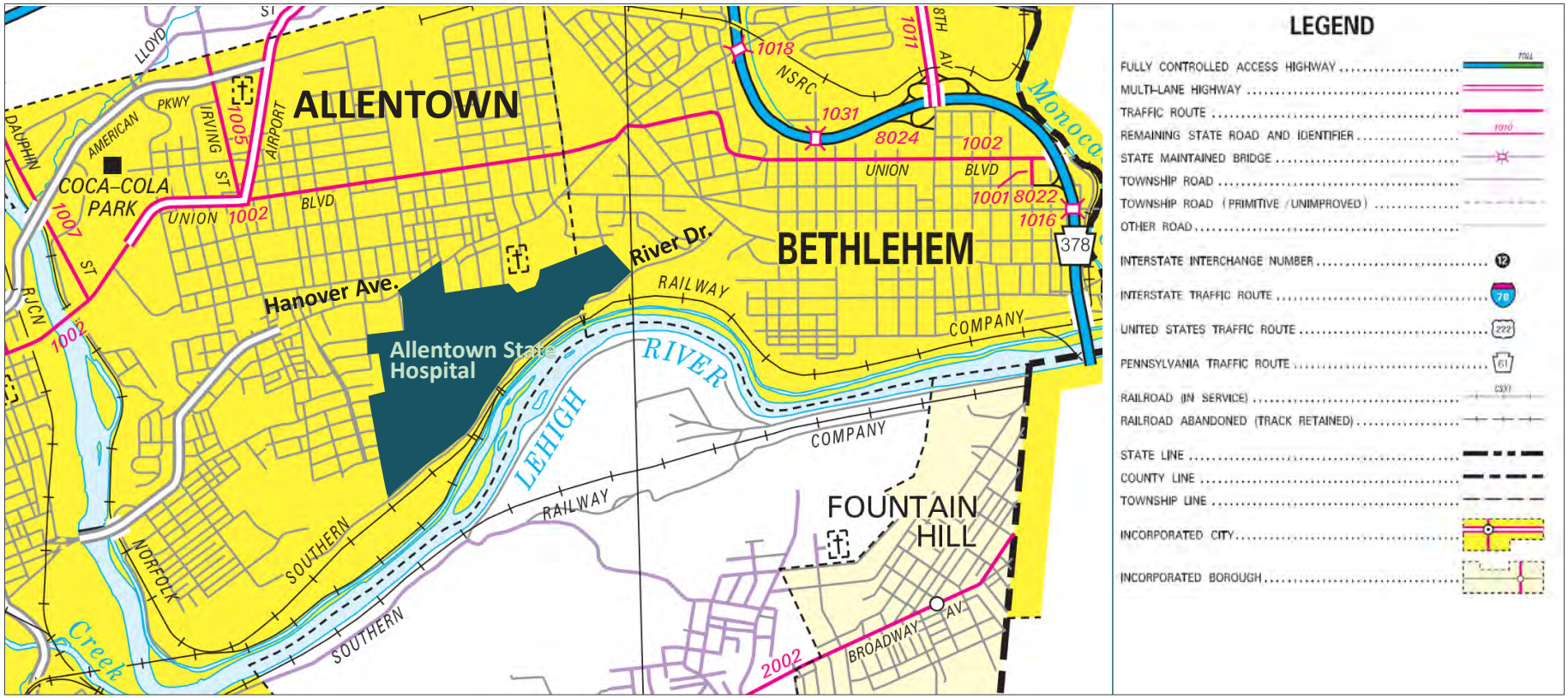
Multimodal Connectivity Analysis

ROADWAY CONDITIONS

All roadways surrounding ASH, including Hanover Avenue and River Drive, are locally owned as indicated by PennDOT County Type 10 map provided in Figure 7. As shown on the map, Hanover Avenue is the northern boundary of ASH, while River Drive is the southern boundary that travels adjacent to the freight rail line. Additionally, ASH contains an extensive, interior pavement network with multiple parking areas and driveway off-shoots. The site demolition work does not include the existing pavement and curbing.

A review of Lehigh Valley Planning Commission's 2021 to 2024 Transportation Improvement Program (TIP) revealed that there are no projects under construction or in development in this area.

Figure 7: PennDOT Lehigh County Type 10 Map



Sources: PPL Electric Utilities, LCA

Site Driveways and Street Connections

There are multiple existing paved access points to ASH, two of which are currently active. The main access point is a median-separated driveway on Hanover Avenue. Oswego Street is an additional access point to the western portion of the site servicing the Community Services for Children property. There are two access points along the eastern portion of the site along East Allen Street and another on the western part of the site at East Hamilton Street that are currently fenced-off. With a new proposed residential development to the northeast of ASH, there is a potential extension of North Wahneta Street that could provide a new connection to the site. In the easternmost portion of the site in the City of Bethlehem, Grandview Boulevard also presents an opportunity for an additional connection to ASH.

Figure 8: ASH Site Driveways and Street Connections

Source: Bing.com

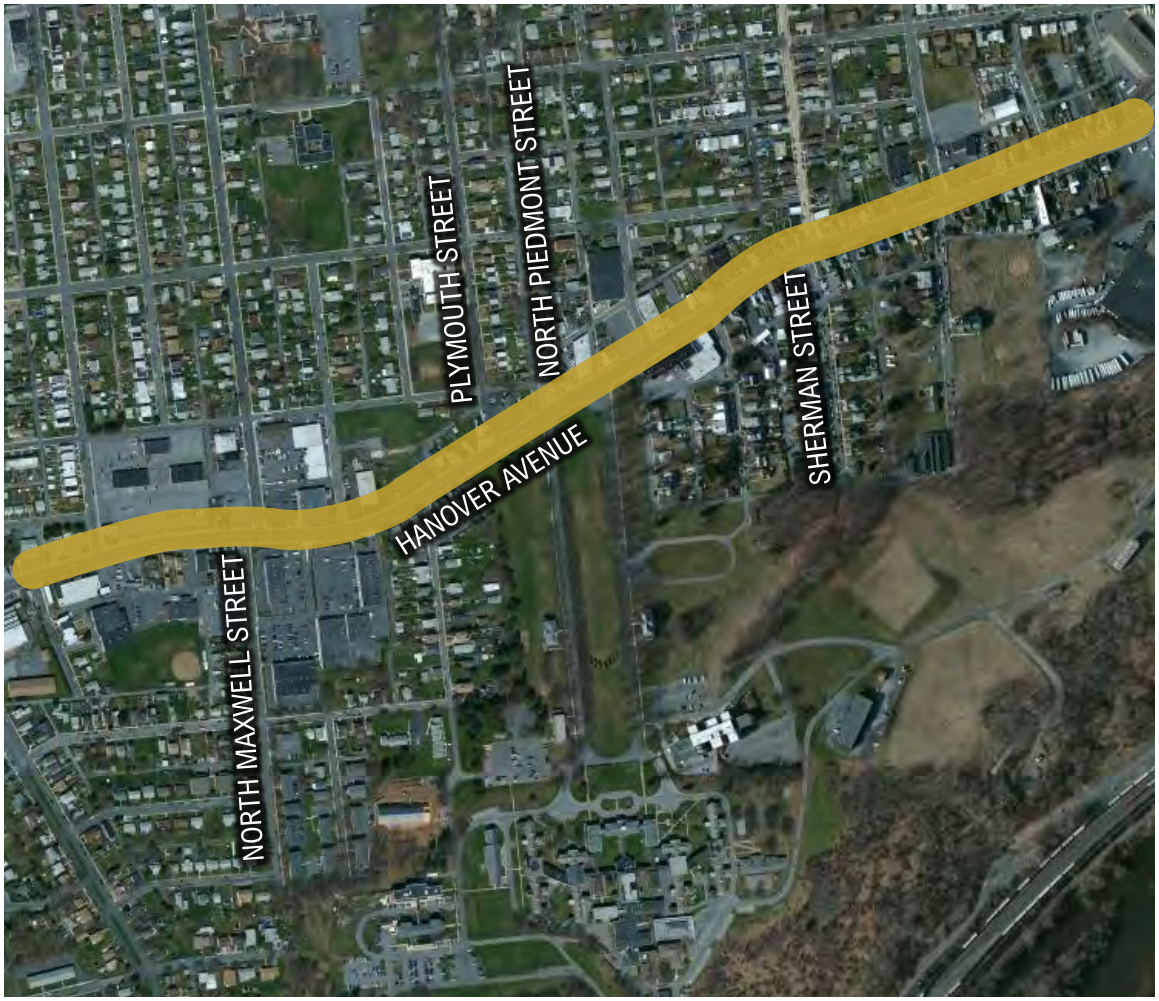
Hanover Avenue

Hanover Avenue is an east-west, two-direction local roadway with a posted speed limit of 35 miles per hour (MPH) at ASH. According to PennDOT's federal functional classification map, Hanover Avenue, a roadway owned by the City of Allentown, is classified as a principal arterial highway. The average road width along the site is 51-feet. Along ASH's frontage, Hanover Avenue's general roadway cross section consists of two 11-foot travel lanes, one in each direction, a 13-foot two-way center left-turn lane, and two 8-foot parking lanes. Portions of the parking lanes are utilized as bus pullover locations where bus stops are present. The average annual daily traffic (AADT) is approximately 14,200 vehicles per day. The predominate land use along Hanover Street, in the area of ASH, is commercial but there is some residential frontage.

There are two signalized intersections located at either end of the site along Hanover Avenue at Maxwell Street to the west and Sherman Street to the east. Both intersections are part of a time-based coordination signal system that runs from the intersection of Hamilton and Second Streets and Hanover Avenue and Wahneta Street.

Hourly traffic counts were conducted along Hanover Avenue between Plymouth Street and Piedmont Street on July 30, 2019. During the 24-hour count, there were 16,356 vehicles observed, 2.9% of which were heavy vehicles. The peak hours were observed to be from 8:00 A.M. to 9:00 A.M. (971 total vehicles) and 5:00 P.M. to 6:00 P.M (1,383 total vehicles). The directional movement is 51/49% split, with slightly more westbound vehicles than eastbound vehicles.

Figure 9: Hanover Avenue

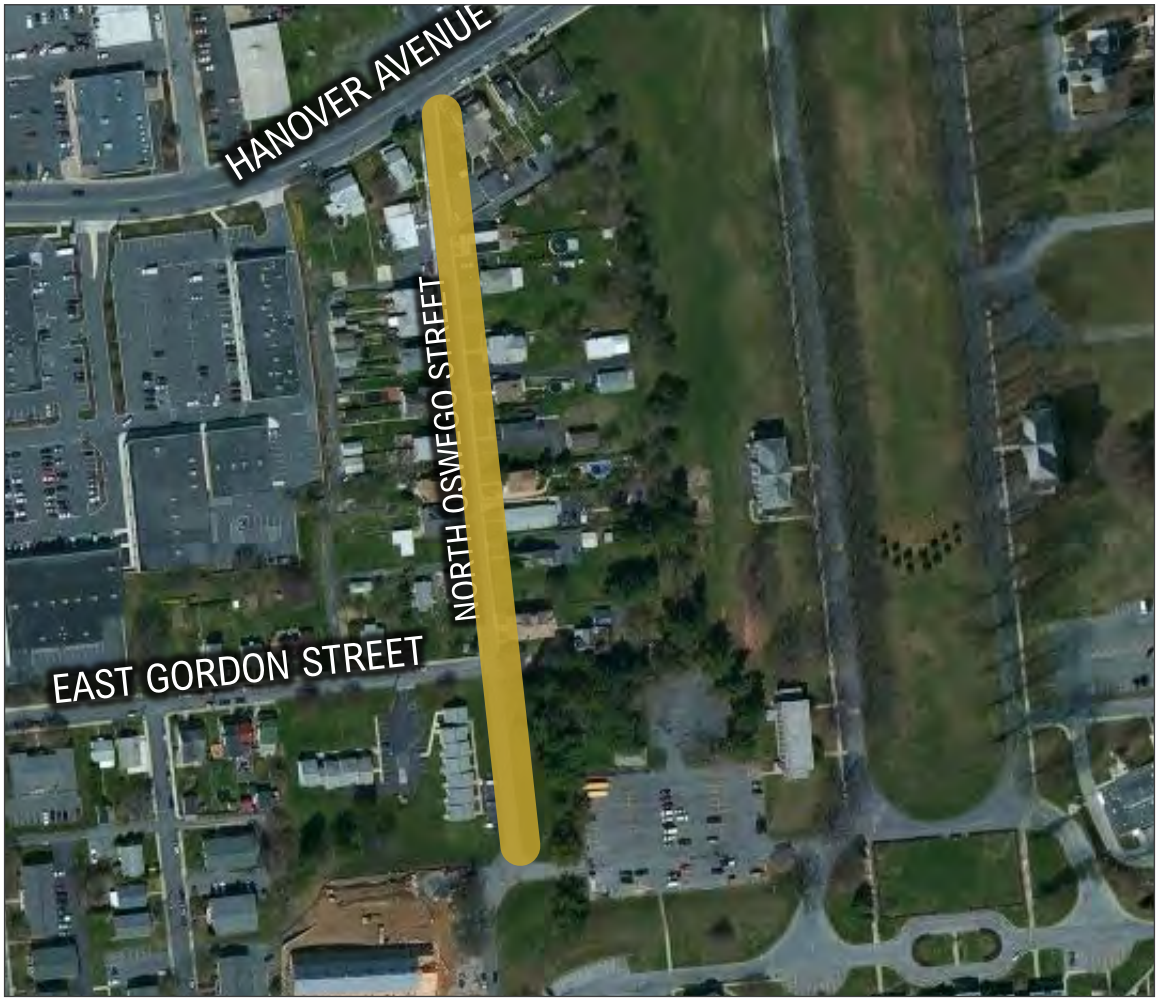


Source: Bing.com

Oswego Street

Oswego Street is a north-south local roadway that connects Hanover Avenue to ASH. Between Hanover Avenue and Gordon Street, the road is approximately 18 feet wide and parking is allowed on the western side of the road. The speed limit is 25 MPH within this road segment and the area is primarily residential. Between Gordon Street and ASH, the speed limit is 15 MPH and signage dictates that northbound-traveling vehicles must turn left at the intersection of Oswego and Gordon Streets. The road is approximately 20 feet wide along this segment.

Figure 10: Oswego Street



Source: Bing.com

River Drive

River Drive is an east-west, two-lane local roadway with a posted speed limit of 35 MPH along the southern boundary of ASH. River Drive is a narrow road that contains no shoulder. The roadway connects Market Street in Bethlehem to Carlisle Street and Hamilton Street in Allentown and serves as an alternate route to Hanover Avenue. The road runs parallel to a Norfolk Southern rail line and there are no existing access points to ASH. While connections to River Drive from the site are possible, there are challenges with respect to existing conditions including roadway geometry, sight distance, and speed limits.

Figure 11: River Drive

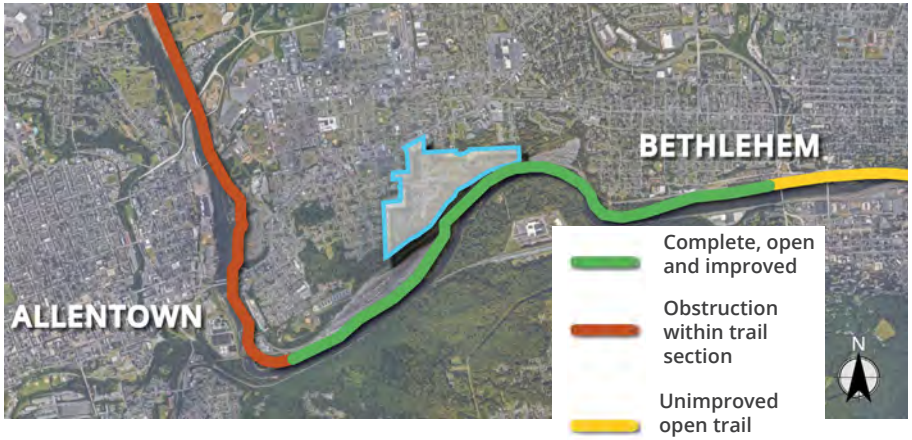
Source: Bing.com

PEDESTRIAN AND BICYCLE NETWORK CONDITIONS

Sidewalk is present along the site driveway entrance and exit, but it has not been maintained. It connects to the sidewalk network along Hanover Avenue. Sidewalk is present along all adjacent roadways and pedestrian crossings are present at the signalized intersections. A pedestrian crossing is also present at Plymouth Street and connects the roadway to the site. The Pennsylvania Bike Route network is not located adjacent to ASH. There are no facilities or signage for bicycles and pedestrians and no paved shoulders along River Drive.

The Delaware & Lehigh National Heritage Corridor (D&L) trail runs parallel to River Drive along the southern boundary of the site, located on the other side of the Norfolk Southern railroad tracks. This segment of the D&L trail is designated as complete, open, and improved. It stretches 3.9 miles and connects the Cities of Allentown and Bethlehem along the Lehigh River.

Figure 12: D&L Trail Traveling Parallel to ASH



Source: Delaware & Lehigh National Heritage Corridor

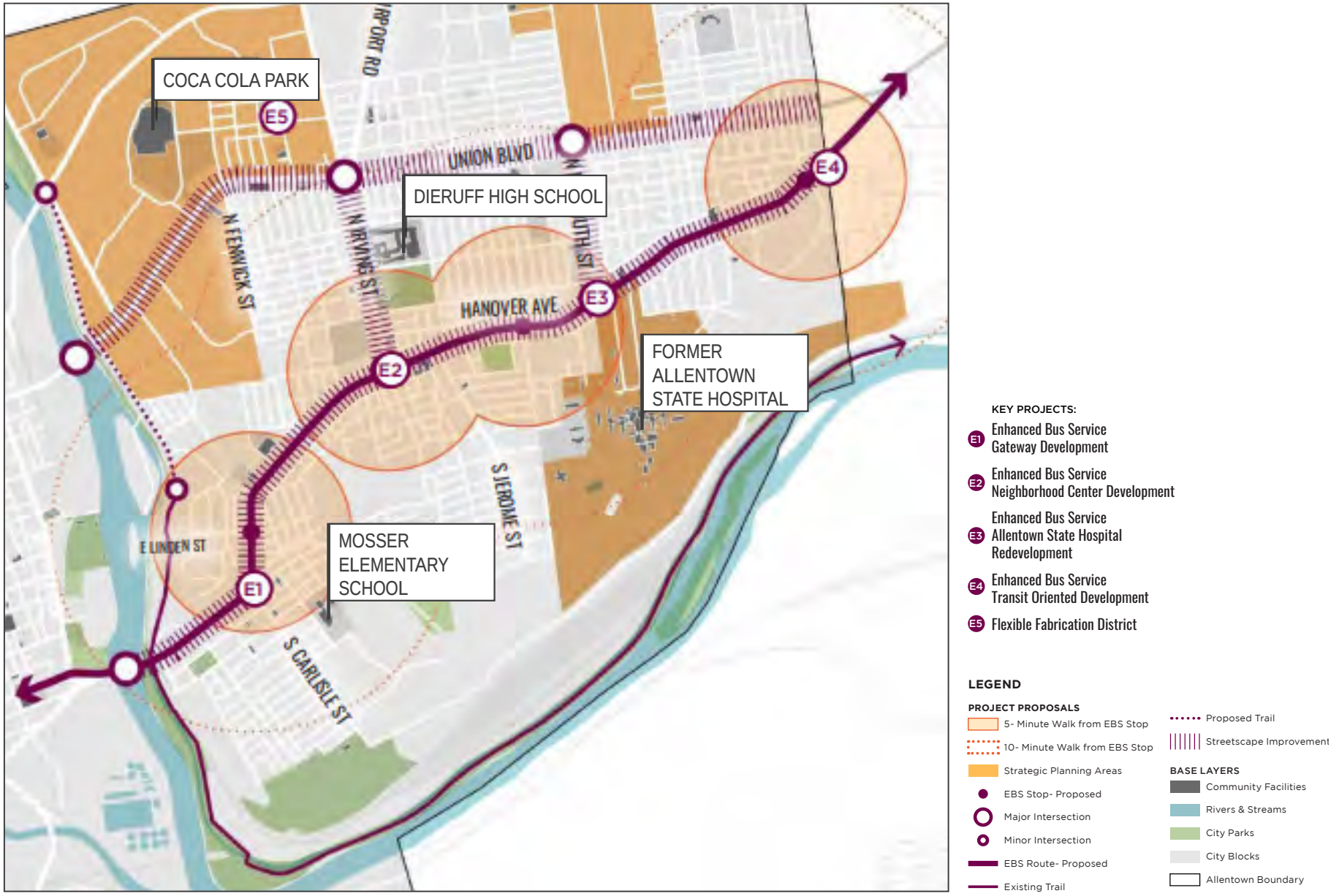
TRANSIT CONDITIONS

Lehigh and Northampton Transportation Authority (LANTA) Bus Route #107 and Bus Route #220 both travel along Hanover Avenue. Both bus routes stop adjacent to ASH at the intersections of Hanover Avenue and Plymouth Street and Hanover Avenue and Quebec Street. LANTA Bus Route #107 travels between Crest Plaza Shopping Center and the intersection of Main and Raspberry Streets in Bethlehem, while Bus Route #220 travels between Downtown Allentown and the City of Easton.

Additionally, as highlighted in the Allentown Vision 2030 plan, the Lehigh and Northampton Transportation Authority (LANTA) has proposed to implement a high-frequency Enhanced Bus Service (EBS) along the Hanover Avenue corridor. An EBS pull-off or shelter stop is proposed at ASH on Hanover Avenue. A transit station to support the new bus service may be a suitable use to include on this site.

Norfolk Southern Railway Company owns the freight railway located adjacent to River Drive and along the southern boundary of ASH. Norfolk Southern also owns and operates a railyard adjacent to the southeastern corner of ASH. This portion of the site remains undeveloped and largely constrained by steep slopes. However, there is evidence of a siding onto the eastern portion of the ASH site in an area with flatter topography. This siding was previously where hopper cars unloaded coal. While this location has more potential for a freight connection across River Drive due to the flatter topography, the curved track geometry presents a challenge to implementing the required switching. Therefore, while Norfolk Southern's busy Allentown Terminal is located in close proximity to ASH, the steep slope conditions and track geometry have prevented industrial use on this portion of the site.

Figure 13: Proposed LANTA EBS System



Source: City of Allentown, Allentown Vision 2030

STAKEHOLDER ENGAGEMENT: INITIAL STUDY PHASES

Stakeholder engagement was a critical component of this study, and was conducted across multiple phases of the study development process. During the beginning phases of the study, one-on-one interviews were conducted with a wide array of local and regional stakeholders including government and other public agencies, real estate brokers, workforce development providers, and area businesses. Additionally, interviews were conducted through a focus group comprised of municipal and economic development representatives. The interviews were helpful to gather the following type of information and supplement community input:

- Elements that make the site a good location for redevelopment
- Visions for site reuse and community needs
- Constraints limiting potential redevelopment
- Types of end uses that would be the most marketable
- Incompatible land uses
- Real estate trends

Table 2 provides a collective summary of the overarching themes that resulted from these interviews. During a latter phase of the study stakeholder engagement included exploration of plan concepts for three development scenarios, the results of which are described in the Visioning Process section of this report. The Visioning Process included a design workshop held virtually via Zoom due to concerns regarding the current COVID-19 pandemic. Participation was robust and consistent over the two-day workshop, and the goals of the workshop were accomplished.

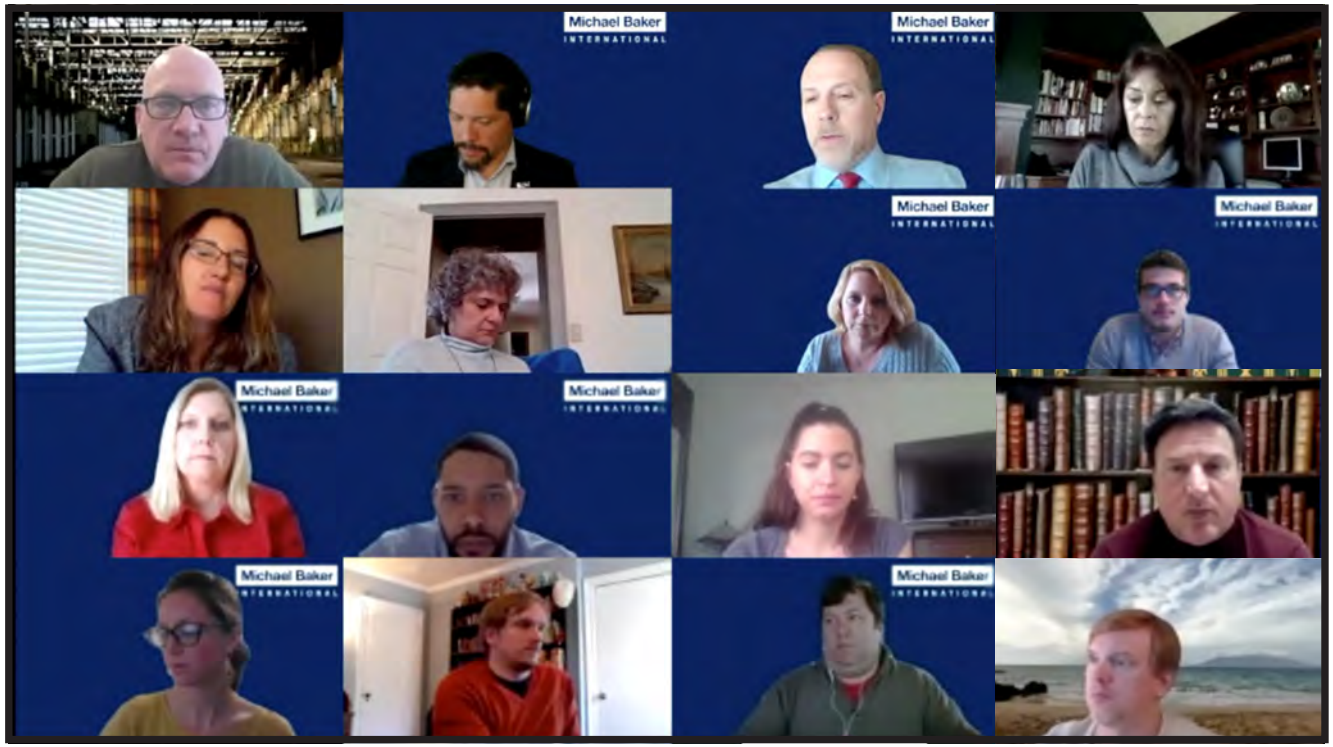


Table 2: Summary of Stakeholder Engagement in Initial Study Phases

Theme	Input
Site Location Advantages	• The site's location **equidistant to the downtowns of Allentown and Bethlehem** is advantageous, creating interaction between the two communities. • The property is a **large piece of contiguous land** in a land-constrained region. Large parcels in urban areas are rare. • ASH is positioned along a **highly used transit route** and is an area of emphasis in the City's new comprehensive plan. • The site is located within a planned node for transit-oriented development through LANTA EBS. • The property has **infrastructure and population** in place. **Infill development** minimizes sprawl and associated environmental concerns. • The **natural environment**, vast area of greenspace, and wildlife in an urban area is unique and presents an opportunity for future greenspace preservation and trail development.
Vision for Site Reuse	• **Residential and light manufacturing** uses could be viable. • Integrated **affordable rental housing** options should be considered; there are not many rental options in the immediate area. • There is noticeable growth in **senior housing** in the area and should be considered a possibility for ASH. • **Industrial uses** would create local jobs for local residents. • Due to access constraints, the site is **not well-suited to serve the warehouse and logistics industry** but rather smaller, local businesses looking for flex, light industrial space. • Hospital system expansion and or ancillary **medical businesses** or labs are plausible for the site. • Consider **mixed-use** residential uses, retail, personal services, and professional services particularly along Hanover Avenue. • Hanover Avenue could be redesigned to include a new streetscape that includes attractive lighting, trees and sidewalks, wayfinding signage, and a bike lane. • Consider a future resort enterprise that preserves open land, provides accommodations, and is geared towards open spaces taking advantage of the views at the top of the site. • A **new school and athletic fields** would benefit the Allentown School District. • Take advantage of open space; **fields for regional sports** events and tournaments could attract outside dollars to the area's businesses. • **Preserve existing natural areas** where wildlife and animal habitat exist.

Continued on the following page

Theme	Input
Community Needs	• Land uses maximizing **revenue generation** would be beneficial and are needed. • Land uses which **create jobs** for local residents would be beneficial. • Dedicated **road access** is needed for the existing Community Services for Children property. Identifying access points having minimal disruption to the surrounding neighborhoods should be the goal.
Site Concerns and Constraints	• **Access** to the site has always been a challenge. Connecting to established residential neighborhoods would disrupt current traffic patterns and will likely be met with resistance. The entry point on Hanover Avenue may be over-stressed if no other viable access point is created, and local zoning codes may require an additional access point. • **Land constraints** including steep slopes, wildlife and natural habitat, contamination and shallow bedrock, which could render certain areas unsuitable for development and could potentially divide the site. Additional fill, excavation, and regrading may be necessary for redevelopment. • New water and sewer lines and connections are needed for new development. • ASH has poor **walkability and connectivity** to Hanover Avenue. The corridor would need solutions for alternate mobility choices including pedestrian, transit, and bike.

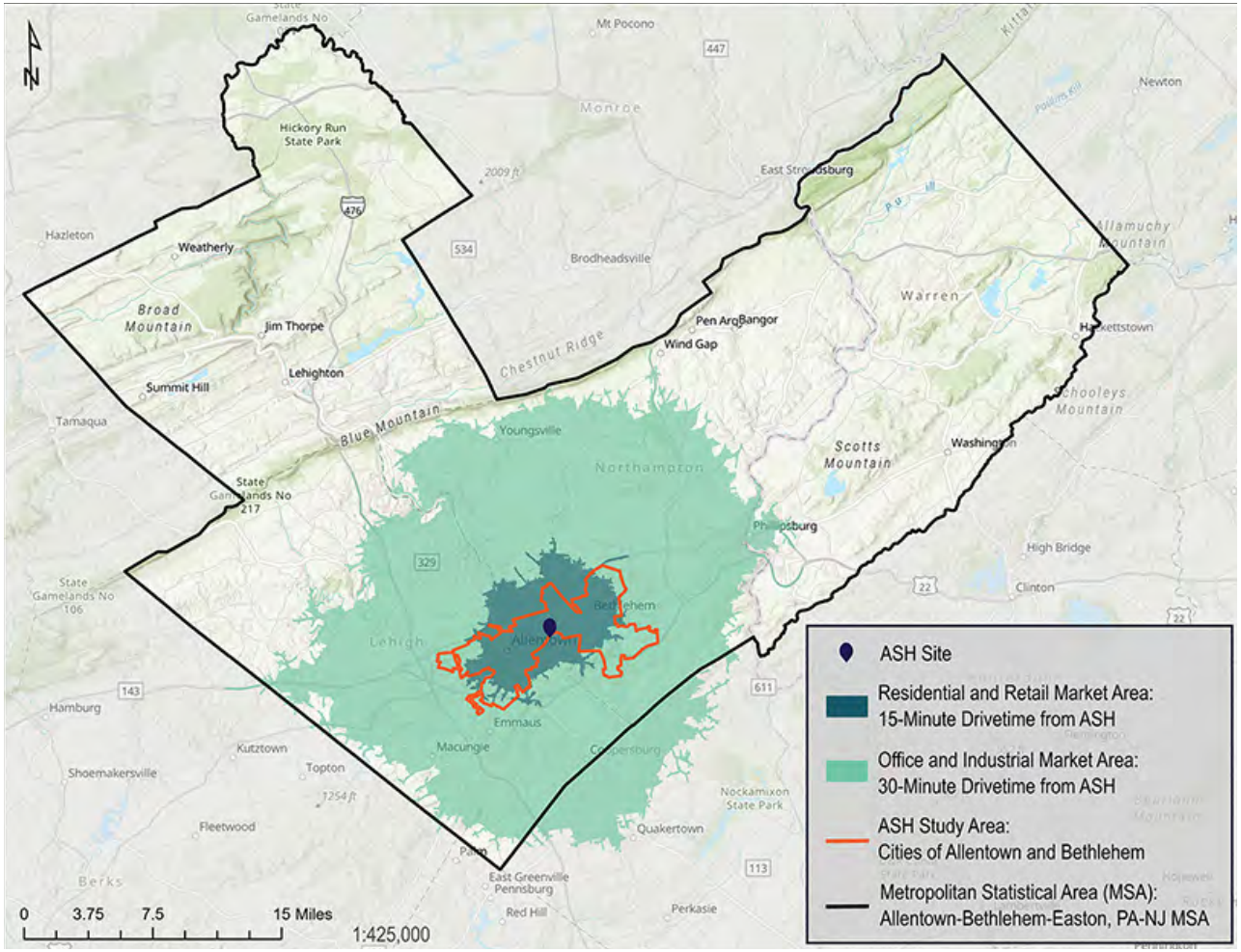
MARKET OPPORTUNITIES

To inform the development of feasible reuse scenarios for ASH, a real estate market study was conducted to better understand which end-uses could potentially be supported on-site based on local and regional market conditions. Specifically, the assessment explored the real estate market receptivity for industrial, office, retail, and residential uses on the site.

Relying on both quantitative data and qualitative information from regional stakeholder engagement, the assessment explored socioeconomic characteristics, employment trends, and real estate market conditions within defined geographic study areas. All of these factors contribute to identifying the market potential for end-uses of ASH. The geographic study areas are provided in Figure 14.

They key findings of this assessment highlight redevelopment opportunities for ASH and are provided in this section. The complete real estate market study is included as Appendix B.

Figure 14: ASH Geographic Study Areas



Source: Esri Business Analyst

Socioeconomic Profile

The socioeconomic composition of current and future residents provides essential underlying context that informs real estate market trends and potential future demand in both residential and commercial markets. The following provides the key findings of the socioeconomic analysis, which begin to uncover potential opportunities:

The population continues to grow, outpacing population growth in the Commonwealth.

Population growth in the region is surpassing growth statewide, reflecting the Lehigh Valley's location within the New York-New Jersey metropolitan area. Population growth at a basic level indicates corresponding growth in goods, services, housing, and employment.

Table 3: Population Trends

Market Area	2000	2010	2019	2024 (Projected)	% Change (2010-2024)
ASH Study Area	178,010	193,014	201,675	205,520	**6.48%**
MSA	740,398	821,173	855,812	872,121	6.20%
Pennsylvania	12,281,054	12,702,379	13,012,438	13,160,675	3.61%

Sources: U.S. Census Bureau, Esri Business Analyst

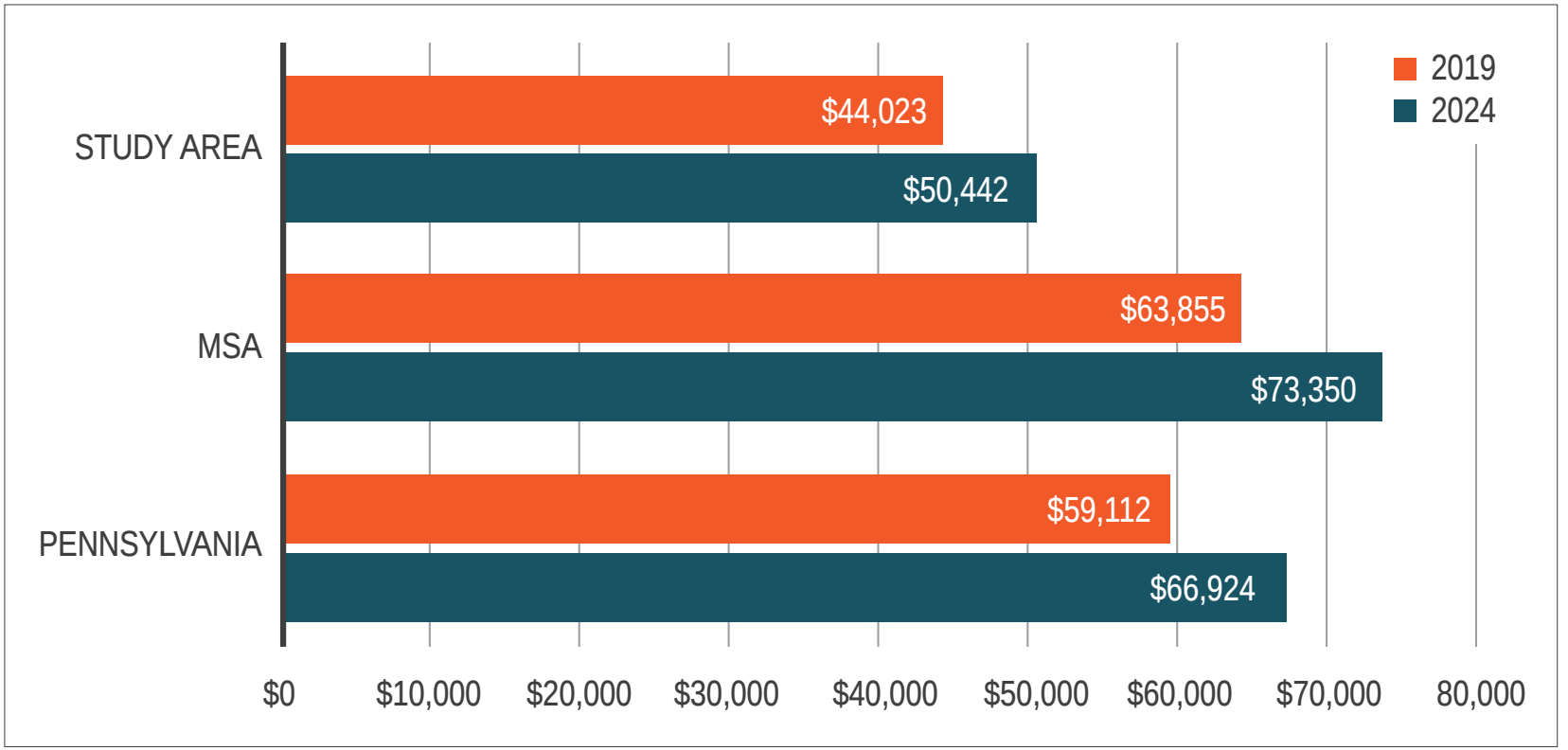
People living near ASH are young and ethnically diverse.

The median age in the ASH Study Area is young (35.1) with a greater number of Millennials compared to their Gen X counterparts in the MSA (42.2). Additionally, residents living near ASH are more ethnically diverse compared to the region. Based on an index that ranks diversity from low (0) to high (100), the ASH Study Area has a diversity index of 83.0 compared to 55.5 for the MSA.

Household income near ASH is lower than in the region, but is projected to increase.

The median household income in the ASH Study Area (Cities of Allentown and Bethlehem) is slightly lower than in the MSA, suggesting lower consumer spending power compared to the region. However, according to Esri projections, by 2024, the median household income is projected to increase by nearly 15%, outpacing statewide growth. This will raise income levels to a more moderate classification. Redevelopment of ASH using an integrated residential development approach could help foster a healthy mix of income levels in this area.

Figure 15: Median Household Income



Source: Esri Business Analyst

Renting is on the rise

The number of housing units within the ASH Study Area and PMA has been increasing since 2000. In addition to renter household being more prevalent than homeowner households, the number of renter-occupied units within the ASH Study Area is projected to continue increasing through 2024, indicating potential demand for rental housing options near ASH.

Table 4: Housing Units by Tenure (2000 – 2024)

MARKET AREA	2000	2010	2019	2024 (Projected)	% Change (2010-2024)	Numerical Change (2010-2024)
ASH Study Area	75,608	78,142	80,520	81,922	**4.8%**	3,780
Owner-Occupied Units	51.0%	46.7%	43.1%	42.4%	-9.2%	—
Renter-Occupied Units	41.7%	45.7%	49.2%	49.7%	8.8%	—
Vacant Units	7.2%	7.6%	7.7%	7.9%	3.9%	—

Sources: U.S. Census Bureau, Esri Business Analyst

Employment and Industry Trends

Economic growth is a significant factor influencing real estate market demand. Employment and industry trends and projections can indicate who will be residing and working in the area, providing data to help to align the workforce with appropriate residential opportunities, as well as informing potential future demand for additional workspace space. The following key findings highlight opportunities with respect to the region's workforce:

1 Workforce demand in the Lehigh Valley is increasing.

Online job postings increased from 3,759 to 5,907 between 2018 and 2019. According to LVEDC's Lehigh Valley Education & Talent Supply Report (2018), 71% of responding employers experienced challenges in recruiting, hiring, or retaining talent.

2 The Lehigh Valley faces a deficit of nearly 10,000 workers.

According to the Lehigh Valley Education & Talent Supply Report, 90,665 people in the workforce are expected to retire within the next 10 years, while only 80,952 people are projected to enter the market. This leaves the region with a potential deficit of nearly 10,000 workers over the next 10 years. As job shortages are filled, it could have implications for the housing market influencing the need for additional housing.

3 The number of jobs in the region is increasing and manufacturing jobs exceed state-level growth.

The MSA added 52,475 new jobs between 2010 and 2019, an 18% increase. The top employing industry is Health Care & Social Assistance, while Transportation & Warehousing had the greatest numeric and percent change in employment during this time. Manufacturing also rebounded in the region, exceeding statewide growth. Over 40% of the Commonwealth's manufacturing jobs added since 2010 were in the Allentown-Bethlehem-Easton MSA.

4 Additional goods-producing jobs in the ASH study area would provide residents jobs where they live.

City officials report that many Allentown residents, particularly those employed in the manufacturing sectors, travel outside the City to work. Census data reveals as many as 2,500 Allentown residents employed in manufacturing jobs work outside of the City. Creating new manufacturing job opportunities in the City would provide residents with job opportunities where they live.

Table 5: Top 5 Industries for Employment Growth in the MSA (2010 – 2019)

Industry (2-Digit NAICS)	Numeric Change	% Change
Transportation & Warehousing	18,188	134%
Health Care & Social Assistance	11,457	22%
Administrative & Support/ Waste Management & Remediation Services	6,556	35%
Manufacturing	6,047	21%
Accommodation & Food Services	5,206	24%

Source: Esri Business Analyst

TARGET INDUSTRIES

In 2018, LVEDC identified five target industry sectors for the Lehigh Valley based on current employment, demonstrated growth in employment in the last five years, and opportunity for growth in the next five years. Each of the target industry sectors was analyzed for potential compatibility at ASH.

Table 6: Target Industry Sector Potential at ASH

Target Industry Sector	Data	Site Analysis
Manufacturing (Advanced and Food & Beverage) 	• 2nd largest economic sector in the Lehigh Valley • Greatest economic multiplier of any sector (1 manufacturing job equals 4 in other sectors) • High demand occupations: machinists, engineers, welders, electricians/ electrical engineers, general labor • Annual demand: 2,676 workers	• **The ASH campus is a potential candidate for light manufacturing and flex space.** • Small industrial users are situated in East Allentown on individual parcels or in business parks. • Real estate brokers and economic development professionals report the lack of small sized (less than 80,000 SF) manufacturing space throughout the Lehigh Valley. • Considering its location in a residential neighborhood, industrial vehicle access to the site should be carefully assessed. • The site could help meet the Lehigh Valley's need for high-value light manufacturing and flex space.
High-Value Business Services 	• The Lehigh Valley's location in proximity to the New York and Philadelphia metro areas combined with existing office facilities support industry sector growth. • Downtown Allentown is a significant regional driver for large corporate office space, primarily driven by tax incentives. Downtown Bethlehem offers tax incentives as well. • High demand occupations: sales and marketing, engineers, accountants, attorneys/paralegals • Annual demand: 1,168 workers	• **The ASH campus is a potential candidate to locate business services workers requiring smaller office spaces to support local needs.** • Any future office development at the ASH campus should not detract from reinvestment in either downtown Allentown or Bethlehem. • Near the ASH campus, tenants are requesting office space sized between 2,500 SF and 5,000 SF.

Target Industry Sector	Data	Site Analysis
Life Science Research & Manufacturing 	• While over half of industry establishments in PA have fewer than 10 employees, the sector contributes a statewide economic output of $88.5 billion. • Life sciences research and manufacturing are a critical sector for the Lehigh Valley's post-secondary educational institutions. • High demand occupations: Engineers, mechanical /mechanics, chemical operators/ chemical analysts, IT/Web Developer/ Software Developer • Annual demand: 167	• **The ASH campus is a potential candidate to locate life science research and manufacturing businesses.** • A few small life science research and manufacturing firms have expanded in proximity to the ASH campus. • One firm has outgrown space at the nearby Ben Franklin Tech Incubator and will relocate to an existing 40,000 SF building in South Allentown creating 38 new jobs. • Flex space would accommodate industry sector needs. • The site could help meet future space needs for this high-value sector.
Transportation,Warehousing, Logistics & Wholesale 	• High demand occupations: CDL drivers, truck drivers, forklift operators and drivers, mechanical/mechanics, warehouse workers • Annual demand: 4,384 workers	• **The site is over 2.5 miles from a US 22 interchange.** • Users of large-scale warehouses prefer locations near interstate connections. • Surrounding land uses and the local road network prevent the site from being a candidate to locate industrial warehouse use.
Health Care 	• Health Care is the Lehigh Valley's top industry by employment • High demand occupations: nurses, medical assistants, caregivers and home health aides, nurses, administrative assistant, psychologists • Annual demand: 1,451 workers	• **The ASH campus is a potential candidate to site health care operations requiring medical office space.** • The site effectively provided health care services for more than a century. • Stakeholders report increasing need for medical office space. • Medical office space would meet the requirements for the health care industry sector.

Sources: LVEDC, Lehigh Valley Education & Talent Supply Report (2018); Workforce Board Lehigh Valley, PA Occupational Wages, Lehigh Valley WDA (May 2019); Stakeholder Interviews

Industrial Reuse Potential

Industrial market trends in the Lehigh Valley region are summarized in Table 7 with key findings linked to potential market receptiveness at ASH. Further analysis was conducted to quantify potential unmet industrial space demand and the likelihood ASH could capture some of that demand.

Table 7: Summary of Industrial Real Estate Market Findings

Key Findings	Market Data	ASH Potential
The dominant real estate driver continues to be industrial warehouse space.	• 28 MSF of industrial warehouse space has been delivered since 2010 with only 10% available for lease. • 13 industrial properties are under construction totaling over 4.5 MSF, 91% is warehouse distribution. • 26 industrial properties are proposed totaling over 7.2 MSF, 98% is warehouse distribution.	Nearby land uses, the existing road network, and the 2.5-mile distance from a U.S. 22 interchange prevent the site from being a candidate to locate industrial warehouse use.
The Lehigh Valley has documented demand for and limited availability of light industrial/ flex space. Further, the existing supply is aging.	• There is a shortage of small-footprint industrial buildings (40,000-80,000 SF) in the region. • No industrial buildings less than 80,000 SF are under construction, and only one is proposed. • Nearly half of LVEDC's 2019 economic development projects (office and industrial) required buildings sized less than 80,000 SF, averaging 36,000 SF. • 67% of top industrial leases in 2019 required a building sized 80,000 SF or less, averaging 42,000 SF. • Compared to an overall industrial vacancy rate of nearly 6%; the vacancy rate of industrial/flex space less than 80,000 SF is just 3%. • Per Allentown's 2014 Re-Industrialization Strategy, the greatest demand for industrial space is for small space less than 80,000 SF. • Industrial re-zoning in Allentown supports growing demand for new industrial space. • Of the 15.4 MSF inventory of small-footprint buildings in the Lehigh Valley, nearly 82% are older than 40 years with only 2% constructed in the past 10 years. • Current asking rent for industrial/flex buildings under 80,000 SF is $6.78/SF compared to a lower rate of $6.10/SF for all industrial buildings.	ASH could help meet the need for new industrial/flex space 80,000 SF or less.

Continued on the following page

Key Findings	Market Data	ASH Potential
An inventory of industrial space is a key business retention factor.	• Close to one-third of LVEDC's economic development projects completed in 2018 were expansion projects for existing Lehigh Valley companies. • Nearly all businesses interviewed for Allentown's re-industrialization strategy noted growth and expansion plans within five to ten years.	ASH provides a location for existing Lehigh Valley and ASH study area businesses to expand.
Businesses requiring smaller industrial space have located in close proximity to ASH.	• Within the last year, eight industrial buildings under 35,000 SF have been leased in the vicinity of ASH. • A specialty pharmaceutical manufacturer expanded from the Ben Franklin TechVentures incubator into an existing 40,000 SF building across the river from ASH campus. • A manufacturer recently relocated from Brooklyn, NY to an existing 80,000-SF building on Plymouth Street, approximately one-half mile from ASH.	Constructing manufacturing and flex space at ASH could serve the needs of businesses requiring smaller spaces.

Sources: CoStar (2020); Stakeholder Interviews

With an estimated 19.5 MSF of industrial space available, under construction, or proposed in the Lehigh Valley, only 886,513 SF of industrial/flex space is available. Of this amount, only 225,963 SF is available in the ASH study area. The growth in manufacturing output has been significant with the manufacturing sector comprising $7.3 billion, nearly 18%, of the Lehigh Valley's economic output. Durable goods manufacturing increased nearly 10% between 2015 and 2018, indicative of a strong manufacturing sector. With the region's manufacturing economic output growing, industrial/flex space is needed to keep pace with demand. ASH provides a potential location for site manufacturers seeking industrial/flex space.

There is documented demand for industrial/flex space in the ASH study area based on recent LVEDC economic development projects, CoStar data, stakeholder discussions, and Allentown's 2014 Re-Industrialization Strategy. While the regional supply of industrial/flex space (886,513 SF) exceeds calculated demand (281,400 SF), constructing industrial/flex space of 80,000 SF in size or less would help develop an inventory to meet current and future demand. The ASH campus provides an opportunity to construct new, modern industrial/flex space to help replenish older industrial building stock. Recent industrial re-zoning in the City of Allentown also supports increased industrial/flex space demand. Further, as industrial businesses from the New York-New Jersey metropolitan area continue to seek locations in the Lehigh Valley due to lower cost space and workforce availability, finding suitable locations in the ASH study area is necessary to meet ongoing demand.

The demand for industrial/flex space is well-documented in the ASH study area.

Office Reuse Potential

Office market trends are summarized in Table 8 with key findings linked to potential market receptiveness at ASH. Further analysis was conducted to quantify potential unmet office space demand and the likelihood that ASH could capture some of the unmet demand.

Table 8: Summary of Office Real Estate Market Findings

Key Findings	Market Data	ASH Potential
State and federal tax incentives in the Cities of Allentown and Bethlehem have attracted office growth and revitalization in their central business districts.	• Approximately 1.8 MSF of office space has been delivered in the Lehigh Valley since 2010 with more than 1 MSF under construction or proposed. • The office vacancy rate of 8% is at a 15-year low. • Since 2015, annual net absorption averages 500,000 SF, nearly double annual supply growth. • Allentown's NIZ has driven office growth downtown with 272,700 SF of space absorbed in one building in 2019; businesses locating in the NIZ may potentially offset lease rates up to 30-40%. • Additional tax incentive programs in Allentown and Bethlehem include state-level KOZs, CRIZ, and federal QOZs. • Both cities have active revitalization strategies in their downtowns adding amenities to meet needs of employees and residents. • Stakeholders indicated that large-scale office space at ASH would compete with downtown revitalization efforts.	While the office market in the Lehigh Valley is growing and active with recent large-scale corporate office development in downtown Allentown, ASH is not candidate to site large-scale and corporate office development and the site does not offer the same tax benefits afforded by the NIZ.
The majority of office leases in the Lehigh Valley are for smaller spaces.	• Excluding leases over 100,000 SF, the average size for an office lease in the Lehigh Valley is 8,334 SF. • Local real estate brokers report typical space requests near ASH between 2,500 and 5,000 SF with lease rates of $18.00 per SF.	ASH could fill the need for small-sized office users requiring 8,000 SF or less.
The inventory of medical office space is growing in the Lehigh Valley.	• 100% of office space inventory added in 2017 was medical office space ccording to the Lehigh Valley Commercial Real Estate Report Office & Industrial Markets Issue #013, page 2. • 12.8% of the region's office space in 2017 was medical office. • Stakeholders report the need for medical office space near ASH. • Health Care is a "Target Industry."	ASH could provide office space to serve the region's Health Care industry.

Sources: CoStar (2020); Lehigh Valley Commercial Real Estate Report Office & Industrial Markets Issue #013; Stakeholder Interviews

An estimated 2.3 MSF of office space, including 512,586 SF of medical office space, is available for sale or lease. Currently, 1.1 MSF of office space is under construction or proposed, with 925,259 SF in the ASH Study Area.

Employment growth projections indicate 17,740 net new jobs will be added to the Lehigh Valley by 2026. The percentage of these new employees working in an office is estimated at 5,784. Of those employees, 3,199 are estimated to be employed in the Health Care & Social Assistance industry, requiring medical office space. Applying an average office space of 158 SF per worker, net new office space demand in the Leigh Valley is estimated at 913,939 SF. This includes 505,409 SF of medical office space for the Health Care industry sector and 254,558 SF of professional office space to accommodate the High-Value Business Services target industry sector.

With over 3.6 MSF of office space available for sale, lease, under construction, or proposed in the Lehigh Valley, new office space demand is met. However, the supply of medical office space available for sale or lease is 512,586 SF, just slightly higher than projected demand of 505,409 SF. No additional medical office space is proposed or under construction, signaling an opportunity for medical office space within the ASH study area.

There is an opportunity for new medical office space at ASH to accommodate estimated demand.

Retail Reuse Potential

Residents and workers within the defined retail market area for ASH (15-minute drive time from ASH) are well-served by current retail offerings. Overall, Retail Trade and Food & Drink industry sector establishments in this area show a surplus of nearly $850 million provided through 1,620 businesses. This indicates that retail establishments within the market area are drawing customers from outside the community to shop.

Despite an overall surplus, consumer expenditure data indicates "leakage" in select retail sectors, which occurs when residents and workers leave their community for their shopping needs. Grocery Stores have the highest unmet demand, followed by Other Miscellaneous Store Retailers, which includes business that offer specialized lines of merchandise. Illustrative examples include art supply stores, candle shops, home security equipment stores, and collectors' items stores.

Based on the sectors experiencing leakage and considering average establishment size and average sales SF, the market area is estimated to support an additional 154,270 SF of retail space.

Table 9: Additional Retail Space Supported in the Market Area (2019)

	NAICS	Retail Gap	Additional Establishments Supported	Additional SF Retail Supported
Lawn & Garden Equip & Supply Stores	4442	$6,540,784	2.0	19,642
Grocery Stores	4451	$62,645,735	1.5	75,996
Office Supplies, Stationery & Gift Stores	4532	$668,895	0.1	1,635
Used Merchandise Stores	4533	$15,295	0.0	42
Other Miscellaneous Store Retailers	4539	$13,840,064	19.0	56,955
TOTAL				**154,270**

Source: Esri Business Analyst

However, stakeholders confirmed that retail, particularly regional retail, may not be the best fit for ASH given the extent of existing establishments and regional retail centers in the market area. Therefore, the viability of locating any portion of the additional square footage identified in Table 9 or any other retail uses at ASH should be considered in the overall context of supporting other potential industrial, office, and residential end-uses. **Service retail supporting the potential future end-uses at ASH would be consistent in character with the surrounding residential neighborhoods.** According to regional real estate brokers, neighborhood retail in the area leases quickly with rents typically between $15.00 and $18.00 per SF.

Residential Reuse Potential

The multi-family housing market in the Lehigh Valley has been outperforming by the standards of central and northeastern Pennsylvania. Employment growth in the transportation and healthcare sectors, combined with state and local tax incentives to spur downtown Allentown's development, has helped support healthy apartment leasing. Additionally, newly delivered projects lease at a steady pace. Of five properties that opened in 2018, only one had a current vacancy rate higher than 5%.

Based on estimated demand generated by household growth and lost inventory (i.e., replacement demand) within the defined housing market area (15-minute drive time from ASH), a total of 2,202 new housing units will be needed by 2024 in the housing market area, or approximately 440 units per year. The 10-year projection estimates a total 3,367 new housing units will be needed by 2029, or approximately 337 units per year. Utilizing the demand scenarios and a 3% and 5% capture rate, ASH is estimated to have demand for between 51 and 110 units between 2019 and 2025 and between 101 and 220 units by 2029.

Table 10: Capture Rate Assumption, 2025-2029

	Conservative Demand Scenario 2025 *1,684 Units*	High Demand Scenario 2025 *2,202 Units*	Conservative Demand Scenario 2029 *3,367 Units*	High Demand Scenario 2029 *4,404 Units*
3% Capture Rate	51	66	101	132
5% Capture Rate	84	110	168	220

Sources: Esri Business Analyst; Michael Baker (2020)

SENIOR HOUSING

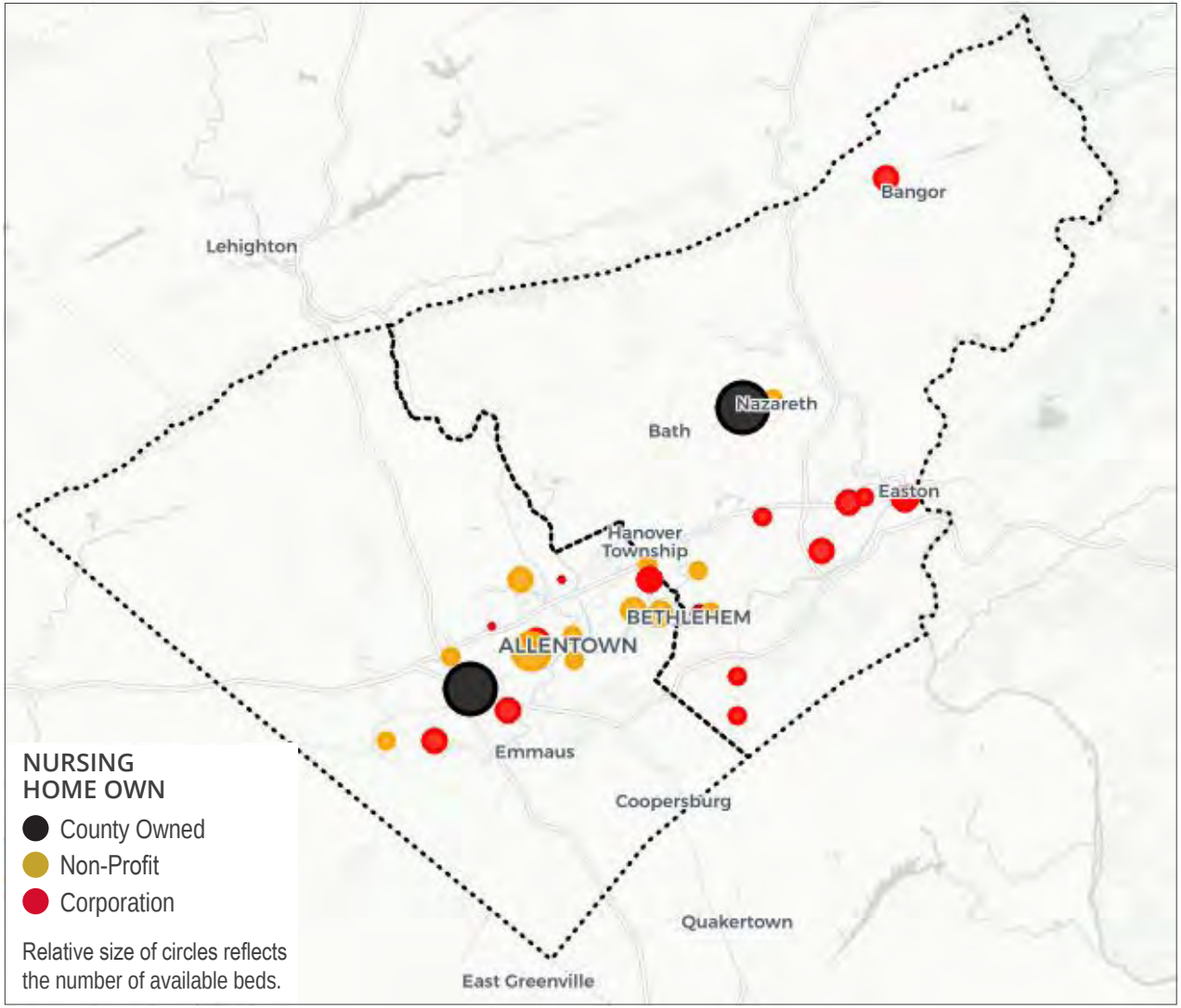
Additionally, ASH has the potential to attract a long-term care facility, such as a Continuing Care Retirement Community (CCRC). According to the Pennsylvania Bar Association in 2019, there were approximately 290 licensed CCRCs in the Commonwealth, an increase from the 230 operations reported in 2011. While new construction of CCRCs remains relatively slow nationally, the Philadelphia regional market has shown growth. ASH fits the CCRC site selection criteria given the open space of the site, transit access to both the Cities of Allentown and Bethlehem, and proximity to hospitals.

Lehigh County is estimated to gain an additional 1,978 households age 75+ by 2024, or an annualized growth rate of 3%. Using this growth rate to project forward to 2029, these elderly households could increase to 16,106 by 2029. This equates to a projected increase of 4,454 new households age 75+ during the 10-year period.

Senior housing penetration rates vary. For purposes of this study, a 10% penetration rate is utilized, meaning that 10% of the households age 75+ in Lehigh County will reside in local long-term care living facilities. Using this assumption, a total of 445 new beds will be needed in Lehigh County by 2029. As a comparison to current data, there are 0.07 long-term care beds (2,104) for every Lehigh County resident age 75+ (30,061). If the ratio of beds to residents remains constant, by 2029 there will be 2,909 long-term care beds, an increase of 805 beds.

This study estimates there is demand for between 445 and 805 long-term care beds in Lehigh County. Of the long-term care facilities currently located in the County, the average facility size is 124 beds. It is plausible that ASH could attract one new, long-term care facility with approximately 124 beds.

Figure 16: Long-term Care Facilities, Lehigh and Northampton Counties



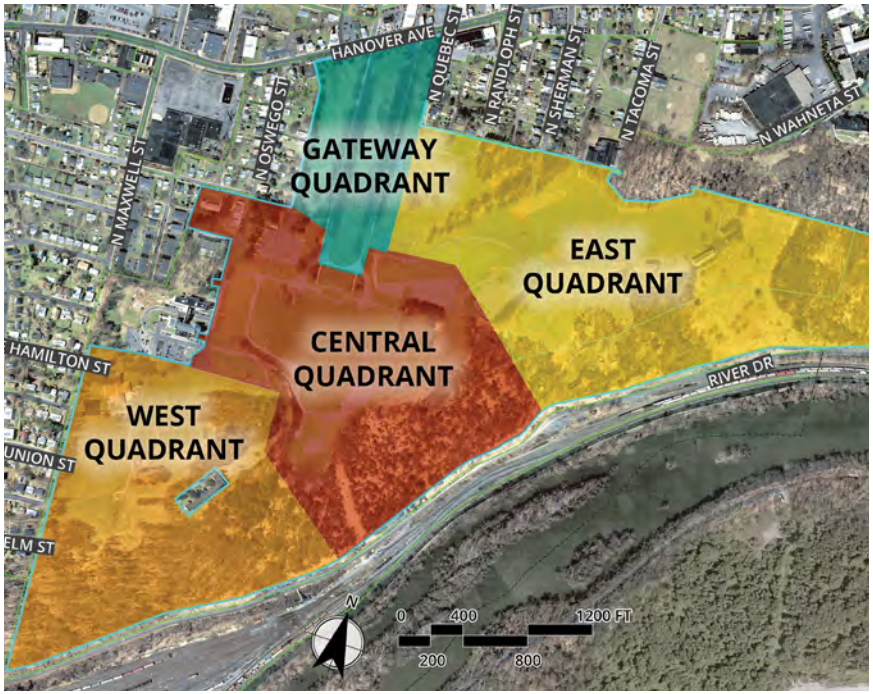
Source: Pennsylvania Department of Health

VISIONING PROCESS

Analysis and Framework: Workshop Session 1

The site's reuse potential was explored during a two-day visioning workshop that engaged stakeholders in a virtual design charrette. All stakeholders were invited to join one or both days to discuss ideas for ASH and test alternate visions and uses for future development. The first online workshop held on April 21, 2020 presented an overview of the site's constraints and opportunities, including a summary of the market study and analysis prepared to date. The 195-acre site is a massive area. To kick off the visioning process, the workshop asked stakeholders to think about the site as four quadrants and consider goals for each quadrant.

Figure 17: ASH Quadrants



Gateway: The prominent entrance to the site provides a sweeping view uphill and is easily accessed from surrounding neighborhoods as well as by bus. Based on market demand, minimal environmental constraints, and existing access, the Gateway Quadrant is a particularly high-value portion of the site for redevelopment and can be used to incentivize reuse.

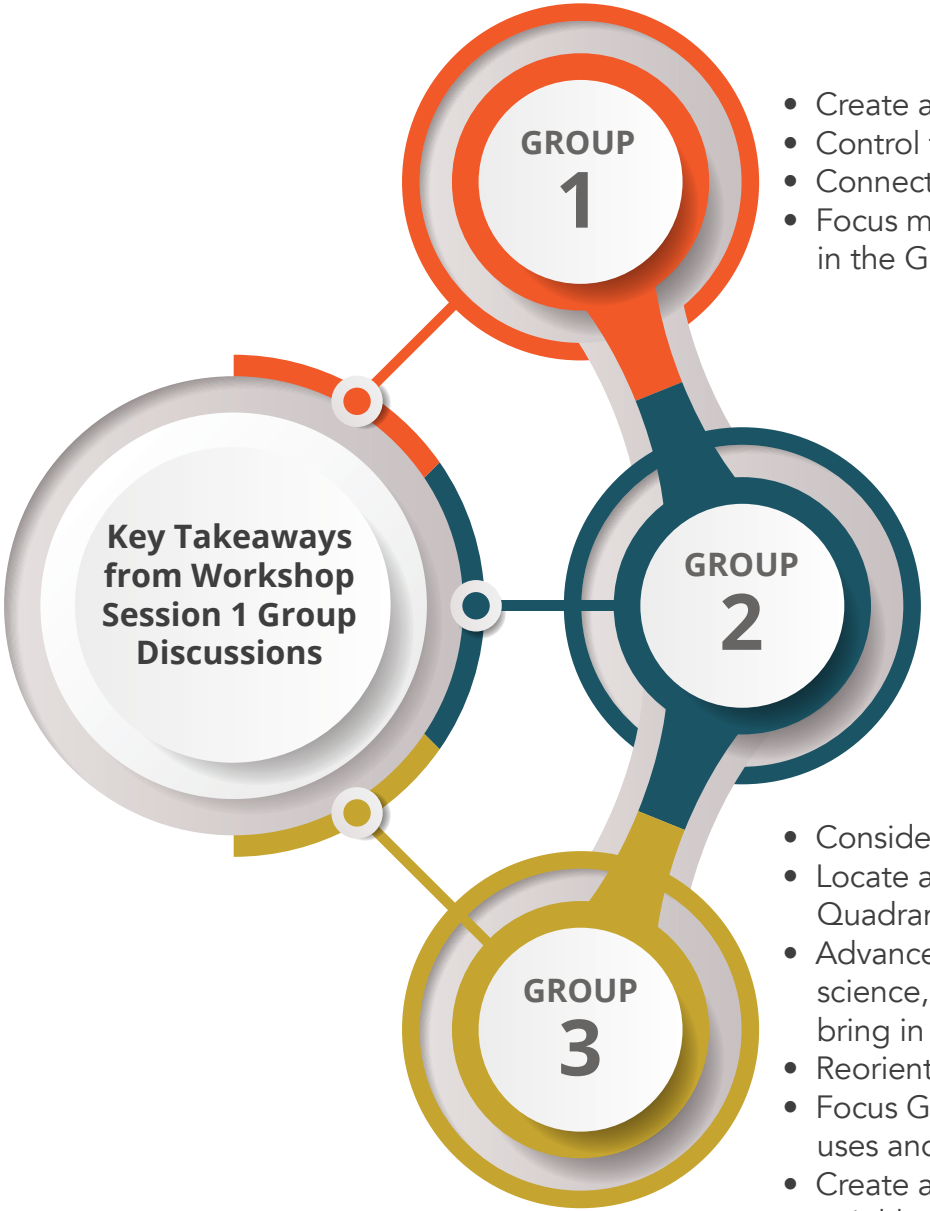
Central Core: The Central Core provides a relatively flat area to redevelop over the old campus footprint. Access is limited, however, so major development in this area is dependent on establishing new internal connections.

West: The western portion of the site boasts the highest point and offers excellent views. Access is limited though, due to steep slopes and the existing electrical substation. This quadrant is immediately adjacent to a residential neighborhood and the Community Services for Children center, both of which will be impacted by development. Connectivity to the existing neighborhood is a priority consideration here.

East: This is the only area of the site where topography allows southern access to River Drive to be reasonably considered. The area to the north includes both industrial uses and residential neighborhoods, and additional residential development is proposed. Despite the size of the East Quadrant, access here relies on roads through the core and/or connections into the residential neighborhood.

Stakeholders split into three breakout groups and conducted small group discussions focusing on a framework for planning uses and access, prompting each person to consider all four quadrants and understand the large scale of the site available. The groups then reconvened to share their thoughts. Some key takeaways from each group are summarized in Figure 18.

Figure 18: Key Takeaways from Workshop Session 1 Group Discussions



GROUP 1

- Create a nice promenade road along the cliff.
- Control traffic and access through adjacent neighborhoods.
- Connect to the community, especially in the West Quadrant.
- Focus mixed use, restaurants, and health/wellness functions in the Gateway Quadrant.

GROUP 2

- Create a transit-oriented corridor and build density along the BRT route.
- Create a destination along the hilltop and maximize views.
- Include a transit station.
- Consider an urban school that is accessible by bus.
- Include signage and wayfinding in the Gateway Quadrant.

GROUP 3

- Consider a new school.
- Locate a community or institutional use in the Gateway Quadrant to respect the historic use.
- Advanced manufacturing, research and development, life science, and high-end businesses are desired uses that also bring in tax revenue.
- Reorient the entrance to align with Plymouth Street.
- Focus Gateway Quadrant on walkable and transit accessible uses and services.
- Create a mixed-use town center in the West Quadrant with neighborhood connections.

Concept Development: Workshop Session 2

On day two of the visioning workshop, stakeholders reconvened to turn ideas into plan concepts. A discussion of major program elements focused on understanding the available developable area in each quadrant and relative sizes of key desired uses. A developable acreage analysis helped participants visualize scale: despite the 195-acre parcel size, topography limits the use of a substantial portion. The Central, Gateway, and East Quadrants together represent approximately 77 contiguous acres of developable land, with another 21 acres available in the West Quadrant. Additional developable parcels are non-contiguous and have significant barriers in access, meaning that roughly half the site is limited or unavailable for development.

Furthermore, the majestic entrance is well known and easily visualized, yet there are many ways that redevelopment could reimagine the site's entrance and reconfiguring the road alignment. To aid stakeholders in envisioning what "could be," they were presented with a site map and were challenged to think about the site without roads. In order to test out various possibilities, each of the three breakout groups was asked to organize site entrance in a different way: (1) keep the road alignment, (2) shift the road alignment but maintain the historic axis, and (3) completely realign the entrance sequence.

While the team explored the possibility of keeping both roads that form the existing grand boulevard, this substantially limits reasonably developable parcels. This alignment does not support a highest and best use redevelopment.

With these guidelines in place, stakeholders spent an hour in three small breakout groups, each developing plan concepts as a facilitator sketched their ideas. The resulting three concepts were shared with the group, and contained a variety of visions and goals that became the framework for the reuse plan concepts.

Aerial view of the ASH site facing southwest. Source: The Morning Call. June 3, 2019

Figure 19: ASH Developable Areas

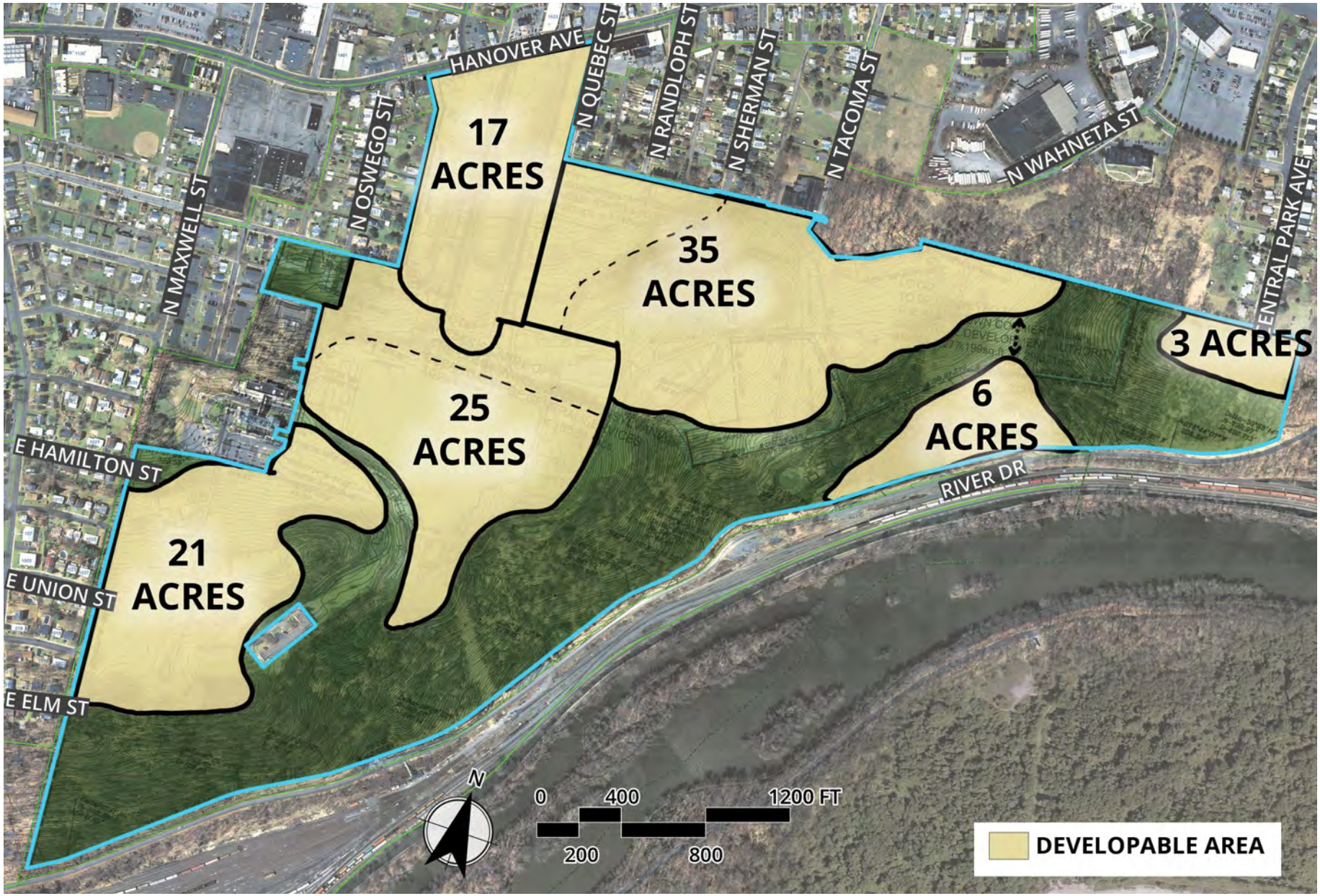
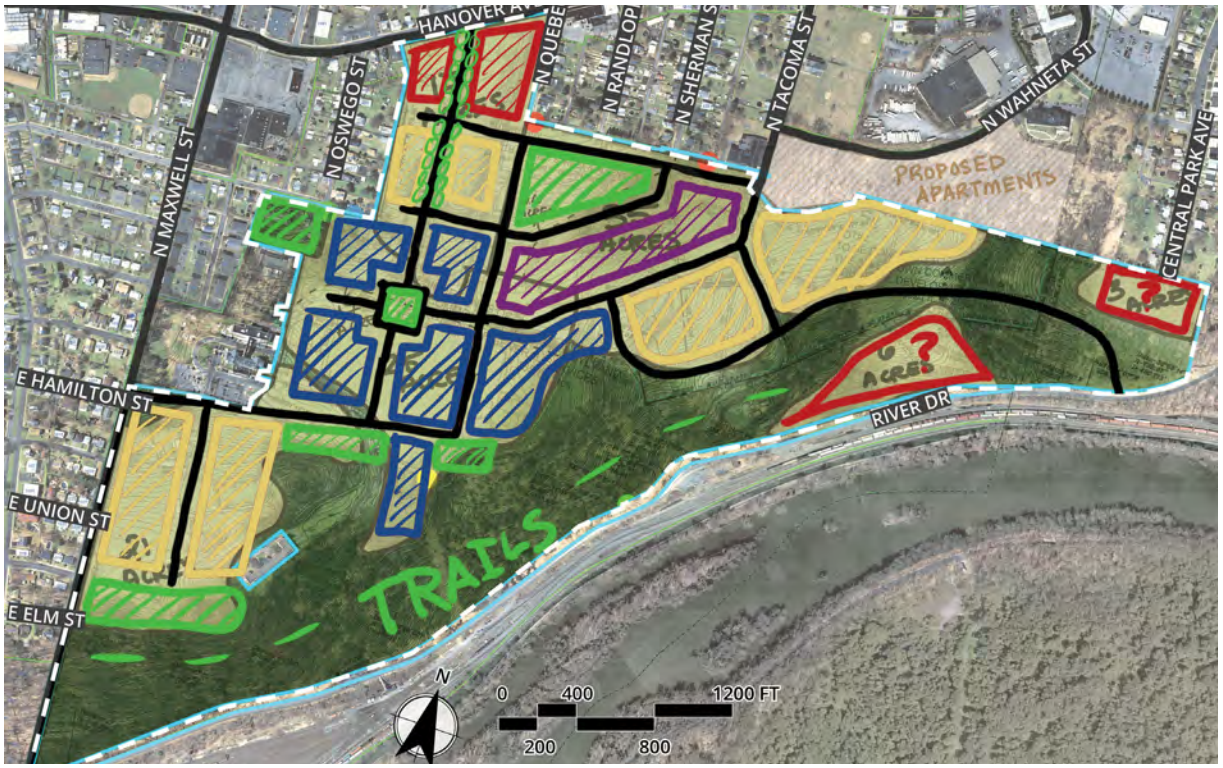


Figure 20: Keep the Road Alignment Sketch



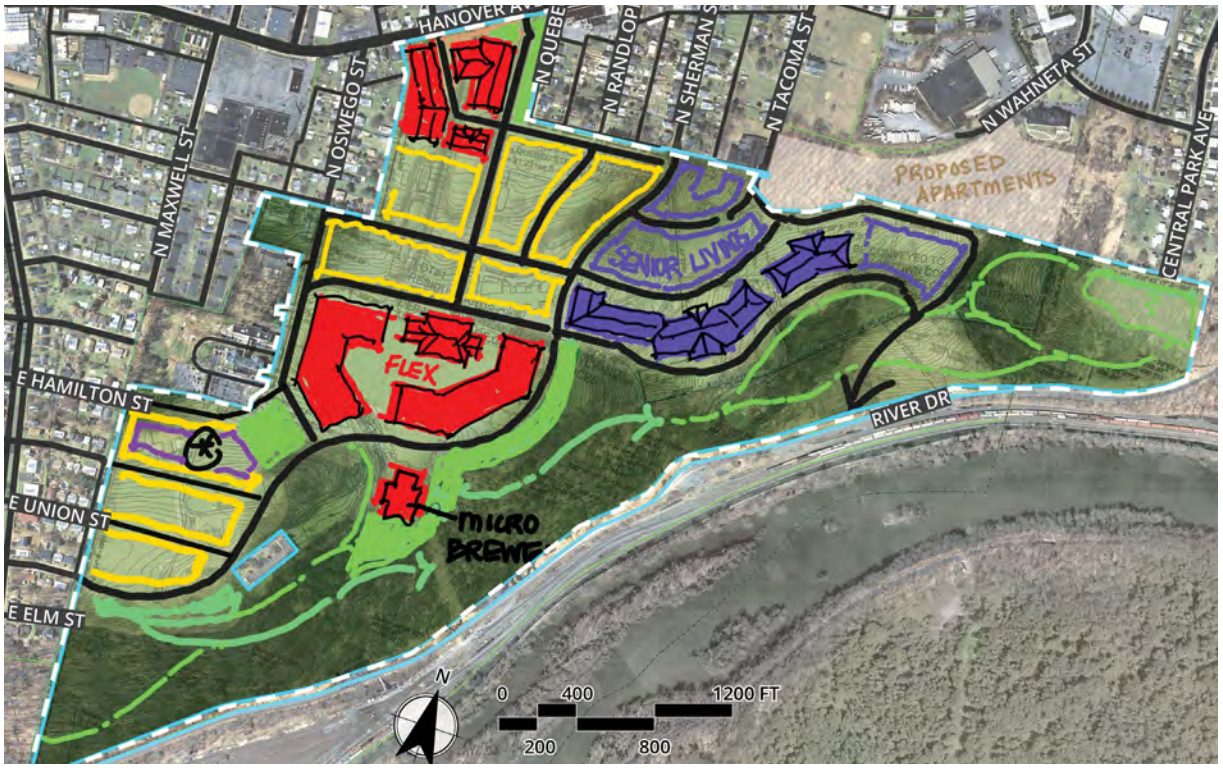
The first group preserved one of the two existing entrance roads, in deference to the site's heritage and the local value placed on the long views provided. For the plan concept, retail and mixed use along Hanover Avenue lead to new housing, a park, and a new school, all within walking distance from bus service. As the road approaches the center of the site, views terminate on a public green square. The existing hospital building campus at the center of the site becomes an office and employment campus around the square, which extends to the cliff and provides prime real estate for high value offices. The street grid creates coherent development parcels, and central office siting keeps them relatively visible and accessible from Hanover Avenue.

New residential neighborhood expansion connects to existing neighborhoods to the east and west. Industrial and manufacturing outposts are proposed in the corners, although access may be expensive to provide. Parklets and vista points at the top of the hill and trails throughout the slopes create a network of outdoor spaces.

GROUP 2

Shift the Alignment, Keep the Axis

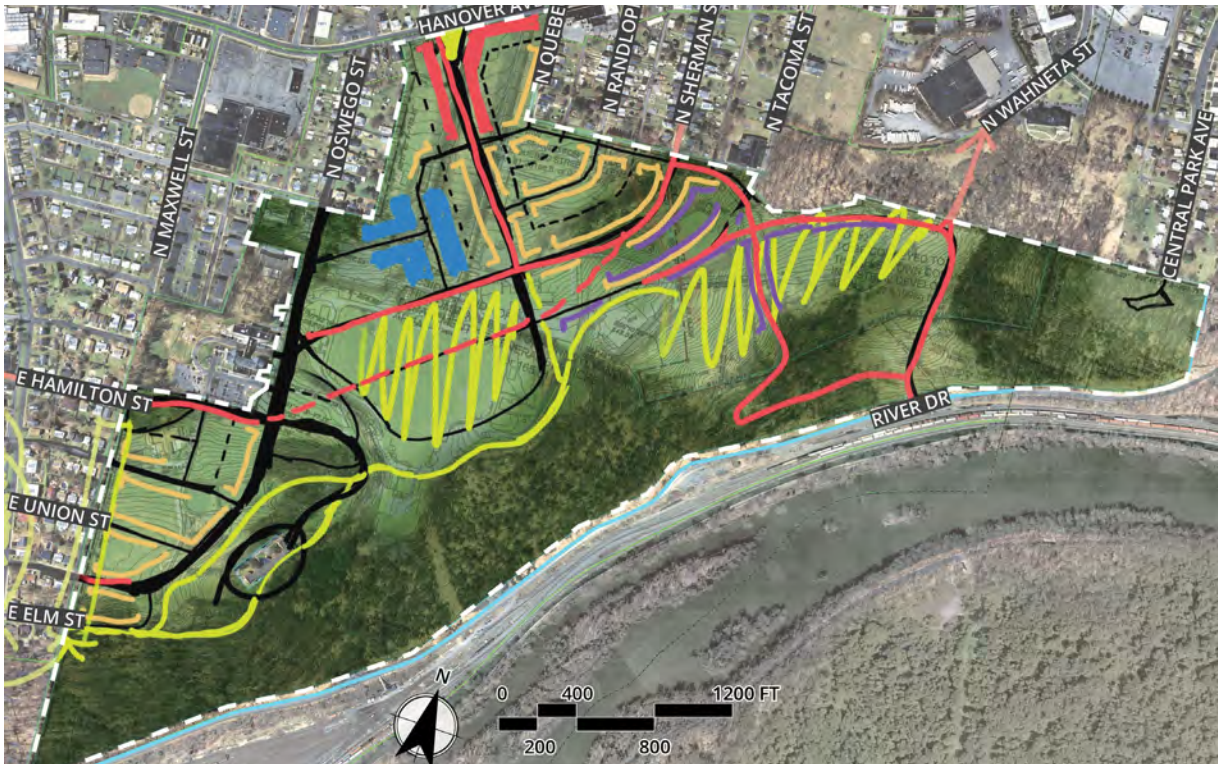
Figure 21: Shifting the Alignment Sketch



The second group realigned the entrance to meet Plymouth Street, which is a more heavily used route and allows an improved right-angle turn into the site from Hanover Avenue. In order to reflect the site's heritage, the road turns to preserve the existing axis and prominent views into the center of the site. North Quebec Street is also enhanced, allowing a straight connection towards the main hospital building campus location and emphasizing the value of views even as the uses change.

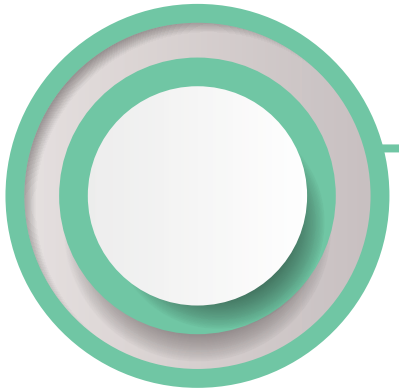
The plan concept includes a mixed-use neighborhood center with retail located along Hanover Avenue, surrounded by blocks of residential units, small offices, or a mix of both. A new campus in place of the former hospital buildings can accommodate larger offices and flex space: preferred tenants are medical services or research and development functions. To the west, new residential blocks connect to the existing neighborhood. To the east, this group proposed senior care facilities, which could include a mix of live-in care facilities as well as independent senior living units. A hilltop promenade and system of trails along the slopes maximize the views and preserve ample open space, with a restaurant or beer garden to attract the outdoor crowd.

Figure 22: Complete Realignment Sketch



The third group took a blank slate approach, assuming that no existing roads will be maintained. This allowed them to examine ideal land use and block size to maximize site usage, and determine from there where the site entrance should be placed. The main entrance was realigned with Plymouth Street to facilitate traffic flow, while a second street reduces bottlenecks. A large plaza allows the site to open onto Hanover Avenue, provides clear visibility into the site, and respects the gateway characteristic of the existing entrance by creating usable public space at the gateway.

The plan concept proposed a network of streets to filter users through the site and minimize heavy traffic in any single location. Mixed use retail with apartments above surround the plaza and face onto Hanover Avenue, offering community-oriented shops and services. Offices are located slightly uphill, adjacent to the mixed use and not too close to residential neighborhoods. The northeastern area of the site, just beyond the entrance plaza, is dedicated to residential neighborhood with a mix of higher density unit types, such as townhomes. The west side of the site is reserved for residential neighborhood matching the scale and character of the adjacent neighborhood. This group focused on a connected street network, public access to a linear green park and preserve along the slopes, and ensuring that residential neighborhoods are respected. To the west, a linear green was discussed to provide some connectivity at select points while creating a clear visual separation.



Summary

The three groups shared many similarities, such as focusing mixed use near Hanover Avenue and establishing an outdoor open space and trail network. The common elements were embedded in each of the final plan scenarios. Various differences exploring possible markets and programmatic elements continued to be studied for their feasibility and recommended site needs. These include the idea of a school, a senior care center, industrial or manufacturing uses, and different types of office. Stakeholders provided valuable guidance about what they find appropriate for the Allentown community. Their input helped inform this study in understanding community needs, benefits, and visions.

DEVELOPMENT CONCEPTS

The three development scenarios are based on four required redevelopment criteria: legal permissibility, physical possibility, financial feasibility, and maximum productivity. These criteria have been evaluated based on site due diligence findings, market study findings, community benefit/ public use, and an assumption that required zoning changes will be secured. The scenarios are also presented in a matrix format for ease of comparison and discussion purposes.

The three concepts reflect the various alignments explored during the workshop, and have been named accordingly as Town Square, Grand Boulevard, and Urban Plaza. The development uses also vary so that each concept depicts a different possibility for future buildout. In addition to the criteria above, these scenarios consider how the market may change if new products are provided and reflect new demand creation. They also consider the market feasibility of uses in conjunction with one another. The development uses also vary so that each scenario depicts a different possibility for future buildout.

Town Square

Grand Boulevard

Urban Plaza

Town Square

The Town Square concept keeps the existing straight road alignment leading into the site. In the center of the site at the main hospital building campus, the main street splits to surround a central green square that terminates the view from Hanover Avenue.

Figure 23: Town Square Illustration

Figure 24: Town Square Illustrative Master Plan

DEVELOPMENT CAPACITY

Development uses proposed in the Town Square include:

- **Mixed Use: More than 90,000 SF of Retail**
  Mixed-use retail with upper floor residential uses along Hanover Avenue and the first block into the site place density near existing transit service.

- **Employment: More than 360,000 SF of Office and Flex Space**
  Office development around the central square includes small offices and flex space. These buildings are oriented towards the street and the entire square is surrounded by office and flex uses, creating an employment district. This is an ideal location for medical offices, start-ups, and similar uses that can support one another and fit comfortably next to residential neighborhoods. Parking is provided internally within the block.

- **Residential: 644 New Units**
  High- and medium-density residential uses surround the side streets near the retail and employment uses: apartments and townhouses provide new housing for rent and for sale. Apartments with one and two bedrooms are affordable for young workers who can commute to jobs around the city using bus service on Hanover Avenue. Townhouses on 22-foot wide lots allow entry-level prices for homeownership. New residential blocks towards the east and west of the site connect to the existing neighborhoods. Single-family homes, duplexes, and triplexes offer a variety of unit sizes and serve rental and for-sale markets. New units include 20 percent affordable homes, market-rate entry-level homes priced for new buyers, and larger homes along the hilltop ridge that demand higher prices.

- **School and Soccer Fields: 7-Acre Site**
  As the population grows, a new school may be needed. This plan located the school a short distance into the site, easily accessible from existing and proposed residential neighborhoods as well as accessible by bus. The school site is over seven acres, including soccer playing fields committed as part of the divestment of the site by the Commonwealth to East Side Youth Center of Allentown that it will share with the school.

- **Senior Care: 5-Acre Site**
  A senior care site is proposed just south of the school. This location offers excellent views over the river and valley and can connect directly to a trail system through the preserved slopes. The senior care facility may include full-time care, independent apartment living with on-site support services, independent living in accessible cottage units, or a combination.

For purposes of this study, Flex Building and Flex Space are defined as follows.

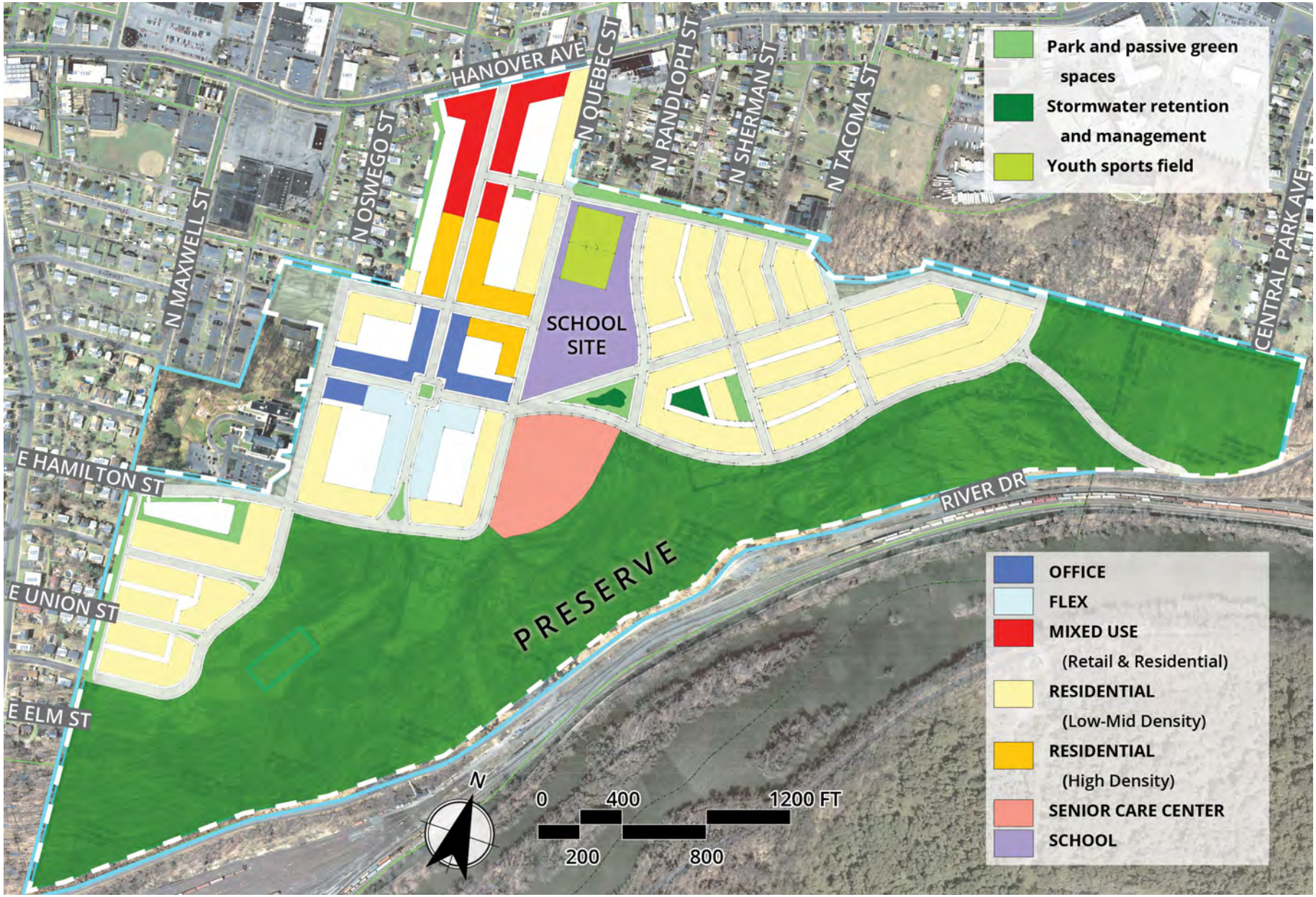
FLEX BUILDING

A type of building(s) designed to be versatile, which may be used in combination with office (corporate headquarters), research and development, quasi-retail sales, and including but not limited to industrial, warehouse, and distribution uses. At least half of the rentable area of the building must be used as office space. Flex buildings typically have ceiling heights under 18', with light industrial zoning. Flex buildings have also been called Incubators, Tech and Showroom buildings in markets throughout the country.

FLEX SPACE

This type of space is only found in flex buildings. It can be used as office, medical, industrial, warehouse, distribution, quasi-retail, or research and development space.

Figure 25: Town Square Land Use Master Plan



OPEN SPACE AND CONNECTIVITY

The hillside slopes include over 90 acres of preserve, which will include a trail network, bike paths, and exercise stations. Along the edge of the development, parklets in the clearings will allow all residents and visitors to enjoy the views, keeping this natural resource readily accessible to the public. While the green park space is mostly consolidated into the large preserve, the developed area is highly urban. Walkable and bikeable street design is inviting to pedestrians.

The offices, senior care site, and the school are close to the retail shops, allowing those shops to potentially cater to both demographics. Lunch spots, cafes, and a bookstore, for example, could tap into new market demand created by this development. The senior care units support increased demand for small and outpatient medical services around the square.

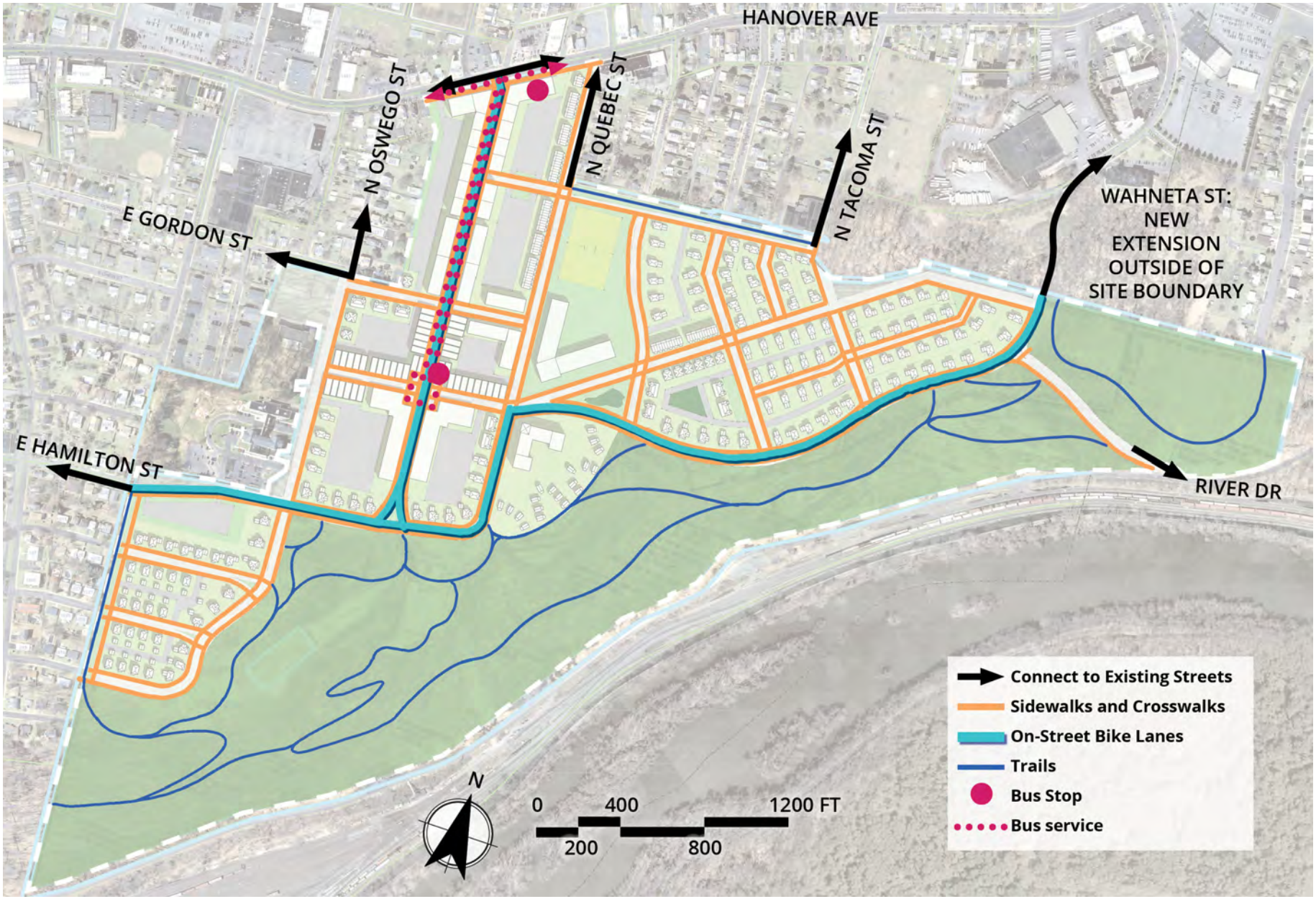
The street network provides multiple routes through the new development to disperse traffic and reduce the load on any single point. A new through road connects Hamilton Street to North Quebec Street. A new connection to North Wahneta Street that provides a second loop into the development. Linear greens along South Maxwell Street and East Allen Street provide visual and physical separation between the existing neighborhoods and proposed development. These can be utilized as linear parks to serve all residents as an amenity. While this concept does not specify a proposed transit station, it does benefit from the planned enhanced bus service along Hanover Avenue. Adding bus service into the site to serve the Town Square is recommended.

Potential connectivity issues that will need to be further investigated include the potential signalization of the main site driveway entrance at Hanover Avenue, and potential sight distance issues at the River Drive entrance. Additionally, it would be advantageous to construct the new development street network intersection approaches at 90° to allow for easier turning movements for both passenger cars and heavy vehicles. Further analysis will need to be performed once land uses have been finalized to determine how the surrounding road networks will be impacted by the new site traffic and what improvements, if any, will need to be made to address congestion issues.

PLAN COMPARISON

The Town Square has the smallest developable footprint (102 acres) due to the larger quantity of nature preserve and the more conservative approach to topographical regrading. Several areas in the eastern part of the site are left undeveloped due to the difficulty in providing access. The residential neighborhoods in this concept provide attractive and marketable housing options that respect the existing neighborhoods, including the new proposed development to the north of the site. While industrial uses are not included, the mix of uses reflect market needs that can be more easily accepted by the community and supported by traffic and access that the surrounding street grid can accommodate. This concept is the only one which includes a school site.

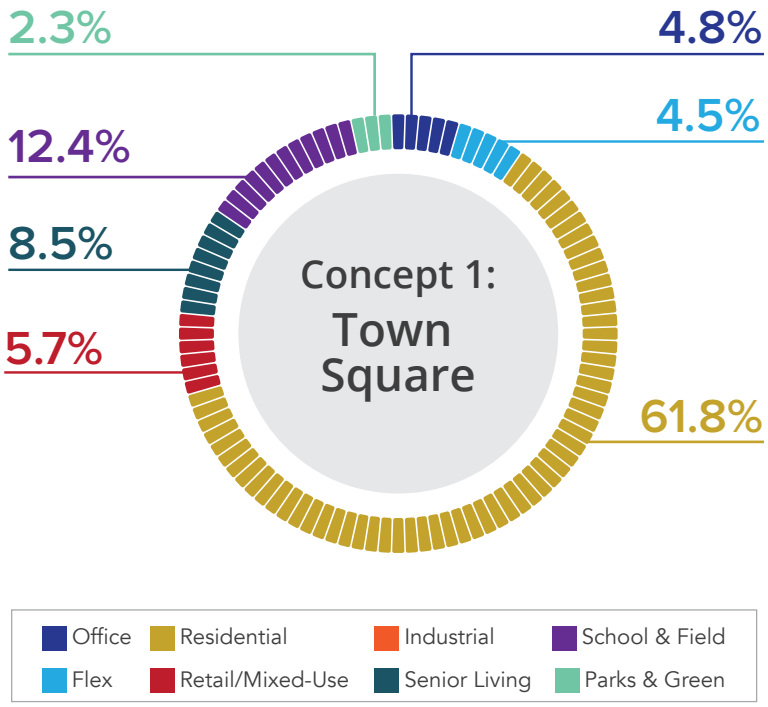
Figure 26: Town Square Connectivity



TOWN SQUARE

Development Concepts Matrix	Town Square Concept			
	Building SF	Residential Units	Lot Use by Acres	% of Total Use Acreage
Single Family Lot		139		
Duplex		18		
Triplex		27		
Townhouse		45		
Apartment		216		
Apartment over Retail		199		
Total Residential		**644**	**35.89**	**61.8%**
Senior Apartments		122		
Senior Cottage		19		
Total Senior		**141**	**4.93**	**8.5%**
Office	206,400		2.79	4.8%
Flex Office	160,000	122	2.63	4.5%
Retail	92,800		3.3	5.7%
Industrial	—	—	—	
School and Field	—		7.17	12.4%
Park with Field	Included with School			
Other Green Space			1.36	2.3%
Total Use Acreage			58.06	

Figure 39: Land Use Distribution (within Total Use Acreage)



Grand Boulevard

The Grand Boulevard concept aligns the main road with Plymouth Street to create a smoother and safer entrance that is visible from both directions. Within the site, the main road turns to follow the existing road, terminating on an employment campus at the location of the former main hospital building campus. The Grand Boulevard establishes a strong internal center surrounded entirely by new development, while reflecting the site's history and preserving views.

Figure 27: Grand Boulevard Illustration

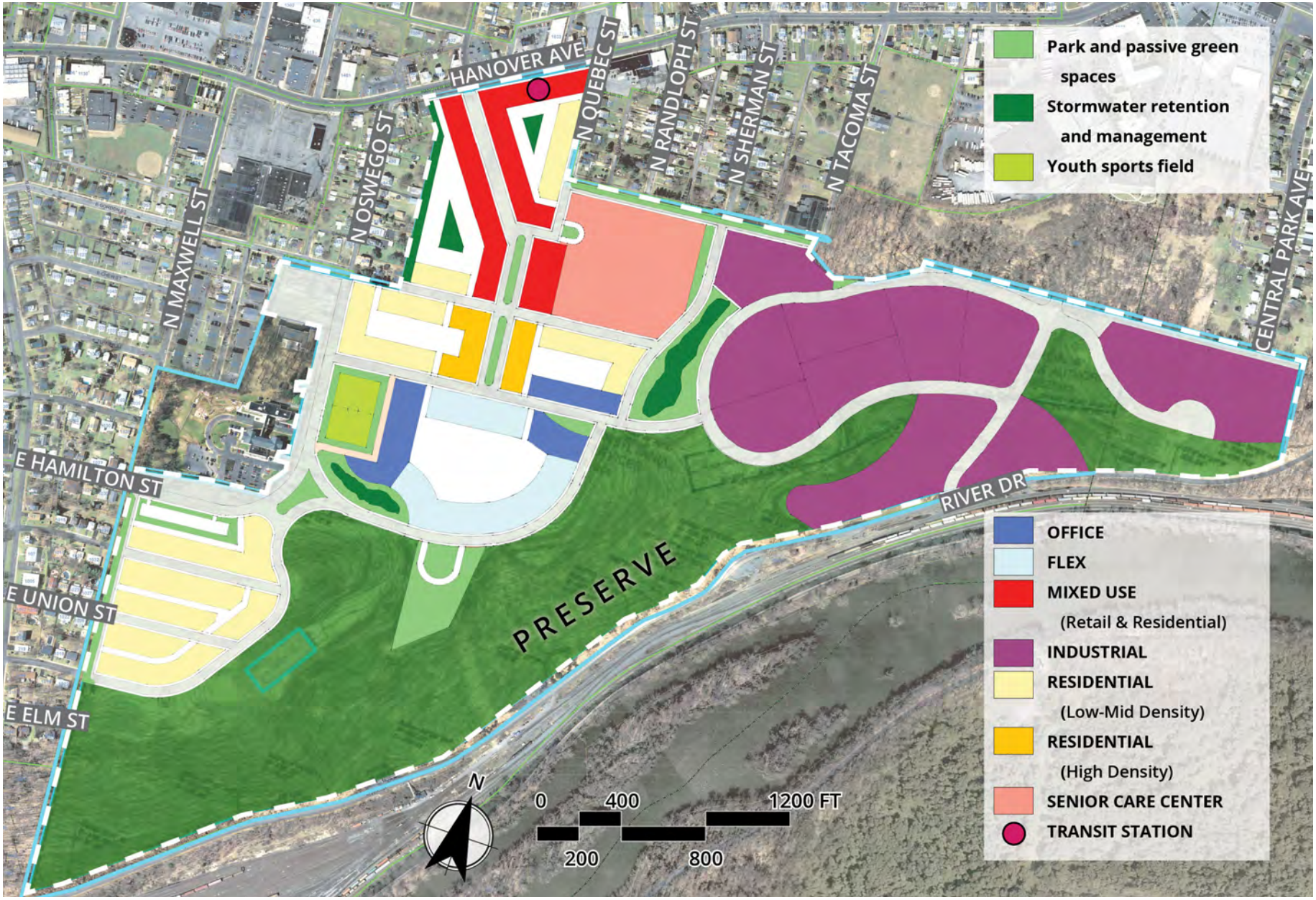
Figure 28: Grand Boulevard Illustrative Master Plan

DEVELOPMENT CAPACITY

Development uses proposed in the Grand Boulevard include:

- **Mixed Use: 140,000 SF of Retail**
  Mixed-use retail with upper floor residential uses is proposed from Hanover Avenue to the internal boulevard. There is opportunity for a substantial amount of retail, with parking lots in the rear and parallel spaces on-street. Community-oriented shops, local services down the block, and eateries such as delis and cafes with outdoor patios can serve both new and existing residents.
- **Transit Center**
  A preferred location for a bus stop and transit station is identified along Hanover Avenue. As the enhanced bus service is implemented and new development brings more uses to the site, this is an ideal location to provide additional rider amenities including bus shelters and a ticket booth. The transit station could be located within the retail frontage and is shown on the plan incorporated into the mixed-use buildings along Hanover Avenue. By emphasizing transit access, the development can entice transit use and reduce parking needs, allowing more land to be available for other uses. Additionally, there is potential to include a transit stop within the site that would help overcome the distance and topography from the core of the site to Hanover Avenue, which could be a barrier to pedestrian and bicycle access. Although size and scale of the transit station are not detailed in this study, this concept includes it as a program element that allows higher development capacity.
- **Residential: 524 Units**
  High-density development lines the boulevard. This can be a prime location for higher-end apartments with a prominent location and views of the tree-lined boulevard. Townhouses, duplexes, and triplexes nearby provide more housing options that can serve rental and for-sale markets, with smaller units that are affordable to new buyers and young families. New residential blocks towards the west match the scale of the existing neighborhood. Single-family lots include 20 percent affordable homes, market-rate entry-level homes priced for new buyers, and larger homes along the hilltop ridge that demand higher prices.
- **Employment: More than 410,000 SF of Office and Flex Space**
  Office and flex uses occupy the existing campus site and terminate the view from the boulevard. Small offices on either side of the block can include small medical offices, incubator spaces, or entrepreneurial businesses. Each row of offices opens onto a public space, which can inspire a marketable identity and offer outdoor space for workers and customers to gather. The flex buildings can be larger footprints with high ceilings or several floors, as suits the end user, and accommodate a range of uses such as research and development, large medical functions, or light manufacturing. A row of flex buildings at the edge of the hill are distanced from residential uses, so related noise and loading will not negatively impact homes.
- **Senior Care: 7.8-Acre Site**
  A senior care site is proposed adjacent to the main boulevard. This facility may include full-time care, independent apartment living with on-site support services, independent living in accessible cottage units, or a combination. This location is directly connected to the shops, easily walkable from the bus station, and visible from the boulevard, making it easy for seniors to get around and enjoy the community. The site is large enough to include a variety of building types, connected by internal walkable green spaces.
- **Industrial: More than 33 Acres**
  Industrial uses cover the majority of the eastern side of the site. More than 33 acres of industrial space is located over moderate topography, maximizing the amount of land developed in this concept. A loop road uses two new connections with North Wahneta Street and River Drive to bring industrial traffic to these buildings while minimizing truck traffic through the rest of the site and adjacent neighborhoods. Due to the topography, the industrial uses are lower than the town center and are largely masked from view.

Figure 29: Grand Boulevard Land Use Master Plan



OPEN SPACE AND CONNECTIVITY

There are 69 acres of preserved slopes, which can include trails, bike paths, and parklets. A green linear park with stormwater swales separates the mixed-use town center and senior site from the industrial site, as well as directing water away from buildings and to a low point that can also become an attractive open space amenity. Trees and landscaping further keep the industrial buildings out of sight and buffered from nearby residences. A two-acre community park with youth playing fields is easily accessible to the existing child services center and residential neighborhoods. The boulevard and small pocket parks can include rain gardens and other stormwater management design elements that are attractive as well as functional.

The street network connects to adjacent streets in key locations, and provides numerous routes through the development to disperse traffic and reduce traffic load at any single point. Primary loops through the site include new connections from East Hamilton Street to North Oswego Street, and an extension of North Sherman Street into a new promenade that winds along the hillside. Linear greens along South Maxwell Street and East Allen Street provide visual and physical separation between the existing neighborhoods and proposed development. These can be utilized as linear parks to serve all residents as an amenity. By locating a transit station along Hanover Avenue, bus access to the site is prioritized, and adding bus service internal to the site along the boulevard is suggested.

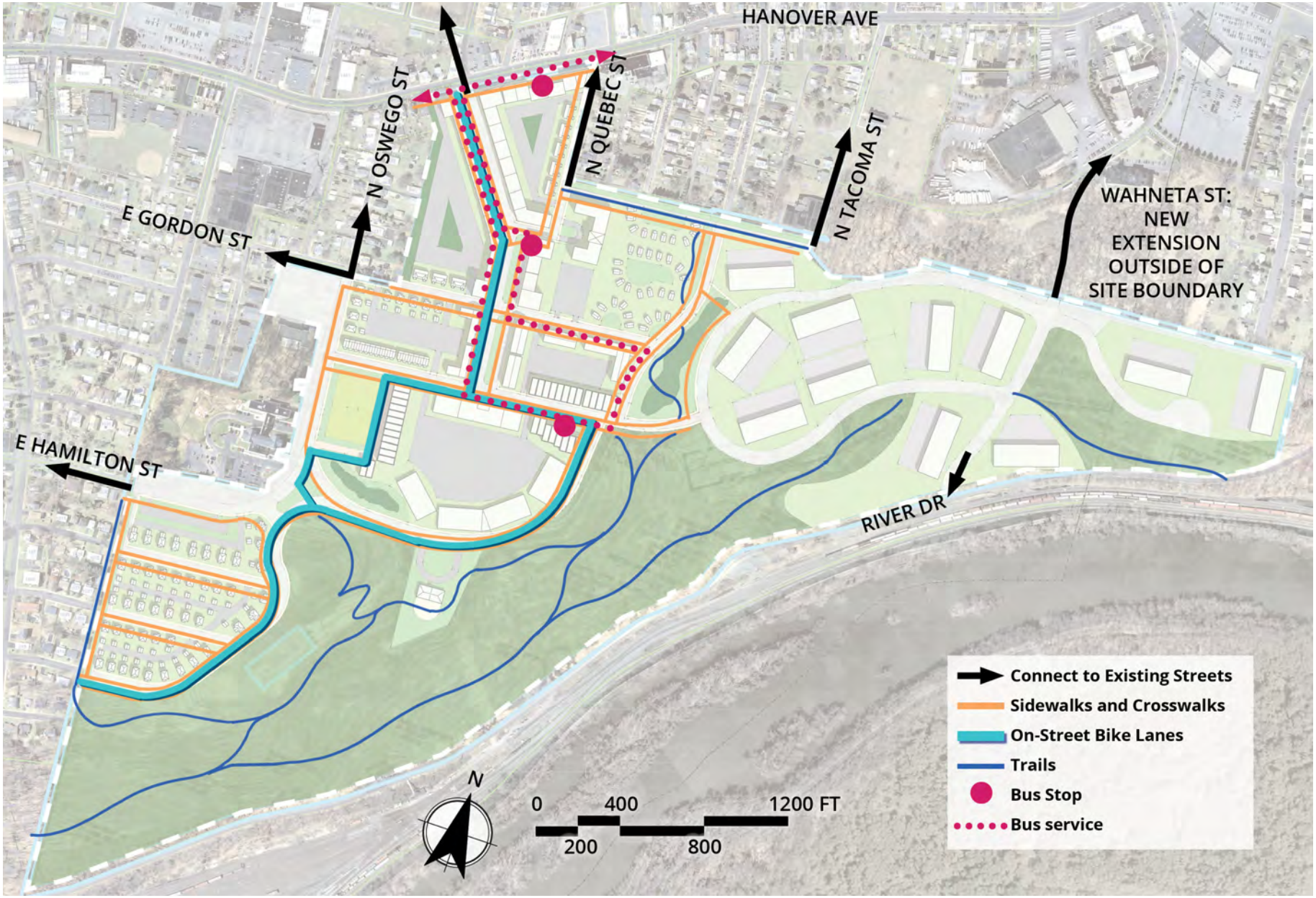
Potential connectivity issues that will need to be further investigated include the potential signalization of the main site driveway entrance at Hanover Avenue due to the high existing volume of traffic along Hanover Avenue, as well as the development along the main driveway. Further analysis will need to be performed once land uses have been finalized to determine how the surrounding road networks will be impacted by the new site traffic and what improvements, if any, will need to be made to address congestion issues.

PLAN COMPARISON

The Grand Boulevard concept has the largest developable footprint (120 acres), due to the smaller nature preserve and the more aggressive approach to topographical regrading. The industrial sites extend all the way to the east corner, which requires additional infrastructure but allows more extensive use of the site. The easternmost industrial lots also fall within the City of Bethlehem, so development in this concept affects two municipalities.

The senior care site is largest in this concept, and closest to shops and other uses for a design that prioritizes community interaction and independent living. The park is near the existing Community Services for Children property and has a public location. Flex uses are most distanced from residential, allowing a greater range in size and use.

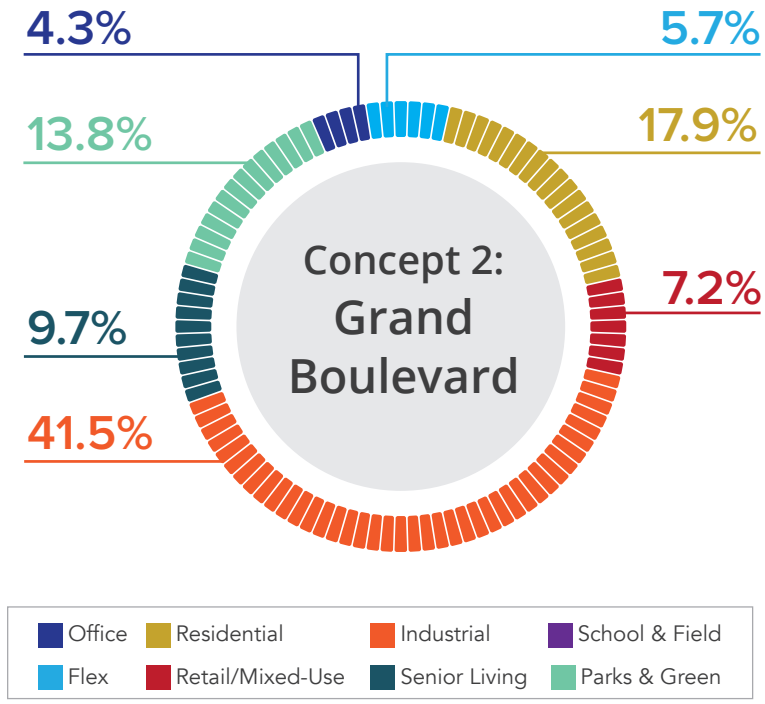
Figure 30: Grand Boulevard Connectivity



GRAND BOULEVARD

Development Concepts Matrix	Grand Boulevard Concept			
	Building SF	Residential Units	Lot Use by Acres	% of Total Use Acreage
Single Family Lot		54		
Duplex		--		
Triplex		24		
Townhouse		16		
Apartment		180		
Apartment over Retail		250		
Total Residential		**524**	**14.4**	**17.9%**
Senior Apartments		140		
Senior Cottage		30		
Total Senior		**170**	**7.81**	**9.7%**
Office	172,800		3.46	4.3%
Flex Office	240,000		4.6	5.7%
Retail	140,000		5.84	7.2%
Industrial	330,000		33.45	41.5%
School and Field	Not Included			
Park with Field			2.07	2.6%
Other Green Space			9.03	11.2%
Total Use Acreage			80.67	

Figure 40: Land Use Distribution (within Total Use Acreage)



Urban Plaza

The Urban Plaza concept creates a large plaza along Hanover Avenue with roads on either side that allow multiple entrance points and increased visibility to the larger development extending into the site. This creates a highly visible front door to the development and facilitates access at the gateway. The existing axial views are not preserved, but the realignment facilitates larger development blocks and clear access through the interior of the site.

Figure 31: Urban Plaza Illustration

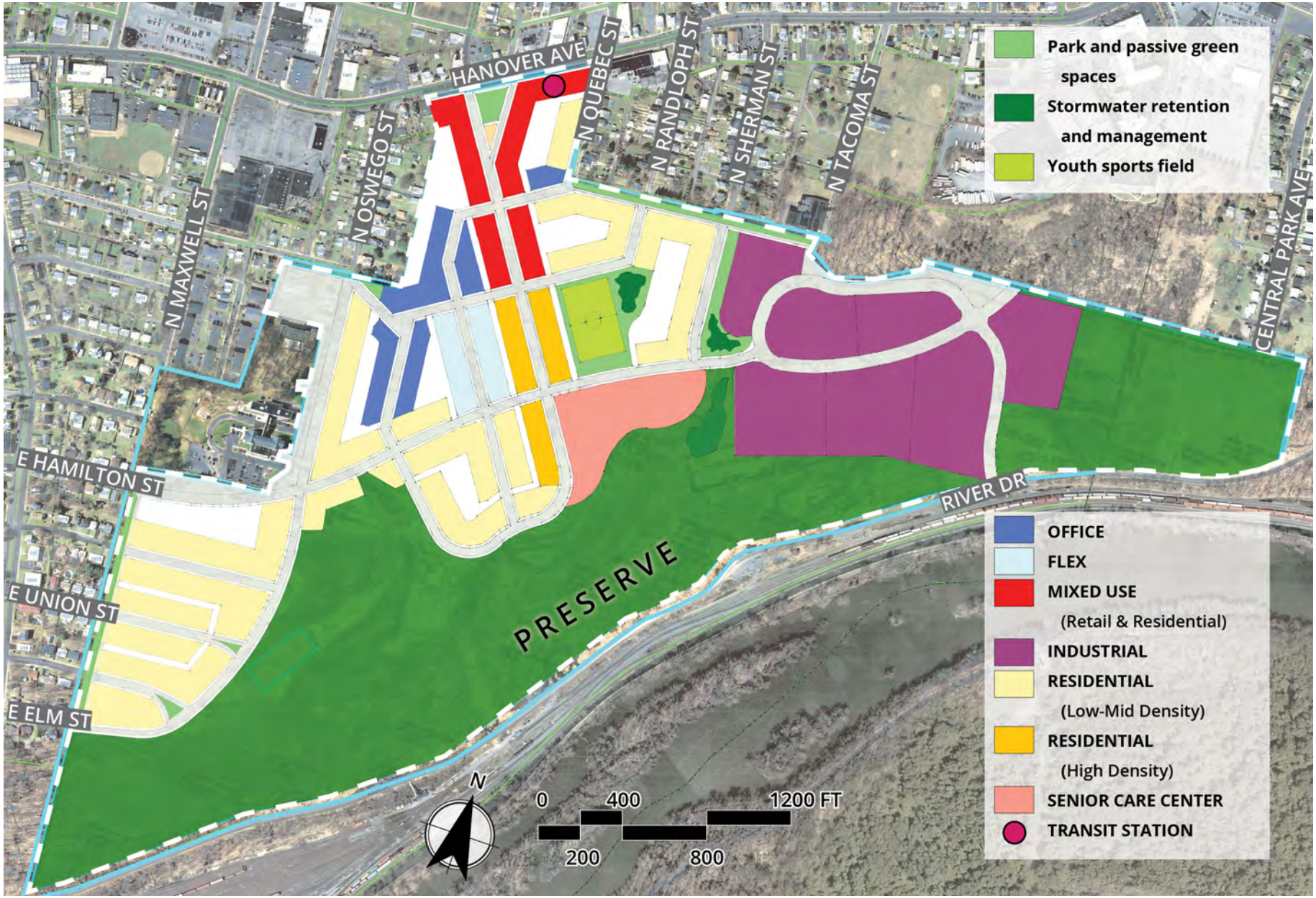
Figure 32: Urban Plaza Illustrative Master Plan

DEVELOPMENT CAPACITY

Development uses proposed in the Urban Plaza include:

- **Mixed Use: More than 124,000 SF of Retail**
  Mixed-use retail with upper floor residential uses lines Hanover Avenue and extends for two blocks. There is opportunity for a substantial amount of retail, with parking lots in the rear and parallel spaces on-street. Parking availability will limit the building square footage possible, although there is an opportunity to prioritize transit-oriented development and maximize density.
- **Transit Center**
  A preferred location for a bus stop and transit station is identified along Hanover Avenue. As the enhanced bus service is implemented and new development brings more uses to the site, this is an ideal location to provide additional rider amenities including bus shelters and a ticket booth. The transit station could be located within the retail frontage and is shown on the plan incorporated into the mixed-use buildings along Hanover Avenue. By emphasizing transit access, the development can entice transit use and reduce parking needs, allowing more land to be available for other uses. Additionally, there is potential to include a transit stop within the site that would help overcome the distance and topography from the core of the site to Hanover Avenue, which could be a barrier to pedestrian and bicycle access. Although size and scale of the transit station are not detailed in this study, this concept includes it as a program element that allows higher development capacity.
- **Employment: More than 348,000 SF of Office and Flex Space**
  Flex buildings and small offices are located west of the main street. These employment uses offer large and small building footprints that can accommodate a range of users and services, all within easy walking distance from the bus line and the new retail shops. This location supports businesses with minimal impact on their surroundings, as they are sited close to residential blocks and have limited parking available. Research and development, technology services, small medical, and other local services as well an entrepreneurial incubator can enjoy the proximity to the plaza and mix of uses to create a thriving and exciting employment district.
- **Residential: 598 Units**
  High-density residential lots line the main street to the top of the hill. Apartments near the mixed use allow housing close to transit and employment, while apartments at the hilltop are a prime location for a higher-end product with excellent views. Townhouses, duplexes, and triplexes surrounding these blocks provide more housing options that can serve rental and for-sale markets and offer smaller units that are affordable to new buyers and young families. More residential lots include single-family homes next to existing neighborhoods to the east and west. Houses can be a mix of smaller and larger products to include affordable housing and entry-level market-rate options, as well as higher-end homes that face the promenade and provide excellent views.

Figure 33: Urban Plaza Land Use Master Plan



OPEN SPACE AND CONNECTIVITY

There are more than 82 acres of preserved slopes, which can include trails, bike paths, and parklets. The historic campus site becomes primarily residential, letting community members make their homes here and enjoy the views that had long been private. The plaza and community park can include rain gardens and other stormwater management design elements that are attractive as well as functional.

The main street allows a straight, uninterrupted view to the top of the hill and preserve. This street can include bike lanes and encourage the connection from Hanover Avenue to the slope-side trails. Another key street connection is the extension of East Hamilton Street that crosses the development to an extension of North Sherman Street. Linear greens along South Maxwell Street and East Allen Street provide visual and physical separation between the existing neighborhoods and proposed development. These can be utilized as linear parks to serve all residents as an amenity. By locating a transit station along Hanover Avenue, bus access to the site is prioritized, and adding bus service internal to the site along the boulevard is suggested.

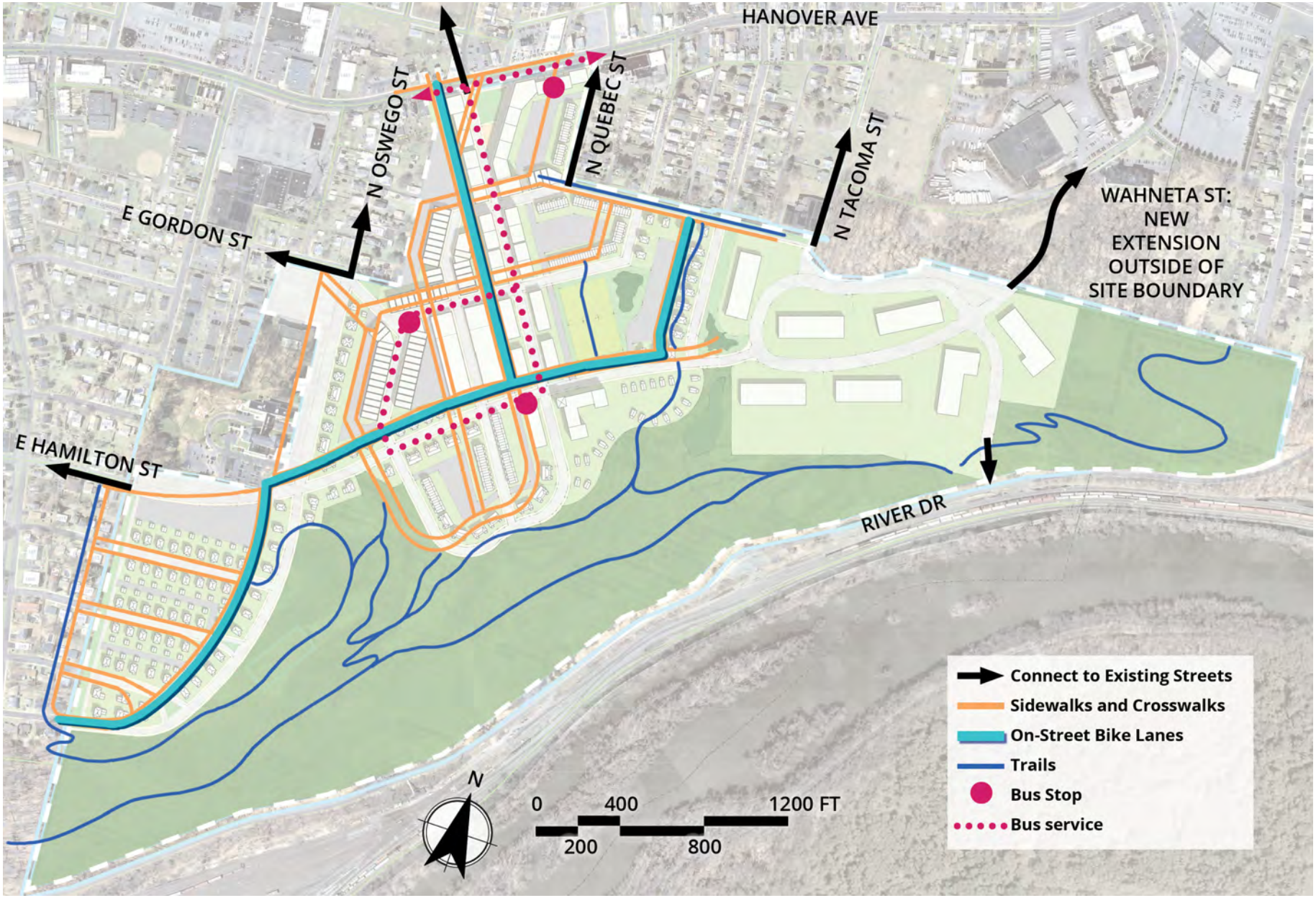
Potential connectivity issues that will need to be further investigated include the potential signalization of the main site driveway entrance at Hanover Avenue due to the high existing volume of traffic along Hanover Avenue, as well as the development along the main driveway. Further analysis will need to be performed once land uses have been finalized to determine how the surrounding road networks will be impacted by the new site traffic and what improvements, if any, will need to be made to address congestion issues.

PLAN COMPARISON

The Urban Plaza concept has a developable footprint of 107 acres. The size difference in comparison with the Grand Boulevard concept is primarily due to the undeveloped eastern corner. This eastern hilltop is potentially developable, but is located adjacent to residences and is difficult to access, so this concept focused development and infrastructure in a more compact footprint. There are 23 acres allotted to industrial uses, which focuses on the 23 acres that are most developable in this area.

The senior care site is smaller in this concept but occupies a highly visible location with great views. A site designed to offer walkability and internal spaces for retreat is well suited here. The park is centrally located, allows privacy inside the park due to its midblock siting, and is large enough for a multitude of park programming.

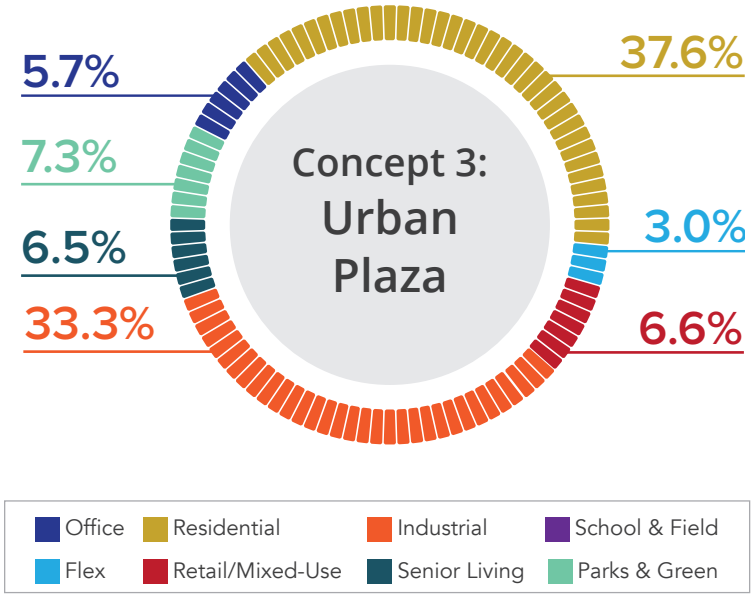
Figure 34: Urban PlazaConnectivity



URBAN PLAZA

Development Concepts Matrix	Urban Plaza Concept			
	Building SF	Residential Units	Lot Use by Acres	% of Total Use Acreage
Single Family Lot		73		
Duplex		22		
Triplex		45		
Townhouse		74		
Apartment		116		
Apartment over Retail		268		
Total Residential		**598**	**26.13**	**37.6%**
Senior Apartments		122		
Senior Cottage		21		
Total Senior		**143**	4.51	**6.5%**
Office	268,800		3.98	5.7%
Flex Office	80,000		2.06	3.0%
Retail	124,973		4.58	6.6%
Industrial	210,000		23.12	33.3%
School and Field	Not Included			
Park with Field			3.35	4.8%
Other Green Space			1.7	2.4%
Total Use Acreage			69.42	

Figure 41: Land Use Distribution (within Total Use Acreage)



Connections to Existing Neighborhoods

The feasible development concepts plans have been designed with three optional connections to the western-most and northeastern-most existing neighborhoods. In order for these options to work, the new neighborhood must maintain the existing road network into the site. Connectivity can be added in the future as part of Option 2 or 3 described below.

OPTION 1

No Physical Connections

This option leaves the green buffer and existing fence as-is. Within the proposed, new neighborhood, a series of one-way streets are built that can be used for connectivity between the blocks. The fence and green buffer are continuous and only provide one connection along East Hamilton Street with a two-way road.

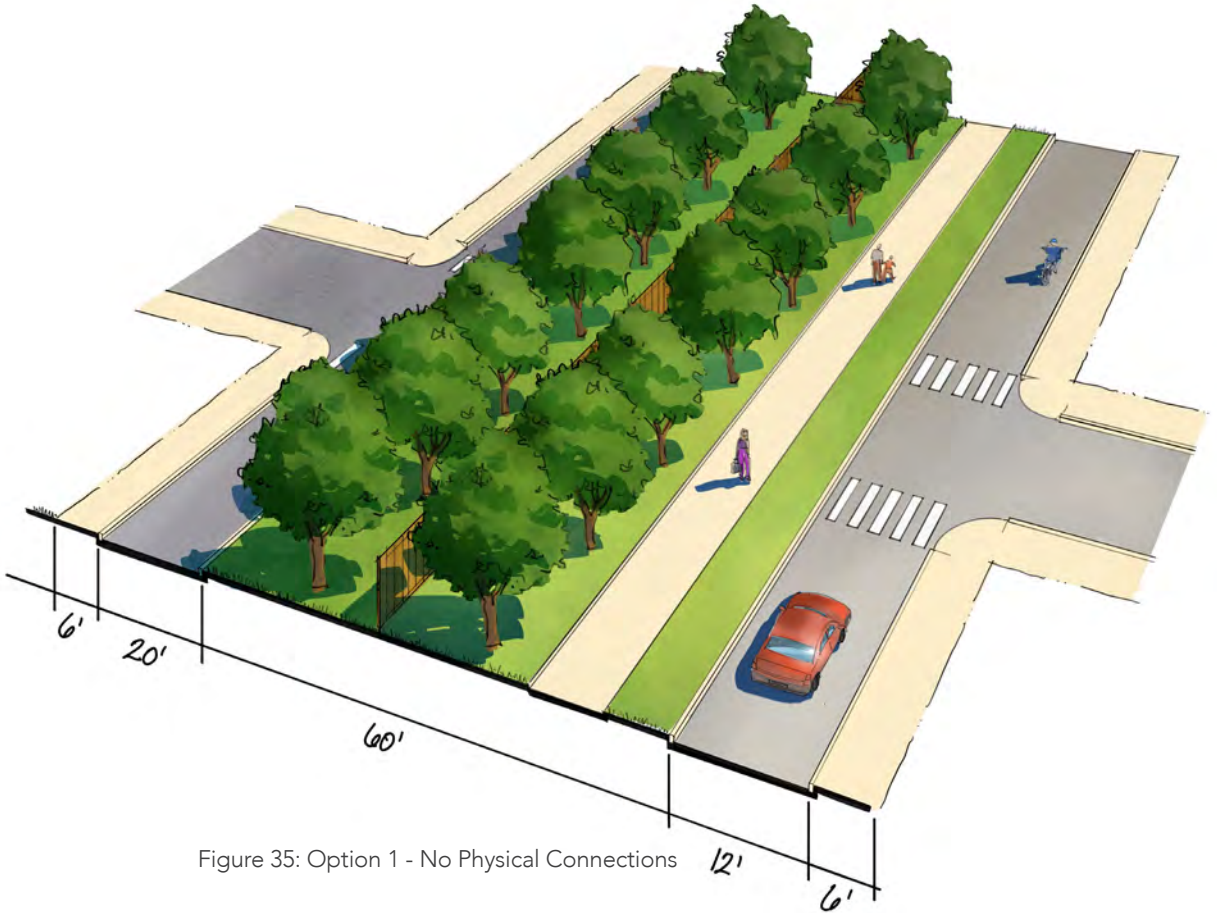


Figure 35: Option 1 - No Physical Connections

Connections to Existing Neighborhoods

OPTION 2

Visual and Pedestrian Connection

As with Option 1, the green buffer is maintained, however, the fence is removed. The green buffer becomes a linear park that allows visual, pedestrian, and bicycle connections between the existing neighborhood and the newly designed neighborhood. The one-way road system is still built along the east side of the linear park to allow connectivity between the blocks. There is only one connection point for cars, and that is at East Hamilton Street.

Figure 36: Option 2 - Visual and Pedestrian Connection

Connections to Existing Neighborhoods

OPTION 3

Visual, Pedestrian, and Car Connectivity

As with the previous options, Option 3 takes advantage of the green buffer by converting it into a linear park. However, more connection streets between the existing neighborhood and the new neighborhood are possible by breaking up the linear park and making a paved connection. This can be done between East Union Street, East Fairview Street, or East Elm Street.

Figure 37: Option 3 - Visual, Pedestrian, and Car Connectivity

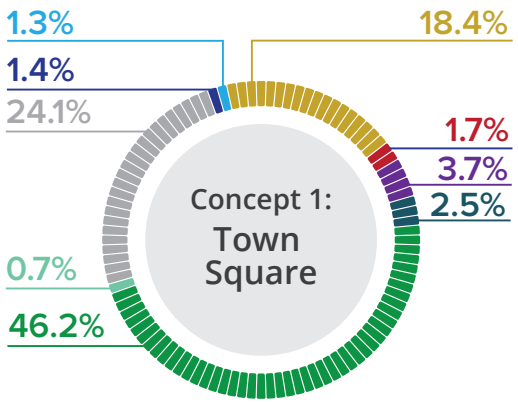
Development Concepts Matrix and Land Use Comparisons

Table 11 provides a summary of the three development concepts in terms of use by building square feet and acres, as well as residential units proposed.

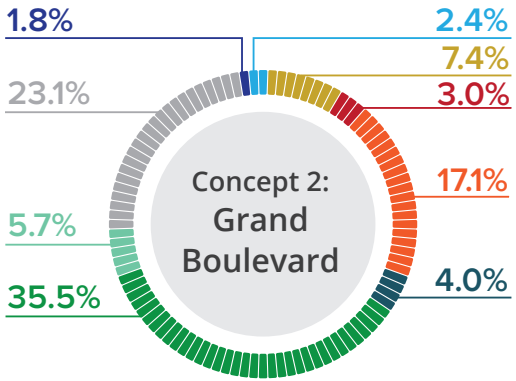
Table 11: Development Concepts Matrix

Development Concepts Matrix	Town Square Concept				Grand Boulevard Concept				Urban Plaza Concept			
	Building SF	Residential Units	Lot Use by Acres	% of Developable Acreage	Building SF	Residential Units	Lot Use by Acres	% of Developable Acreage	Building SF	Residential Units	Lot Use by Acres	% of Developable Acreage
Residential		644	35.89	35.3%		524	14.4	12.0%		598	26.13	24.3%
Senior Living		141	4.93	4.8%		170	7.81	6.5%		143	4.51	4.2%
Office	206,400		2.79	2.7%	172,800		3.46	2.9%	268,800		3.98	3.7%
Flex Office	160,000		2.63	2.6%	240,000		4.6	3.8%	80,000		2.06	1.9%
Retail	92,800		3.3	3.2%	140,000		5.84	4.9%	124,973		4.58	4.3%
Industrial	—	—	—		330,000		33.45	27.8%	210,000		23.12	21.5%
School and Field			7.17	7.0%	Not Included				Not Included			
Green Preserve			90.14	88.6%			69.36	57.7%			82.62	76.9%
Park with Field	Included with School						2.07				3.35	
Other Green Space			1.36	1.3%			9.03	7.5%			1.7	1.6%
Total Use Acreage			58.06				80.67				69.42	
Other/Infrastructure Acreage			46.97				45.14				43.13	
Total Developed Area Acres			101.71				120.27				107.44	

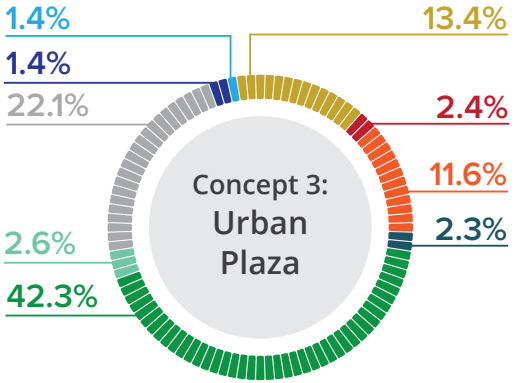
Figure 38: Sitewide Land Use Comparison



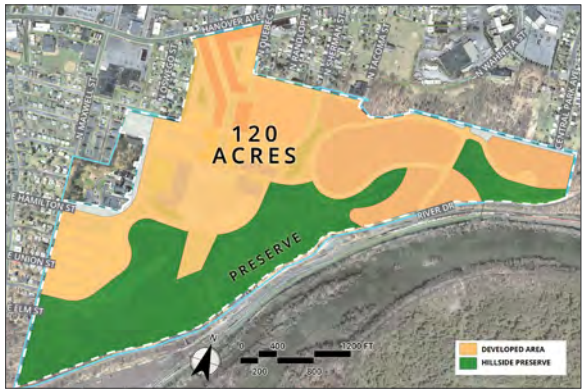
The Town Square concept prioritizes connecting with surrounding neighborhoods and keeps the largest area of preserved open space.

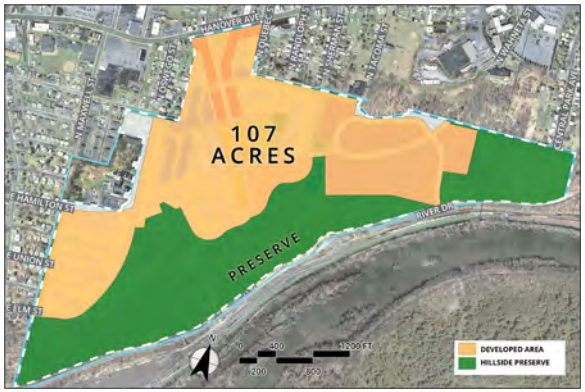


The Grand Boulevard concept balances neighborhood and commercial uses. It portrays the most development but will require substantial regrading to achieve.



The Urban Plaza concept balances neighborhood and commercial uses. It maximizes development in the most feasible areas but avoids major regrading that only supports small areas.





Office | Residential | Industrial | Preserve | Other
Flex | Retail/Mixed-Use | Senior Living | Parks & Green | School & Field

Fiscal and Economic Impacts

Economic and fiscal impact modeling are tools used to determine the economic impact resulting from a development project. For economic impacts, an econometric modeling system (i.e., Minnesota IMPLAN) estimates the cumulative effects of economic change. The analysis conducted for this study is based on the proposed conceptual site designs and estimated project costs. The econometric modeling captures both the construction phase of the project (temporary impacts) and the operational phase (permanent impacts), including direct and indirect job creation.

A fiscal impact analysis is utilized to estimate the potential tax revenue that could be generated from development or redevelopment of a site. Revenue such as property tax, sales tax, franchise fees, and other possible sources are calculated, and a net fiscal impact is determined after incorporating existing tax revenue generated from the site.

Both an economic impact analysis (jobs) and fiscal impact analysis (taxes) were completed for the three build-out scenarios. While a true fiscal impact analysis estimates the net impact on government for a particular project by projecting both incremental tax revenue and the additional cost on the local government (e.g., providing public services to the site, impact on the school district, etc.), a full fiscal impact analysis is beyond the scope of this study. However, a partial fiscal impact analysis estimating the impact on tax generation is provided.

The outputs from the economic and fiscal impact analyses show that the Grand Boulevard concept has the highest tax revenue and job impact, followed by the Urban Plaza scenario and then the Town Square scenario. A summary of findings is provided in Tables 12 and 13.

Table 12: Fiscal Impact Assessment

		CONCEPT PLAN		
		Town Square Concept	Grand Boulevard Concept	Urban Plaza Concept
REAL ESTATE TAX		$507,643	$620,642	$581,282
Assessed Value	7.31			
City Effective Millage Rate(1)		$3,710,870	$4,536,893	$4,249,171
Annual Real Estate Tax Revenue				
ACT 511 TAXES				
Earned Income(2)				
Income of ASH Residents		$25,410,000	$20,170,000	$23,732,000
Income of non-residents employed in ASH businesses		$50,090,000	$70,180,000	$57,000,000
Resident rate (city share)	1.475%	$374,798	$297,508	$350,047
Non-resident rate (city share)(2)	0.358%	$179,523	$251,525	$204,288
Deed Transfer, deed transfer rate per AV (3)	0.03%	$158,076	$193,263	$181,007
Local Services(4)	$1,700,000			
Residential Population	120,000	2,051	1,667	1,924
Per capita (residents)	$14.17	$29,049	$23,609	$27,250
Business Privilege Tax				
Projected sales volumes:				
Retail		$50,112,000	$75,600,000	$67,500,000
Services tax rate		$54,960,000	$61,920,000	$52,320,000
Retail tax rate	0.0015	$75,168	$113,400	$101,250
Services tax rate	0.003	$164,880	$185,760	$156,960

Continued on the following page

		CONCEPT PLAN		
		Town Square Concept	Grand Boulevard Concept	Urban Plaza Concept
Other Revenues (estimated by population)				
Residents + non-resident employees	124,000	3,396	3,605	3,502
Licenses and Permits(4)	$7,948,361			
Per capita (residents + employees)	$64.10	$217,650	$231,079	$224,445
Charge for Services(4)	$6,583,000			
Per capita (residents + employees)	$53.09	$180,263	$191,385	$185,890
Fines and Forfeitures(4)	$378,000			
Per capita (residents + employees)	$3.05	$10,351	$10,989	$10,674
Other Local Taxes(4)	$3,993,000			
Per capita (residents + employees)	$32.20	$109,341	$116,087	$112,754
Total Projected General Fund Revenues		**$5,209,968**	**$6,151,498**	**$5,803,736**

Notes:
(1) Millage was increased in December 2018 and effective in 2019 (CAFR, 2019)
(2) Household earned income based on census tract data for representative neighborhoods in Allentown. Non-resident rate is 1.28 percent, however, the City retains only 28 percent of the assessment and returns the remainder to the employee city of residence. Assume 50 percent non-resident employees.
(3) Deed Transfer Rate Calculation

Assessed Valuation 2019: ($1000's)
Residential: $2,871,421
Commercial: $1,445,226
Multi-family: $697,000
Combo Property: $173,000
Vacant: $112,139
Total Assessed Value 2019 (CAFR, 2019): $5,298,786
Deed Transfer Revenue ($1,000): $1,650
Deed Transfer Revenue Rate per $1 of AV: 0.03%

(4) Actual budget revenues (Comprehensive Annual Financial Report, City of Allentown, 2019)

Table 18: Estimated Economic Impacts of Development

	Town Square Concept		Grand Boulevard Concept		Urban Plaza Concept	
	Construction (one time)	Operational (annual)	Construction (one time)	Operational (annual)	Construction (one time)	Operational (annual)
Economic Impact (Regional Product)[1] [2]						
Output (Sales) Impact						
Direct	$534,097,294	$427,557,954	$649,621,406	$718,183,100	$610,394,459	$558,051,262
Indirect & Induced	$266,419,960	$254,875,799	$324,046,032	$416,375,894	$304,478,733	$325,618,053
Total Ouput Impact	**$800,517,254**	**$682,433,753**	**$973,667,438**	**$1,134,558,993**	**$914,873,192**	**$883,669,316**
Employment Impact [3] [4]						
Employment						
Direct	3,953	2,634	4,808	3,813	4,517	3,079
Indirect & Induced	1,653	1,746	2,011	2,824	1,889	2,212
Total Job Creation	**5,606**	**4,380**	**6,819**	**6,637**	**6,406**	**5,291**
Employee Compensation						
Direct	$258,336,940	$250,301,264	$314,214,673	$353,357,217	$295,241,033	$284,122,949
Indirect & Induced	$92,149,045	$92,382,793	$112,080,688	$152,727,350	$105,312,772	$119,153,119
Total Employee Compensation	**$350,485,985**	**$342,684,057**	**$426,295,361**	**$506,084,567**	**$400,553,805**	**$403,276,068**

(1) All model results are in year 2018 dollar values.

(2) A countywide model of Lehigh County, Pennsylvania was the basis of analysis. Therefore, all results reflect county impacts.

(3) Operational impacts reflect the benefits of a development when it is in operation. Employment impacts reflect the jobs created and/or supported by the project at full build-out. All compensation and tax impacts are assumed to recur on an annual basis.

(4) Employment impacts reflect the total number of jobs created and/or supported by the project including part time employment. Full time equivalent (FTE) are calculated as a national average of the ratio of Implan projected employment to FTE for each industry sector.

Source: Implan, Inc. 2020

RECOMMENDATIONS

The Commonwealth of Pennsylvania, as the current owner for the former Allentown State Hospital (ASH) site, intends to issue a Developer Request for Proposal (RFP) as the mechanism for disposition of the property. As a result, what ultimately happens at this site will be determined by the new property owner and their development team.

Even with no ownership role, the City of Allentown and its redevelopment partners have the opportunity to play a significant role in facilitating and promoting the kind of redevelopment that it wants to see. This section identifies actions that the City and other public sector partners can take to foster strong economic development and community revitalization at ASH. The following recommendations discuss policy-related actions and positions that can establish a development-friendly atmosphere to incentivize the types of end-uses that are most desired.

Town Square Illustration Concept

Policy-Related Recommendations

PROACTIVE ENGAGEMENT WITH NEW PROPERTY OWNER AND THE COMMUNITY

Combined with the City of Allentown's previous planning efforts, this Reuse Feasibility Study gives the City and other public-sector leadership partners a strong foundation in terms of what type of development is possible given remaining site constraints, the results of the market study, and the desires of the community.

Following the selection of a buyer for the site by the Act 71 Committee and DGS, the City of Allentown will serve as the single point-of-contact entity that will act as the primary liaison with the new owner of the ASH property. As the Redevelopment Liaison, the City should be prepared to discuss:

- the findings of this Reuse Feasibility Study;
- the desires of the community and local government;
- the goals and timelines of the new property owner/developer; and
- the needs of the new property owner/developer in terms of zoning accommodations, etc.

By speaking through "one voice," the community's redevelopment vision will be consistently conveyed to the new property owner/developer. In addition, a cohesive local communication strategy will help to facilitate an efficient resolution of concerns and ensuring a unified vision and clearly identifying the project's highest priorities. This approach is the first step to establishing a strong partnership that avoids the "us versus them" scenario and also presents a united front with a common shared end-goal for success.

Serving as the single point-of-contact, or Redevelopment Liaison, the City of Allentown will coordinate with the party that purchases the site to provide the community with regular status updates throughout the redevelopment process. Celebrating successes and initial steps forward – both small and large – will generate excitement for the redevelopment and begin to develop community buy-in and pride throughout each phase of redevelopment.

ZONING UPDATES AND FLEXIBILITY

The ASH site is currently located within the Institutional and Governmental zoning district, which does not permit most of the desired end uses identified in this Reuse Feasibility Study. However, the City of Allentown is proactively updating its zoning ordinance. It is recommended that the City leverage its current zoning code update efforts to begin to focus on the ASH site. This study should be used to directly inform the permitted land uses for and rezoning of the site for redevelopment. The rezoning should consider an array of reuse possibilities and flexible zoning standards.

CONCLUSION

Throughout the Reuse Feasibility Study process, redevelopment of the ASH site was described as a "once in a lifetime" opportunity for the region. The potential to generate new tax revenue, create new jobs, establish exceptional recreation amenities, and build a live-work-play community is well-supported by this study. The community must be patient and recognize that redevelopment of a site of this size will happen in phases and will likely take a decade or more to complete.

While not the property owner, the local leadership can have significant roles to play in establishing a favorable development atmosphere, serving to manage community expectations and robustly champion the success of the redevelopment effort. Recommendations proposed in this Reuse Feasibility Study can begin now and set the stage for realizing the highest levels of success for redevelopment of the ASH property.

Left: Yesterday: Allentown State Hospital, 1938
Right: Grand Boulevard Illustration Concept

Existing Environmental Conditions

Appendix A

The analysis of existing environmental conditions at the former Allentown State Hospital (ASH) property was developed through review of publicly available environmental assessment reports. Since it is the current property owner's (the Commonwealth of Pennsylvania) intention to mitigate environmental concerns as part the site demolition contract, the Scope of Work for the Demolition Contract (DGS SOW) was also reviewed to determine if all previously identified environmental issues were being mitigated.

Environmental studies utilized to conduct the analysis of existing environmental conditions included:

1. Phase 1 Environmental Site Assessment, prepared for the City of Allentown by HDR, Inc., February 24, 2009. (Limited to the 30-acre portion of the ASH property now located at 1900 East Allen Street in the City of Allentown, also known as the former Allentown Commercial and Industrial Development Authority (ACIDA) parcel.)

2. Phase 2 Environmental Site Assessment, prepared for LVEDC by Moonstone Environmental, LLC, August 31, 2009. (Limited to the ACIDA parcel.)

3. Target Brownfield Assessment (TBA), Subsurface Field Investigations, prepared for U.S. Environmental Protection Agency by Advanced Environmental Solutions, Inc and HDR Inc., September 2010. (Limited to the 30-acre former ACIDA parcel.)

4. Phase 1 Environmental Site Assessment, prepared for the City of Allentown via the Lehigh Valley Economic Development Corporation (LVEDC) by HDR, Inc., April 5, 2017. (Focused on the portion of the ASH property located at 1600 Hanover Avenue consisting of approximately 164 acres with 28 individual buildings, but NOT including the 30-acre former ACIDA parcel.)

5. Phase 1 Environmental Site Assessment, prepared for the Pennsylvania Department of General Services (DGS) by KCI Technologies, Inc., November 8, 2018. (The subject site of this study is the entire ASH property including two parcels of land totaling approximately 195 acres. The subject site is developed with thirty (30) vacant hospital buildings located near the center of the site and several vacant agricultural and maintenance buildings located on the eastern portion of the site.)

6. Screening Level Phase 2 Environmental Site Assessment, prepared for DGS by KCI Technologies, Inc., November 20, 2018. (The Screening Level Phase II ESA was conducted to investigate A) dioxin-impacted soils located south of the former incinerator and B) two diesel aboveground storage tanks (ASTs) and one decommissioned underground storage tank (UST) located on the site. The investigation was both targeted and limited in nature and was conducted to gather additional information concerning the issues referenced above. KCI Technologies, Inc. did not investigate other areas of the site or other issues.)

7. Pennsylvania Department of General Services, Request for Proposal for a Design Build Contractor, Project No. DGS-C-0501-0022, Project Manual, Appendix Q, Statement of Work, August 29, 2019. (DGS SOW)

STUDY AREAS OF EACH ENVIRONMENTAL INVESTIGATION

In 2009, ACIDA was considering acquisition of the 30-acre portion of the site now located at 1900 East Allen Street in the City of Allentown from the Commonwealth. The Commonwealth proceeded with a subdivision of the parcel in preparation of the sale to the ACIDA. The 30-acre parcel is presented in Figure 2 from the 2009 report and is included at the end of this section The first three studies in the above list were conducted on this 30-acre parcel only. Figures 2 and 3 from the 2010 TAB investigation present the Areas of Concern for this parcel. The parcel was conveyed to ACIDA, but it was eventually sold back to the Commonwealth in 2018.

Subsequent environmental studies focused on either the remaining 160+ acres of the ASH property (see Figure 3 from the 2017 Phase 1 report) or on the entire 195-acre property (see Figure ES1 from the 2018 Phase 1). These figures present the Areas of Concern for the larger parcels. The DGS SOW encompasses demolition, remediation, and site reclamation work at the entire 195-acre property.

SUMMARY OF RECOGNIZED ENVIRONMENTAL CONDITIONS

A summary of the findings and conclusions of each investigation report is presented in the Environmental Findings Table at the end of this section. Any corresponding mitigation measures that have been identified in the DGS SOW are also presented in the table. Figures that are relevant from each report are included at the end of this section.

SUMMARY OF DEMOLITION/REMEDIATION SCOPE OF WORK

The DGS project generally consists of abatement, termination of utilities, demolition of the existing buildings/structures, and restoration of the ASH property. There are 44 buildings, including ancillary structures such as sheds, gazebos, and dumpsters, etc., located throughout the approximately 195-acre site that date back to the late 1800s. There is also a system of utility tunnels throughout the main grouping of buildings along with one inactive and two active water reservoirs that currently hold approximately 1.5 million gallons of water. There are several structures and a building on campus that are not in contract (NIC), which are the existing sidewalks and parking lots (not integral to the top of the utility tunnels), the Pennsylvania Department of Environment Protection (PADEP) weather station (nor its power service), Community Services for Children, and townhouses. The construction duration of this project is 546 days. This includes an estimated 120 days, four months for design and 14 months for abatement, utility termination, demolition, removal, fill and seeding.

DGS has contracted with a Design Build Contractor (DBC) to complete the DGS SOW described in the Request for Proposal, which provides details as to the final condition of the site and supporting infrastructure once the work is completed. For example, the DBC shall only grub to the extent required to perform the demolition of the buildings and structures and abatement of environmental hazards. No trees located along the main ingress/egress roads shall be removed. Demolished buildings and subgrade voids (i.e. basements, tunnels, areas of contaminated soil, and USTs) shall be filled with approved fill. These areas shall be filled in two-foot lifts and compacted to 95% compaction. Any portion of existing sidewalk that was removed to abate and demolish the tunnels shall be replaced to match existing. If any portion of tunnel runs under the roadway, the roadway shall be repaired in accordance with Pennsylvania Department of Transportation standards. The disturbed areas of the project site shall be seeded in accordance with National Pollutant Discharge Elimination System (NPDES) permit requirements.

CONCLUSION & RECOMMENDATIONS

Based on a review of available environmental reports and the DGS SOW, it appears that all previously identified Recognized Environmental Conditions will be addressed during the planned site preparation work. However, potential developers will need to confirm whether the "pad ready" status of the site is suitable for their proposed end-uses.

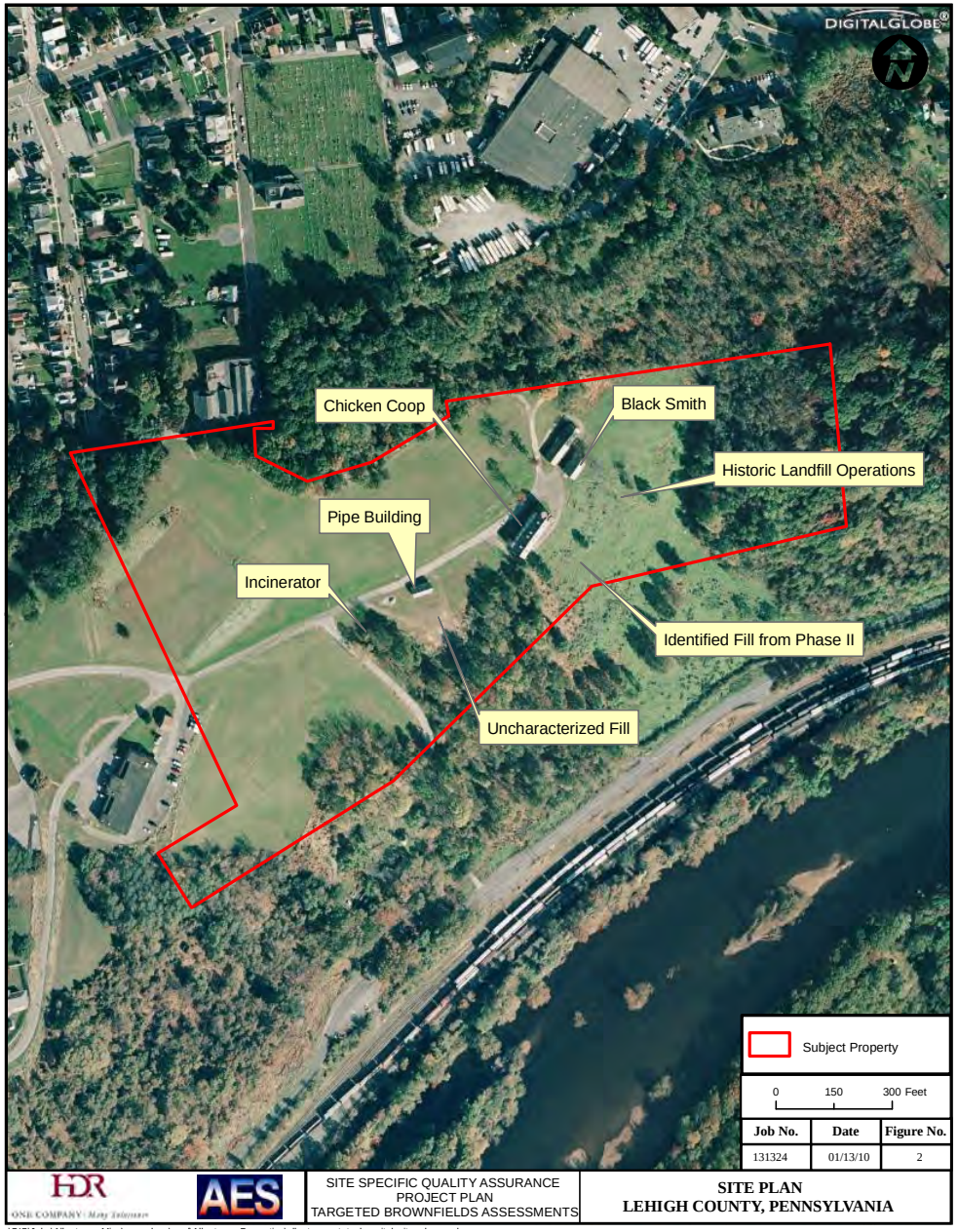
There may be several potential outstanding environmentally-related concerns that remain after completion of the DGS SOW. For example, the confirmation sampling to be conducted by the DGS DBC will be crucial to evaluate if remediation has been completed to a level that will attain the PADEP's residential cleanup standards that will be necessary to support unrestricted redevelopment of the site. Also, in the previously landfilled areas, compaction testing is recommended to confirm buildability of those areas once excavated and backfilled. Similarly, given that building debris will be backfilled into basement areas of buildings during demolition, buildability of former building footprints should be confirmed prior to new construction.

30-Acre Portion of ASH Now Located at 1900 East Allen Street (Former ACIDA Parcel)

HDR ONE COMPANY | Many Solutions℠ 1720 Spillman Drive Suite 280 Bethlehem, PA 18015-2165	**Allentown State Hospital** **1520 Hanover Avenue** **Allentown, PA 18109**	**Subject Parcel** **Phase I Environmental Site Assessment**	**Date** 1/16/09	**Figure** **2**

Source: Phase 1 Environmental Site Assessment, prepared for the City of Allentown by HDR, Inc., February 24, 2009.

Areas of Concern for the Former ACIDA Parcel (Map 1)

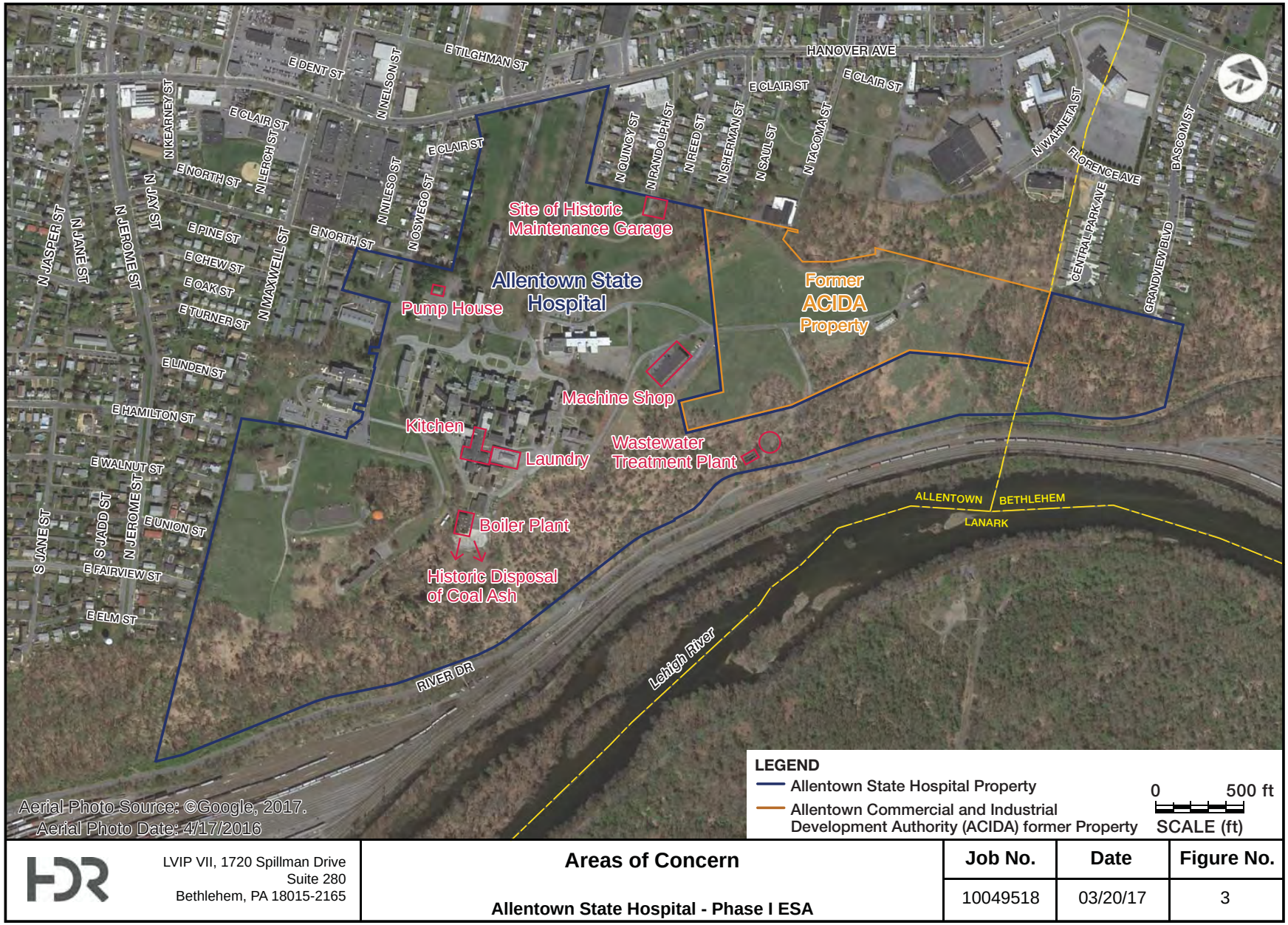


Source: Target Brownfield Assessment (TBA), Subsurface Field Investigations, prepared for USEPA by Advanced Environmental Solutions, Inc and HDR Inc., September 2010.

Areas of Concern for the Former ACIDA Parcel (Map 2)

Source: Target Brownfield Assessment (TBA), Subsurface Field Investigations, prepared for USEPA by Advanced Environmental Solutions, Inc and HDR Inc., September 2010.

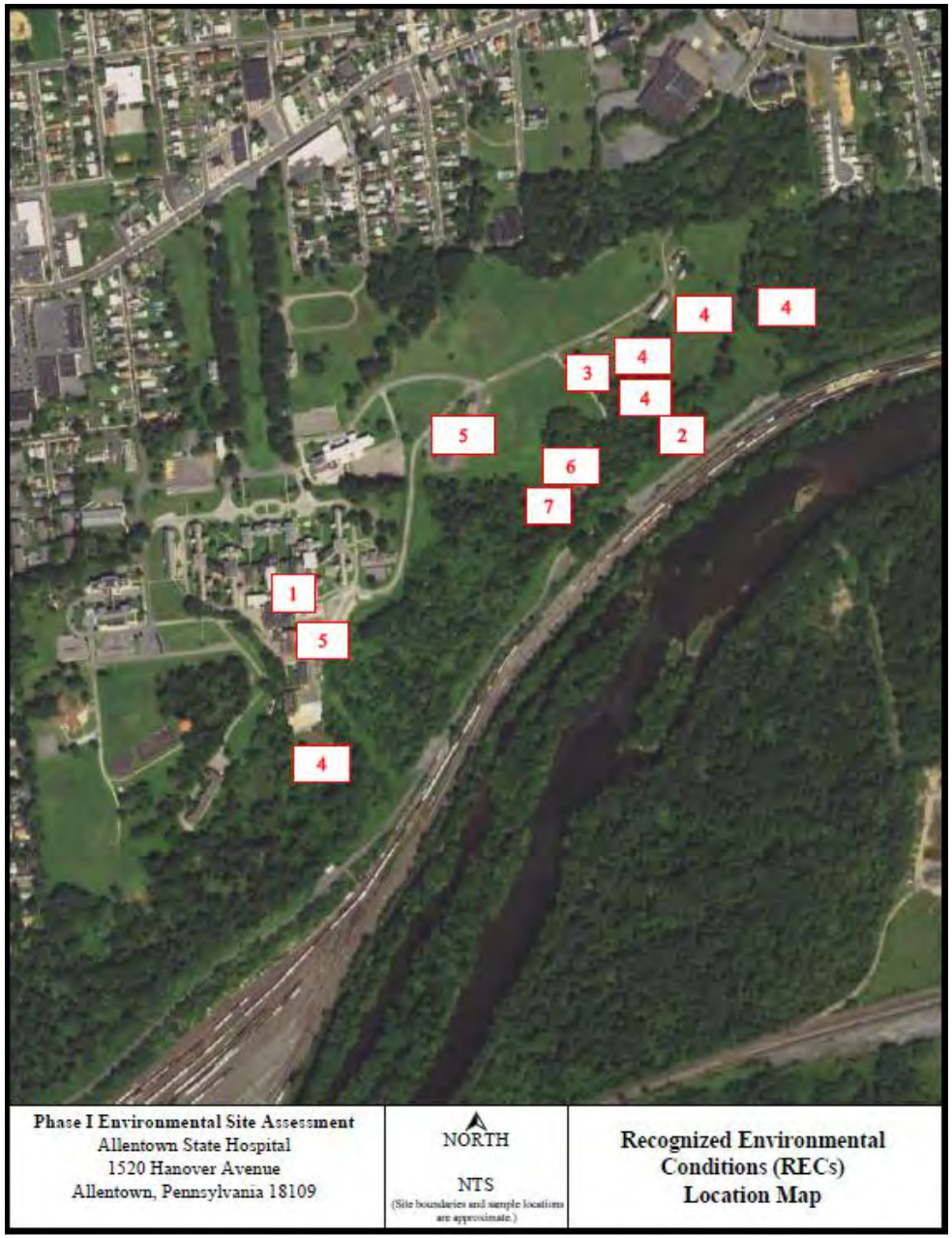
Areas of Concern for the Remaining 160-Acre Site (Map 1)



LVIP VII, 1720 Spillman Drive Suite 280 Bethlehem, PA 18015-2165	**Areas of Concern** **Allentown State Hospital - Phase I ESA**	**Job No.**	**Date**	**Figure No.**
		10049518	03/20/17	3

Phase 1 Environmental Site Assessment, prepared for the City of Allentown via LVEDC by HDR, Inc., April 5, 2017.

Areas of Concern for the Remaining 160-Acre Site (Map 2)



Source: Phase 1 Environmental Site Assessment, prepared for DGS by KCI Technologies, Inc., November 8, 2018.

	REPORT REFERENCED	PARCEL & PURPOSE	FIELD WORK CONDUCTED	RECS & IDENTIFIED CONCERNS	FIGURE REFERENCES	FINDINGS/ RECOMMENDATIONS AND FOLLOW-UP STUDIES	DGS PLANNED MITIGATION
1	**Phase 1 Environmental Site Assessment, prepared for the City of Allentown by HDR, Inc., February 24, 2009.**	30-acre portion of the ASH property now located at 1900 East Allen Street, also known as the former ACIDA parcel. The Phase 1 was conducted to support possible acquisition of the parcel by the ACIDA.	N/A	PADEP documents, interviews and aerial photographs indicate that several areas have been backfilled or show signs of soil disturbance. Specifically, documents indicate the eastern boundary of the subject parcel was utilized as a landfill starting in the early 1970s and into the 1980s. The fill material at these locations was never characterized and is considered a recognized environmental condition.	**Figure 2 shows 30-acre parcel**		See REC 4 from 2018 Phase 1
				Interviews conducted during this assessment indicate that an incinerator operated on the subject parcel and was used to burn primarily paper waste. There is evidence of slag and other fill material in the immediate vicinity of the incinerator. There are no records that document what exactly has been burned and the ultimate disposal of the ash, therefore this is a recognized environmental condition.			See REC 3 from 2018 Phase 1
				Potential asbestos containing material (ACM) including shingles cover the outside walls of the former chicken coop. There is the potential that additional asbestos containing materials requiring additional evaluation exist inside the building.		August 2009 Phase 2 confirmed presence of ACM & recommended abatement prior to demolition. Grey transite siding on the chicken coop and on the storage shed next to the blacksmith shop have been confirmed as asbestos-containing materials.	As per DGS SOW: The DBC will be required to perform abatement of ACM prior to demolition of any buildings on the property. In addition, there is a potential of paint chips in the area surrounding Building 41 (Water Tower). The DBC shall, if paint chips are present, bag and treat the paint chips as if they are lead-based paint chips.
2	**Phase 2 Environmental Site Assessment, prepared for LVEDC by Moonstone Environmental, LLC, August 31, 2009.**	30-acre portion of the ASH property now located at 1900 East Allen Street, also known as the former ACIDA parcel. The purpose of the limited Phase II investigation was to evaluate the extent of fill material in three areas of suspected landfilling, and to evaluate soil quality in the following areas: suspect landfill areas, the area around the former incinerator, the area near a floor drain outfall at the former blacksmith shop, and the area of a historical herbicide spill.	The investigation of these areas included an electromagnetic survey, installation of 12 test pits, installation of 10 soil borings via GeoProbe™, and collection of discrete soil samples for laboratory analysis. The Phase II assessment also included an asbestos survey for four buildings at the Site: the chicken coop, the blacksmith shop, and the two storage sheds.	Exceedances of the RSHS for benzo(a)pyrene, arsenic, and lead were documented in soil. Only lead exceeded NRHS.	**Figure 3 Site Boundaries and APECs on Aerial Photograph**	If this area is to be used for future development, the presence of the landfill materials will need to be taken into account, particularly with respect to the presence of wood and large void spaces in the subsurface, which may contribute to structural instability. Remediation will be dependent on end-use.	See REC 4 from 2 018 Phase 1

	REPORT REFERENCED	PARCEL & PURPOSE	FIELD WORK CONDUCTED	RECS & IDENTIFIED CONCERNS	FIGURE REFERENCES	FINDINGS/ RECOMMENDATIONS AND FOLLOW-UP STUDIES	DGS PLANNED MITIGATION
3	Target Brownfield Assessment, Subsurface Field Investigations, prepared for USEPA by Advanced Environmental Solutions, Inc and HDR Inc., September 2010.	30-acre portion of the ASH property now located at 1900 East Allen Street, also known as the former ACIDA parcel.	A subsurface investigation was completed during the months of March and April 2010. Trenches were excavated through the areas of known or suspected land filling, shallow soil samples were collected adjacent to the incinerator and monitoring wells were installed and sampled to document groundwater conditions at upgradient and downgradient locations.	The following observations were noted with respect to the soil: • Trenching activities confirmed significant thicknesses of debris in four separate landfill areas: behind the blacksmith shop (trenches 1 and 1A), below the chicken coop (trench 2 and 3), and behind the pipe building (trenches 4 and 5). • Fill material was documented to thickness of up to 15 feet in the trenches and up to 18 feet in the area below the Blacksmith shop (railroad tie area). • Landfilled material consisted of bricks, ash, bottles, household items, etc., as described in the trench pit logs. • Apparent ash-like material was observed in all areas. • Trench 1A was added to the investigation to evaluate an obvious disposal location of railroad ties. • Additional trenching conducted in July 2010 in the area below the chicken coop to determine volume and characteristics of the railroad ties disposal area.	**Table in Section 6 presents thickness of landfilled materials in each area. Figures 2 & 3 show landfilled areas.**	Based on soil analytical data, remedial actions may be warranted to address potential risks from direct exposure to Site compounds of concern, specifically dioxin. Additionally, the landfill debris may be a hazard to human safety and also pose problems to future development with respect to engineering design issues.	See REC 3 and REC 4 from 2018 Phase 1
				• SVOC compounds exceeded Residential SHS in only one soil sample, AH-TP-03-13FT.Compounds exceeding standards were: benzo(a)anthracene, benzo(a)pyrene,benzo(b)fluoranthene, dibenzo(a,h) anthracene, and carbazole. • The metals arsenic, lead and cobalt were detected in soil at concentrations above Residential SHS • One dioxin compound (1, 2, 3, 4, 6, 7, 8, 9-OCDD) was detected slightly above the EPA guidance levels in the shallow soil adjacent to the incinerator.			See REC 3 from 2018 Phase 1
				The following observations were noted with respect to the groundwater: • VOC and SVOC analysis did not detect any compounds above PADEP Residential Used Aquifer, TDS<2500 criteria. • Lead and aluminum were detected in groundwater at concentrations above Residential Used Aquifer (TDS<2500) criteria.		Groundwater impacts, other than dissolved lead and aluminum above standards is not a risk driver, and since the groundwater in the area is not being used for a drinking water supply, no remedial efforts will be required for groundwater.	None

	REPORT REFERENCED	PARCEL & PURPOSE	FIELD WORK CONDUCTED	RECS & IDENTIFIED CONCERNS	FIGURE REFERENCES	FINDINGS/ RECOMMENDATIONS AND FOLLOW-UP STUDIES	DGS PLANNED MITIGATION
4	**Phase 1 Environmental Site Assessment, Prepared for the City of Allentown via LVEDC by HDR, Inc., April 5, 2017.**	164-acre portion of the ASH property located at 1600 Hanover Avenue in the City of Allentown, but NOT including the 30-acre former ACIDA parcel	N/A	Soil potentially impacted with heavy metals and other coal ash constituents in the on-site ash disposal area south of the boiler plant.	**Figure 3: Areas of Concern**		See REC 3 from 2018 Phase 1
				Potential spills and releases at the reported historic maintenance garage at the property entrance.			See REC 5 from 2018 Phase 1
				Impacts from release through floor drains throughout the facility, including in the maintenance shop, laundry area, boiler plant, and kitchen, all of which have unknown discharge locations and may have conveyed cleaning solvents, heavy metals, petroleum products, or other hazardous materials that may have been released to soil underlying the facility from drain leakage.			See REC 1 and REC 5 from 2018 Phase 1
				Soil potentially impacted with heavy metals and other constituents from wastewater treatment sludge that was disposed of by spreading it on the ground.			See REC 6 from 2018 Phase 1
				PCB-oil containing transformers			As per the DGS SOW : Prior to the broader demolition efforts of the buildings, the DBC must remove all existing electrical power system equipment and devices (e.g. panel boards, transformers, generators, transfer switches, enclosed circuit breakers, receptacles, etc.).
				Asbestos insulation and lead-based paint in the extensive network of utility tunnels that connect the buildings on the Subject Property. The need for abatement of the asbestos and lead-based-paint in the utility tunnel network has the potential to be costly and time-consuming, and may impact a future redevelopment schedule and budget.			As per the DGS SOW: Throughout the site there is a system of utility tunnels that will also need to have selective demolition completed. Once the tunnels are abated and piping and appurtenances disposed of, they will have the top portion demolished and the bottom slab cracked full depth.

	REPORT REFERENCED	PARCEL & PURPOSE	FIELD WORK CONDUCTED	RECS & IDENTIFIED CONCERNS	FIGURE REFERENCES	FINDINGS/ RECOMMENDATIONS AND FOLLOW-UP STUDIES	DGS PLANNED MITIGATION
5	Phase 1 Environmental Site Assessment, Prepared for PA Department of General Services by KCI Technologies, Inc., November 8, 2018.	The subject site of this study is the entire ASH property including two parcels of land totaling approximately 195 acres.	N/A	This Phase 1 identified 7 RECs and recommended a Phase 2 ESA. Some of the 7 RECs correspond to RECs previously identified as indicated above. RECs are summarized below.	**Figure ES1 - REC Map**		NOTE: The mitigation efforts described for each REC has been taken from the DGS SOW for the DBC conducting the demolition and site preparation work.
				REC 1 - Laundry facility in Building 29 may have had dry-cleaning operations.	**Figure ES 1 2018 Phase 1 KCI**	Previously Identified.	Possible historic dry-cleaning activities occurred around hospital building 29. DBC is to conduct a soil vapor investigation for VOCs and remove elevated contamination if present prior to building demolition, with follow-up soils and groundwater characterization/ delineation if warranted. Results and report(s) are to be prepared and shared with DGS hired QA firm.
				REC 2 - Fire Training area east of WWTP.	**Figure ES 1 2018 Phase 1 KCI**		The Fire Training area east of the WWTP has the potential for soil contamination from byproducts of burning. DBC is to sample soils for TPH, VOCs, SVOCs, RCRA-8 metals, PFOS/PFAS and characterize and delineate contaminated areas and remove elevated contamination if present. DBC will remove rusted partial drums and large metal tank. Results and report(s) are to be prepared and shared with DGS hired QA firm.
				REC 3 - Coal Ash and dioxin soil contamination in area of former incinerator. 2018 KCI Phase 2 sampling confirmed dioxin levels.	**Figure ES 1 2018 Phase 1 KCI**	Previously Identified.	The DBC is to excavate and dispose of approximately 14 tons of known dioxin contaminated soil located south and southeast and of the Incinerator. DBC is to investigate, remove and dispose of additional apparent ash deposited near the northeast and northwest corners of the incinerator and remove if determined to be contaminated. DBC is to remove and dispose of ash remaining within the incinerator prior to demolition, and clean stained areas prior to demolition. DBC is to collect confirmatory samples following removal and provide and install clean backfill. DBC shall backfill and perform compaction associated with backfilling in these areas with clean fill.

	REPORT REFERENCED	PARCEL & PURPOSE	FIELD WORK CONDUCTED	RECS & IDENTIFIED CONCERNS	FIGURE REFERENCES	FINDINGS/ RECOMMENDATIONS AND FOLLOW-UP STUDIES	DGS PLANNED MITIGATION
5							There is approximately 22,100 CY of coal ash on the project site. The known areas that coal ash exists is above and on the embankment near the lot to the south the boiler plant. Additionally, there is ash remaining in the boilers and boiler area. DBC is to remove all coal ash, dispose in accordance with applicable regulations.
				REC 4 - 3 Unregulated landfill areas: south of boiler plant area; southeast of incinerator and pipe building; in wooded area east end of subject property	**Figure ES 1 2018 Phase 1 KCI**	Previously Identified.	Three areas of dumping are apparent along embankments and in wooded areas to the south of the boiler plant building, to the southeast of the former incinerator and pipe building, and in the wooded area at the east end of the subject site. The discarded waste included intact and partial/rusted out drums, tires, an aboveground tank (AST), scrap metal, and wood debris. DBC is to characterize drums, soil and groundwater in the three known drum areas for TPH and VOCs. DBC is to remove and dispose of drums and drum contents, tires, AST, scrap metal and wood debris. DBC is to perform targeted soil removal and disposal if required, and backfill to grade with clean fill.
				REC 5- Use and storage of chemicals, oils and evidence of vehicle maintenance in Electric Shop and Maintenance Shop	**Figure ES 1 2018 Phase 1 KCI**	Previously Identified.	Containers of lubricants, motor oils, paint, vehicle/equipment maintenance chemicals, and tires are present in the electric shop and maintenance shop at the subject site. Oil staining was observed around several transformer/electrical parts on the concrete floor in the electric shop and around equipment in the maintenance shop. DBC is to dispose of containers and all remaining chemicals, lubricants, containers and tires prior to demolition of the shops. DBC is to clean stained areas or remove substrate and dispose prior to demolition of the shops.

	REPORT REFERENCED	PARCEL & PURPOSE	FIELD WORK CONDUCTED	RECS & IDENTIFIED CONCERNS	FIGURE REFERENCES	FINDINGS/ RECOMMENDATIONS AND FOLLOW-UP STUDIES	DGS PLANNED MITIGATION
5				REC 6 - Several concerns related to historic operations of the WWTP including disposition of sludge and the presence of leaking drums and containers inside the sludge filter building	**Figure ES 1 2018 Phase 1 KCI**	Previously Identified.	Three areas of dumping are apparent along embankments and in wooded areas to the south of the boiler plant building, to the southeast of the former incinerator and pipe building, and in the wooded area at the east end of the subject site. The discarded waste included intact and partial/rusted out drums, tires, an aboveground tank (AST), scrap metal, and wood debris. DBC is to characterize drums, soil and groundwater in the three known drum areas for TPH and VOCs. DBC is to remove and dispose of drums and drum contents, tires, AST, scrap metal and wood debris. DBC is to perform targeted soil removal and disposal if required, and backfill to grade with clean fill.
							Three areas of dumping are apparent along embankments and in wooded areas to the south of the boiler plant building, to the southeast of the former incinerator and pipe building, and in the wooded area at the east end of the subject site. The discarded waste included intact and partial/rusted out drums, tires, an aboveground tank (AST), scrap metal, and wood debris. DBC is to characterize drums, soil and groundwater in the three known drum areas for TPH and VOCs. DBC is to remove and dispose of drums and drum contents, tires, AST, scrap metal and wood debris. DBC is to perform targeted soil removal and disposal if required, and backfill to grade with clean fill.

	REPORT REFERENCED	PARCEL & PURPOSE	FIELD WORK CONDUCTED	RECS & IDENTIFIED CONCERNS	FIGURE REFERENCES	FINDINGS/ RECOMMENDATIONS AND FOLLOW-UP STUDIES	DGS PLANNED MITIGATION
5							DBC is to investigate the contents of the drum(s) and other containers and properly dispose of the vessels and contents prior to demolition of the structures. DBC to investigate the contents of the UST, remove and dispose of all contents, properly remove the UST in accordance with PA DEP requirements, and backfill the area to existing grade.
				REC 7 - Evidence of an undocumented UST was observed at the former wastewater treatment plant (WWTP) located at the southeast end of the subject site. KCI also identified two (2) 1,000-gallon fuel oil ASTs at the subject site, one located to the south of the electric shop and one located between buildings 25 and 26. One 500-gallon diesel AST was also observed to the northeast of the maintenance building. A 4,000-gallon gasoline UST was located to the northeast of the maintenance building.	**Figure ES 1 2018 Phase 1 KCI**		(1) 4000 gallon gasoline UST to be removed located northeast of maintenance building. It is pumped out and 'closed' status. (1) 500 gallon diesel AST northeast of maintenance building, (2) 1000 gallon diesel ASTs with some fuel still remaining in each. One is located south of the electrical shop and one located between buildings 25 and 26. DBC to remove all tanks and slabs, all contamination that may exist, and submit closure reports to PA DEP inclusive of all required testing. DBC shall backfill and perform compaction associated with backfilling in the area with clean fill. Refer to Phase 2 ESA for additional information.

Real Estate Market Study

Appendix B

2020 real estate market data courtesy of CoStar

This study was funded through a 2016 USEPA Brownfield Assessment Grant received by Lehigh Valley Economic Development Corporation and Lehigh Valley Land Recycling Initiative. The Reuse Feasibility Study is being conducted independent of the Commonwealth of Pennsylvania's disposition process for the Allentown State Hospital Campus. Michael Baker International, Inc. is not acting as an agent of the Commonwealth while conducting the study.

CoStar™

TABLE OF CONTENTS

EXECUTIVE SUMMARY

Key real estate market study findings are summarized on the following pages. The full market study begins on page 12.

Purpose

The former Allentown State Hospital is located on an approximately 195-acre campus (ASH campus) in the City of Allentown's East Allentown neighborhood. Closed in 2010, this real estate market study was conducted to assess real estate market receptivity for potential redevelopment end uses including retail, office, industrial, and housing.

Locational Advantages

- The site represents one of the largest parcels available for development in the City of Allentown and surrounding communities and is uniquely located in an established residential community.
- The site is positioned between two urban centers, the City of Allentown and the City of Bethlehem, affording easy access between the two downtowns.
- The site is located within a planned node for transit-oriented development through LANTA EBS. Transit accessibility is reinforced through Allentown Vision 2030 Comprehensive and Economic Development Plan.
- The ASH campus is located within a 10-minute drive of Lehigh Valley International Airport, not only an air passenger and air cargo hub but an industrial hub as well.

Geographic Study Areas

STUDY AREA
City of Allentown & City of Bethlehem

PMA
(Primary Market Area)
30-Minute Drive Time from Allentown State Hospital

MSA
Allentown-Bethlehem-Easton, PA-NJ Metropolitan Statistical Area

RETAIL MARKET AREA
15-Minute Drive Time from Allentown State Hospital

Socio-Economic Snapshot

Population continues to grow, outpacing state growth

Population in all geographies surpasses state growth, reflecting the Lehigh Valley's location within the New York- New Jersey metropolitan area. Growth in the PMA is highest at nearly 8%, representing opportunity for future workforce.

People living near the Allentown State Hospital are younger

The median age in the study area is younger (35.1), with a greater number of Millennials compared to their Gen X counterparts in the PMA (41.3) and MSA (42.2). Median age across all geographies is expected to increase over the next 5 years.

Household income near the ASH campus is lower than the region, but projected to increase

The median household income in the study area is slightly lower than the MSA and PMA, suggesting lower consumer spending power compared to the region. By 2024 median household income is projected to increase by nearly 15% in all study areas, increasing by just 13% at the state level.

Home ownership is declining, renting is on the rise, and vacancy rates are increasing slightly

Owner occupied units in the study area and PMA have been declining since 2000 with decline projected to continue over the next 5 years. The number of renter occupied units currently exceeds home ownership in the study area, suggesting potential need for additional multi-family housing.

Median home values near the ASH campus are lower than surrounding study areas

The median home value within the study area is more than 40% lower than median home values within the MSA and PMA indicating that if housing is constructed at the ASH campus, price points should be comparable with the study area.

Residents living near the ASH campus are more ethnically diverse compared to the region

Based on an index that ranks diversity from low (0) to high (100), the study area has a diversity index of 83.0 compared to 62.4 (PMA) and 55.5 (MSA). The index represents the likelihood that two persons, chosen at random from the same area, belong to different race or ethnic groups.

Residents living near the ASH campus have lower levels of educational attainment

Compared to the PMA and MSA, the percentage of adults in the study area with less than a high school education is high at over 16%. Adults with a bachelor's degree or higher is slightly more than 20% in the study area, increasing to over 30% in the other geographies.

Employment Trends

Workforce demand in the Lehigh Valley is increasing

Online job postings increased from 3,759 to 5,907 between 2018 and 2019. According to LVEDC's Lehigh Valley Education & Talent Supply Report (2018), 71% of responding employers experienced challenges in recruiting, hiring, or retaining talent.

Jobs are increasing, particularly in the Health Care and Transportation & Warehousing industries

The MSA added 52,475 new jobs between 2010 and 2019, an 18% increase. The top employing industry in the MSA is Health Care & Social Assistance at over 63,000. Transportation & Warehousing had the greatest numeric and percent change in employment between 2010 and 2019, at 18,188 and 134%, respectively.

Lehigh Valley manufacturing jobs are rebounding, exceeding state level manufacturing growth

While manufacturing employment dipped after the 2008 national recession, it rebounded reflecting a 21% increase in employment between 2010 and 2019. State growth in manufacturing was only 3%, reinforcing the strength of the manufacturing sector in the Lehigh Valley. Over 40% of the state's 14,499 manufacturing sector jobs added since 2010 were created in the MSA.

The Lehigh Valley faces a deficit of nearly 10,000 workers

According to the Lehigh Valley Education & Talent Supply Report, 90,665 people in the workforce are expected to retire within the next 10 years, while only 80,952 people are likely to enter the talent market. This leaves the region with a deficit of nearly 10,000 workers over the next 10 years if no actions are taken to address workforce.

Additional goods producing jobs in the study area would provide residents jobs where they live

While the number of employees living and working within the MSA and Lehigh Valley Workforce Investment Area (WIA) has been increasing, Allentown officials report that many City residents, particularly those employed in the manufacturing sectors, travel outside the City to work. Census data reveals as many as 2,500 Allentown residents employed in manufacturing jobs work outside of the City. Creating new manufacturing job opportunities in Allentown would provide Allentown residents with jobs where they live. The ASH campus could be a potential site for locating these new jobs.

Target Industry Sectors

In 2018 LVEDC identified 5 target industry sectors for the Lehigh Valley based on: current employment figures, demonstrated growth in employment in the last five years, and opportunity for growth in the next five years. Each of the 5 target industry sectors was analyzed for potential compatibility at the ASH campus. Further analysis of real estate supply and demand is discussed later in this Executive Summary.

Target Industry Sector	Data [1]	Site Analysis
Manufacturing (Advanced and Food & Beverage) Manufacturing will be highly influenced by new technology and processes, requiring highly skilled workers	• 2nd largest economic sector in the Lehigh Valley • Greatest economic multiplier of any sector (1 manufacturing job equals 4 in other sectors) • High demand occupations: machinists, engineers, welders, electricians/ electrical engineers, general labor • Annual demand: 2,676 workers	• **The ASH campus is a potential candidate for industrial/flex space.** • Small industrial users are situated in East Allentown on individual parcels or in business parks. • Real estate brokers and economic development professionals report the lack of small sized (less than 80,000 SF) manufacturing space throughout the Lehigh Valley. • Considering its location in a residential neighborhood, industrial vehicle access to the site should be carefully assessed. • The site could help meet the Lehigh Valley's need for high-value industrial/ flex space.
High-Value Business Services Corporate demands required to respond to rapid changes in customer expectations drive growth in this sector	• The Lehigh Valley's location in proximity to the New York and Philadelphia metro areas combined with existing office facilities support industry sector growth. • Downtown Allentown is a significant regional driver for large corporate office. • High demand occupations: sales and marketing, engineers, accountants, attorneys/paralegals • Annual demand: 1,168 workers	• **The ASH campus is a potential candidate to locate business services workers requiring smaller office spaces to support local needs.** • Any future office development at the ASH campus should not detract from reinvestment in either downtown Allentown or Bethlehem. • Near the ASH campus, tenants are requesting office space sized between 2,500 SF and 5,000 SF.
Life Science Research & Manufacturing Life sciences is increasing nationally concurrent with increasing demand for health services	• While over half of industry establishments in PA have fewer than 10 employees, the sector contributes a statewide economic output of $88.5 billion. • Life sciences research and manufacturing are a critical sector for the Lehigh Valley's post-secondary educational institutions. • High demand occupations: Engineers, mechanical / mechanics, chemical operators/ chemical analysts, IT/Web Developer/ Software Developer • Annual demand: 167	• **The ASH campus is a potential candidate to locate life science research and manufacturing businesses.** • A few small life science research and manufacturing firms have expanded in proximity to the ASH campus. • One firm has outgrown space at the nearby Ben Franklin Tech Incubator and will relocate to an existing 40,000 SF building in South Allentown creating 38 new jobs. • Industrial/flex space would accommodate industry sector needs. • The site could help meet future space needs for this high-value sector.
Transportation, Warehousing, Logistics & Wholesale Fulfilling increasing customer e-commerce demands has intensified the importance of this sector	• Fastest-growing sector in the Lehigh Valley's economy • 9.5% year-over-year growth in economic output, adding 10,000 jobs in the last 5 years • High demand occupations: CDL drivers, truck drivers, forklift operators and drivers, mechanical/ mechanics, warehouse workers • Annual demand: 4,384 workers	• **The ASH campus is not a potential candidate to site large scale warehouse and logistics users.** • The ASH campus is situated in a residential neighborhood accessed by a two-lane road network. • The site is over 2.5 miles from a US 22 interchange. • Users of large-scale warehouses prefer locations near interstate connections. • Surrounding land uses and the local road network prevent the site from being a candidate to locate industrial warehouse use.
Health Care Health care is a key component of the U.S. economy driven by over 98 million Americans age 65+ by 2060	• Health Care is the Lehigh Valley's top industry by employment • High demand occupations: nurses, medical assistants, caregivers and home health aides, nurses, administrative assistant, psychologists • Annual demand: 1,451 workers	• **The ASH campus is a potential candidate to site health care operations requiring medical office space.** • The site effectively provided health care services for more than a century. • Stakeholders report increasing need for medical office space. • Medical office space would meet the requirements for the health care industry sector.

[1] *LVEDC, Lehigh Valley Education & Talent Supply Report (2018); Workforce Board Lehigh Valley, PA Occupational Wages, Lehigh Valley WDA (May 2019)*

Industrial Market Potential

Industrial market trends are summarized below with key findings linked to potential market receptiveness at the ASH campus. Further analysis was conducted to quantify potential unmet industrial space demand and the likelihood the ASH campus could capture some of the unmet demand.

Findings	Data	Site Analysis
The Lehigh Valley has documented demand for and limited availability of small-footprint industrial/flex space, particularly in the study area.	• According to an LVEDC 2018 Commercial Real Estate Report, there is a shortage of small-footprint industrial buildings (40,000 – 80,000 SF) in the Lehigh Valley. • Per Allentown's 2014 Re-Industrialization Strategy, the greatest demand for industrial space is for small sized space less than 80,000 SF. • Each of the economic development and real estate professionals contacted as part of this market study noted the shortage of small-footprint industrial/flex space. • LVEDC reports that at the end of 2019, only 1 building less than 100,000 SF in size was under construction. • Nearly half of LVEDC's 2019 economic development projects (office and industrial) required buildings sized less than 80,000 SF. Based on industry type, 7 were manufacturing, 2 R & D, and 3 distribution. • Compared to an overall industrial vacancy rate of nearly 6%; the vacancy rate of industrial/flex space less than 80,000 SF is just 3%. • Current asking rents for industrial/flex buildings under 80,000 SF is $6.78/SF compared to a lower rate of $6.10/SF for all industrial buildings. • Industrial re-zoning in Allentown supports growing demand for new industrial space.	• The ASH campus could help meet the Lehigh Valley's need for industrial/flex space. • The lack of smaller sized industrial space in the Lehigh Valley presents a real estate market opportunity at the ASH campus. • Constructing industrial/flex space 80,000 SF in size or less would help meet current demand. Average building sizes are currently 42,000 SF.
Smaller industrial buildings in the Lehigh Valley are older.	• Of the 15.4 MSF inventory of small-footprint buildings in the Lehigh Valley, nearly 82% are older than 40 years with only 2% constructed in the past 10 years. • Of the 111 buildings constructed post-1980, 94 were 100% occupied in 2018.	• The ASH campus provides an opportunity to construct new, modern small-footprint industrial/flex space. • Newer industrial building stock would help replace existing, older buildings.

Continued on the following page

Findings	Data	Site Analysis
The Lehigh Valley's manufacturing sector as measured by Gross Domestic Product (GDP) is strong.	• The Lehigh Valley's GDP reached a record-high $41.2 billion in 2018. • The manufacturing sector comprises nearly 18% of the region's economic output, higher than the U.S. at 12.8%. • Durable goods manufacturing increased nearly 10% between 2015 and 2018, indicative of a strong manufacturing sector.	• The ASH campus provides a location to continue expansion of the region's economic output.
Allentown's Re-Industrialization Strategy points to advantageous industrial conditions in the study area	Allentown's advantageous industrial conditions were documented as: • Lower-cost space • Lower-cost labor • Access to a dense labor market within a short commute, often within walking distance • Access to city amenities for workers and entrepreneurs and increased commercial activity • An incubator and related services specifically dedicated to manufacturing and serving as a focal point for a manufacturing entrepreneurial network • Existing infrastructure	• The ASH campus provides a location to increase Allentown's, and Bethlehem's, industrial space inventory.
An inventory of industrial space is a key business retention factor.	• Close to one-third of LVEDC's economic development projects completed in 2018 were expansion projects for existing Lehigh Valley companies • Nearly all businesses interviewed for Allentown's re-industrialization strategy noted growth and expansion plans within 5 to 10 years.	• The ASH campus provides a location for existing Lehigh Valley and study area businesses to expand.
Businesses requiring smaller industrial space have located in proximity to the ASH campus with out of state business attraction increasing as well	• Within the past year, 8 industrial buildings under 35,000 SF have been leased in the vicinity of the ASH campus. • A specialty pharmaceutical manufacturer expanded from the Ben Franklin TechVentures incubator into an existing 40,000 SF building across the river from the ASH campus. The company is projected to employ 50 over 5 years. • A manufacturer recently relocated from Brooklyn, NY to an existing 80,000 SF building on Plymouth Street ½ mile from the ASH campus. The project will result in the creation of 80 jobs over 3 years. • Industrial businesses from the New York-New Jersey metropolitan area continue to seek locations in the Lehigh Valley due to lower cost space and workforce availability.	• Constructing industrial/flex space at the ASH campus would serve the needs of businesses requiring smaller sized buildings near the site. • Additional industrial space would also provide sites for businesses relocating to the region from the New York-New Jersey metropolitan area.

Industrial Space Demand

A limited amount of industrial/flex space is available in the study area

With an estimated 19.5 MSF of industrial space available, under construction, or proposed in the Lehigh Valley, only 886,513 SF of industrial/flex space is available. Of this amount just 225,963 SF is available in the study area.

Continued growth in industrial GDP signals increasing industrial space needs

The growth in manufacturing output has been significant with the manufacturing sector comprising $7.3 Billion, nearly 18%, of the Lehigh Valley's economic output. Durable goods manufacturing increased nearly 10% between 2015 and 2018, indicative of a strong manufacturing sector. With the region's manufacturing economic output growing, industrial/flex space is needed to keep pace with demand. the ASH campus provides a potential location for site manufacturers seeking industrial/flex space.

The demand for industrial/flex space is well-documented in the study area

There is documented demand for industrial/flex space in the study area based on recent LVEDC economic development projects, CoStar data, stakeholder discussions, and Allentown's re-industrialization strategy. While the regional supply of industrial/flex space (886,513 SF) exceeds calculated demand (281,400 SF), constructing industrial/flex space 80,000 SF in size or less would help develop an inventory to meet current and future demand in the study area. The ASH campus provides an opportunity to construct new, modern industrial/flex space to help replenish older industrial building stock. Recent industrial re-zoning in the City of Allentown also supports increased industrial/flex space demand. Further, as industrial businesses from the New York-New Jersey metropolitan area continue to seek locations in the Lehigh Valley due to lower cost space and workforce availability, finding suitable locations in the study area is necessary to meet ongoing demand.

Office Market Potential

Office market trends are summarized below with key findings linked to potential market receptiveness at the ASH campus. Further analysis was conducted to quantify potential unmet office space demand and the likelihood the ASH campus could capture some of the unmet demand.

Findings	Data	Site Analysis
State and federal tax incentives in Allentown and Bethlehem have attracted office growth and revitalization in each city's downtown	• Approximately 1.8 MSF of office space has been delivered in the Lehigh Valley market since 2010, and 92% is occupied. There is just over 1 MSF under construction or proposed. • Absorption is taking place throughout the Lehigh Valley, with sizable amounts occurring in downtown Allentown. • Current office vacancy of 8% is below the national average and has not been this low over the past 15 years. • Since the start of 2015, net absorption has averaged about 500,000 SF annually, which is close to double annual supply growth of 280,000 SF. • In Downtown Allentown, 272,700 SF of space was absorbed in one building in 2019. • Allentown's Neighborhood Improvement Zone (NIZ) is a 128-acre specialty tax zone in Downtown Allentown. • Businesses locating in the NIZ may potentially offset lease rates up to 30% - 40% • Additional tax incentive programs operating in Allentown and Bethlehem include state level Keystone Opportunity Zones (KOZs), City Revitalization & Improvement Zone (CRIZ), NIZ, and federal Qualified Opportunity Zones (QOZs)	• The office market in the Lehigh Valley is active with recent large-scale corporate office development concentrated in downtown Allentown. • ASH campus would not be a candidate to site large corporate office development.
Office development which would compete with revitalization in downtown Allentown or Bethlehem would detract from revitalization occurring in each city's central business district	• Both Allentown and Bethlehem have active revitalization strategies in their central business districts. • Each city has added amenities such as retail, restaurants, and residential to meet needs of office employees and residents. • Community and economic development professionals note that large amounts of office space at the ASH campus would compete with downtown revitalization efforts.	• Developing large scale office space at the ASH campus would compete with downtown revitalization efforts and should not be encouraged.

Continued on the following page

Findings	Data	Site Analysis
The majority of office leases in the Lehigh Valley are for smaller spaces	• Excluding office leases over 100,000 SF, the average size for an office lease in the Lehigh Valley is 8,334 SF • Local real estate brokers report typical space requests near the ASH campus between 2,500 SF – 5,000 SF	• As the ASH campus is not a candidate for large scale office development, it could fill the need for small sized office users requiring 8,000 SF or less.
Medical office space is growing in the Lehigh Valley	• 100% of office space inventory added in 2017 was medical office space • 12.8% of the Lehigh Valley's office space in 2017 was medical office. • Stakeholders report the need for medical office space near the ASH campus. • Health Care is a Lehigh Valley Target Industry Sector	• The ASH campus could provide office space to serve the Lehigh Valley's Health Care target industry sector.

Office Space Demand

Over 3.6 MSF of office space is available, under construction, or proposed in the Lehigh Valley

An estimated 2.3 MSF of office space, including 512,586 SF of medical office space is available for sale or lease according to CoStar. Currently, 1.1 MSF of office space is under construction or proposed, with 925,259 SF in the study area (Allentown and Bethlehem).

Net new office workers are projected at 5,784

Employment growth projections by PA L&I Center for Workforce Information and Analysis indicate 17,740 net new jobs will be added to the Lehigh Valley by 2026. The percentage of these new employees working in an office is estimated at 5,784. Of those employees, 3,199 are estimated to be employed in the Health Care & Social Assistance industry, requiring medical office space.

By 2026 net new office demand is estimated at over 913K SF, with 759,967 SF of demand in Target Industry Sectors

Applying an average office space of 158 SF/worker per a 2018 Cushman & Wakefield study, net new office space demand in the Leigh Valley is estimated at 913,939 SF. This includes 505,409 SF of medical office space to accommodate workers from the Health Care target industry sector and 254,558 SF of professional office space to accommodate the High-Value Business Services target industry sector.

Medical office space is needed to accommodate estimated demand

While over 3.6 MSF of office space available for sale, lease, under construction or proposed in the Lehigh Valley, new office space demand is met. However, the supply of medical office space available for sale or lease is 512,586 SF, slightly higher than projected demand of 505,409 SF. No medical office space is proposed or under construction, signaling an opportunity to fill the reported demand for medical office space within the study area.

Retail Market Potential

- Overall, the market area surrounding the ASH campus (15-minute drive time) is well-served by current retail offerings. At the macro level Retail Trade and Food & Drink establishments show a surplus (retail establishments within the market area are drawing customers from outside the community to shop) of nearly $850 million provided through 1,620 retail businesses.
- The large amount of retail offerings available in the market area is verified by regional real estate brokers. In their view, retail, particularly regional retail is not the best fit for the site as large amounts are in the market area.
- The market area is estimated to support an additional 154,270 SF of retail store space. The viability of locating a portion of this square footage at the ASH campus should be considered in the overall context of potential industrial, office, and residential end uses contemplated.
- Service retail supporting the eventual end uses at the site would be in keeping with the character of the surrounding residential neighborhoods.
- Neighborhood retail in the area leases between $15.00/SF - $18.00/SF with retail space leasing quickly according to regional real estate brokers.

Housing Market Potential

In terms of the multi-family housing market, Lehigh Valley has been outperforming by the standards of central and northeastern Pennsylvania. Employment growth in the transportation and healthcare sectors, combined with state and local tax incentives to spur downtown Allentown's development, has helped support healthy apartment leasing. Newly delivered projects lease at a healthy pace. Near the ASH project site, the Summit Ridge luxury apartments has a healthy 2.9 percent vacancy, demonstrating the demand for Allentown's multifamily housing market beyond the downtown.

Based on estimated demand generated by household growth and lost inventory (e.g., replacement demand), the project site is estimated to have demand for between 51 and 110 units between 2019-2025 and between 101 and 220 units by 2029. In addition, the project site has the potential to attract a long-term care facility, such as a Continuing Care Retirement Community (CCRC).

SECTION 1: INTRODUCTION

Michael Baker International (MBI) was retained by Lehigh Valley Economic Development Corporation (LVEDC) and Lehigh Valley Land Recycling Initiative (LVLRI) to provide professional services in conjunction with a 2016 USEPA Brownfield Assessment Grant. As part of the brownfield assessment grant, EPA has approved the completion of a Reuse Feasibility Study for the Allentown State Hospital campus (ASH campus).

Phase 2 of the Reuse Feasibility Study includes completion of this Real Estate Market Study (market study). The market study analyzes market conditions in proximity to the Allentown State Hospital campus and in the Lehigh Valley and identifies those types of land uses most receptive to the current real estate market.

The market study includes analysis of quantitative data associated with people, their retail spending habits, and area employment and real estate conditions.

The data is supplemented with qualitative insights gathered through stakeholder interviews and review of the City of Allentown's recently adopted comprehensive and economic development plan, Allentown Vision 2030.

Community Profile

Socioeconomic assessment of demographic data pertaining to population and consumers.

Employment and Industry Trends

Outlines past, current, and future employment levels by industry. To offer additional insight on employment trends and the opportunity to attract industries to the East Allentown neighborhood where the Allentown State Hospital campus is located, the Lehigh Valley's target industry sectors are also analyzed.

Real Estate Market Analysis

Current real estate market conditions for the Lehigh Valley are presented to identify current strengths and weaknesses for different types of land uses strengths and weaknesses for different types of land uses.

Real Market

A Retail Gap Analysis was performed to compare the supply (sales to customers) and demand (potential for consumer spending) based on disposable income in the study area, segregated by retail categories to provide insight into where unmet market demand is most evident.

Industrial, Office, and Housing Markets

Regional and localized trends for the industrial, office, and housing markets are analyzed to identify unmet needs that could potentially be addressed through development at the ASH campus.

DISCLAIMER: The Reuse Feasibility Study including this Real Estate Market Study has been conducted solely with EPA funding and has been conducted independently of the Commonwealth of Pennsylvania's disposition of the Allentown State Hospital campus.

Methodology

Study Areas and Data Sources

To evaluate real estate market conditions for potential industrial, office, housing, and retail uses at the ASH campus, several study areas were identified.

Industrial, Office, and Housing Market

The following study areas were selected to identify socio-economic and labor data trends to inform the site's strength for attracting industrial, office, and housing uses:

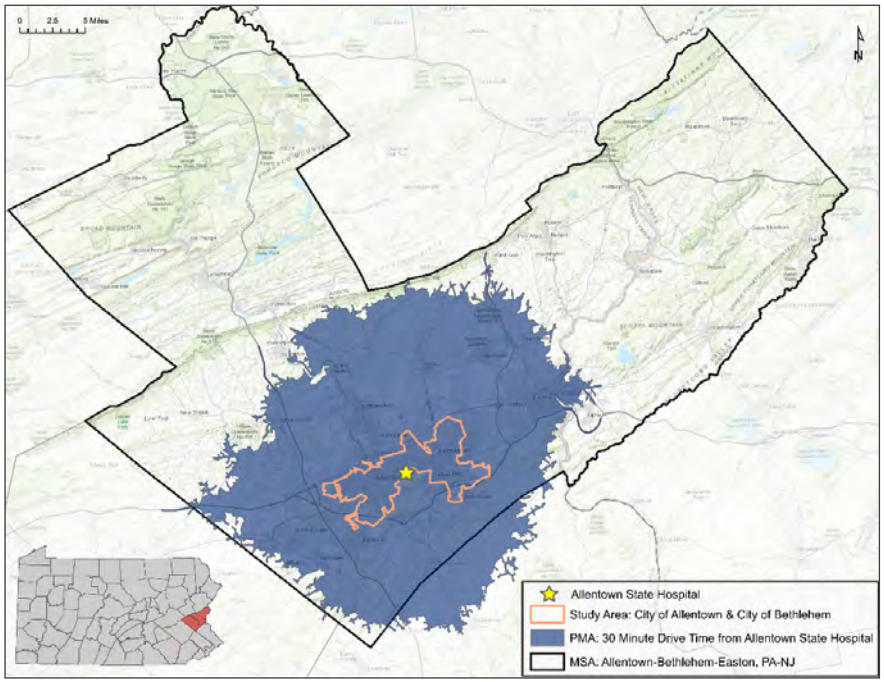
- Allentown-Bethlehem Study Area (study area) – Includes the City of Allentown and the City of Bethlehem which reflects the location of the ASH campus between both city centers.
- 30-Minute Drive Time Primary Market Area (PMA) - A 30-minute drive time radius from the ASH campus (Esri Business Analyst). A 30-minute drive time is reflective of the Lehigh Valley residents' mean travel time to work, 26.2 minutes (U.S. Census, Population Estimates July 2019).
- Allentown-Bethlehem-Easton, PA-NJ Metropolitan Statistical Area (MSA) - The MSA includes the Pennsylvania counties of Carbon, Lehigh, and Northampton and Warren County, New Jersey and provides a regional comparison for local data.

State level data was also used for context and comparison, as required.

The Lehigh Valley's real estate market was evaluated with industrial and workforce data provided by Lehigh Valley Economic Development Corporation (LVEDC) and Lehigh Valley submarket area real estate data provided by CoStar. CoStar data reflects that the real estate industry has divided major metropolitan areas into real estate markets for the purposes of comparison and statistical analysis. These market areas are often broken into smaller submarkets based upon geographic barriers and local dynamics. The ASH campus is in the Lehigh Valley submarket, which is part of the larger Philadelphia market.

Once each real estate market type was assessed for market receptiveness at the site and potential uses within that market type, further analysis was conducted to quantify potential unmet demand and the likelihood the ASH campus could capture some of the unmet demand.

Exhibit 1: Study Areas – Industrial, Office, Housing Analysis



Source: Esri Business Analyst, Michael Baker International

Retail Market Analysis

A 15-minute drive time radius market area was selected for conducting a retail gap analysis. This distance is the primary trade area for the analysis of the retail market and was selected to reflect the site's location in a residential neighborhood, with a neighborhood-scale street network, and distance from a major highway (over 2.5 miles from US 22).

Data Source

Primary data sources for the market study included the following.

- Allentown Vision 2030 Comprehensive and Economic Development Plan
- Esri Business Analyst Market Profiles and Retail MarketPlace Profiles
- U.S. Census Bureau LEHD Origin Destination Employment Statistics (LODES)
- Pennsylvania Department of Labor and Industry Center for Workforce Information & Analysis (CWIA) occupational employment long-term projections and industry employment long-term projections
- LVEDC Lehigh Valley Education & Talent Supply Report and additional industry reports, as referenced
- Workforce Lehigh Valley wage and labor data reports
- CoStar real estate market data
- U.S. Bureau of Economic Analysis, Gross Domestic Product data

Stakeholder Input

Quantitative data used to evaluate market conditions was validated, expanded upon, or adjusted through qualitative information collected from local and regional stakeholders. Stakeholders included representatives from local government, local and regional economic development, workforce development, and regional real estate brokers.

The market study draws upon findings from Allentown's recently completed comprehensive and economic development plan, Allentown Vision 2030, for insights into the community's interest about future development at the ASH campus.

Local and Regional Context

The ASH campus is located on approximately 195 acres in the City of Allentown's East Allentown neighborhood. Known historically as Rittersville, the neighborhood has been a connector between Allentown and Bethlehem since the 1800s. There are a limited number of open, larger parcels available for development in Bethlehem and Allentown, a fact that community and economic stakeholders pointed out as part of outreach conducted for this market study.

With direct access to Hanover Avenue, the ASH campus is strategically positioned in proximity to employment centers in downtown Allentown and Bethlehem and is within a 10-minute drive of the Lehigh Valley International Airport. Residential land surrounding the campus is primarily single family along with duplexes and multi-family. Development along Hanover Avenue is a mix of commercial, residential, and institutional uses.

Existing Site Conditions

Allentown State Hospital closed in 2010. The property and buildings are maintained by the Pennsylvania Department of General Services (DGS). Interior roadways, either deteriorating or unimproved, traverse the site. Wildlife, predominantly deer, are prevalent throughout the campus taking advantage of limited human interaction and overgrown vegetation.

A Pennsylvania Department of Environmental Protection (PADEP) Air Monitoring Station is located on the property and will remain in the future.

Property currently occupied and operated by Community Services for Children will remain. This campus property is 195± acres in size, is currently owned by the DGS. The total campus includes three individual properties containing a total of 44 buildings of which are contracted to be 100% demolished in 2020-21.

Undeveloped portions of the ASH campus are located along River Road with steep slopes in this area a constraint to development. While Norfolk Southern' s busy Allentown Terminal is located along River Road adjacent to the campus, the steep slope conditions have prevented industrial use in this portion of the property in the past. For reference, the ASH campus at its high point is approximately 540 feet above mean sea level (AMSL) while the Norfolk Southern Allentown Terminal sits along the Lehigh River at approximately 260 feet AMSL (USGS US Topo 7.5-minute map for Allentown East, PA 2019).

Unique to the ASH campus, as well as some of the surrounding neighborhoods, is its high elevation. The vistas at the apex of the ASH campus near Dutch Hill are impressive with views of surrounding mountains and the City of Bethlehem.

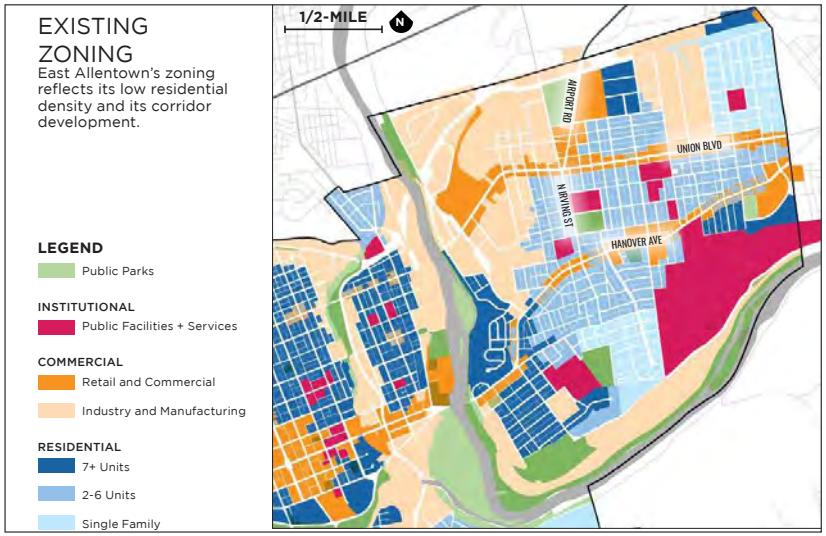
Further details pertaining to former state hospital operations, former building and development remnants, and utilities are included in the Environmental, Geotechnical, and Stormwater Evaluation portions of the Reuse Feasibility Study.

Zoning and Land Use

As part of the City's recently completed comprehensive and economic development planning process, four defined neighborhood areas of the city were identified. The ASH campus is located in the East Allentown neighborhood and is currently zoned Institutional.

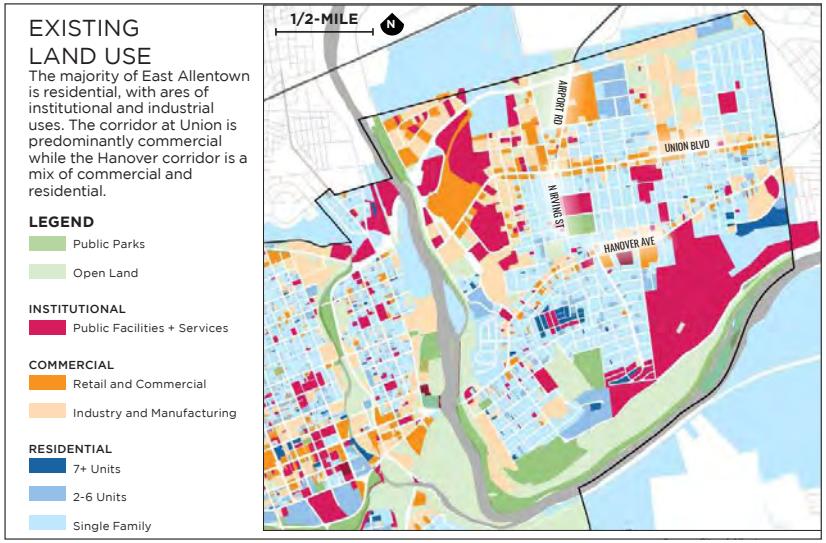
While relatively consistent with current zoning, existing land use identified through the comprehensive and economic development plan reflects many areas of institutional land use and not as much residential, industry, and manufacturing as zoned for. This signals the need to change zoning to reflect existing market conditions or a change in planning to reflect desired market conditions. As part of the City's recent planning process, a City-wide zoning code update will be completed to help direct future market conditions. The update will focus on prioritizing development encouraging different types of housing and transportation options. The zoning update will emphasize 'quality, mixed use' development resulting in increased municipal taxes and provide residents with land uses that meet their preferences (Allentown Vision 2030).

Exhibit 2: Zoning in East Allentown



Source: Allentown Vision 2030 Comprehensive and Economic Development Plan (November 2019)

Exhibit 3: Existing Land Use in East Allentown



Source: Allentown Vision 2030 Comprehensive and Economic Development Plan (November 2019)

Changes in zoning have already started to take place in Allentown with recent re-zoning supportive of industrial uses. Nearly 30 acres of property have been recommended for rezoning to general industrial.[1] Changes in zoning to attract economic development focused on industrial uses was an objective in a re-industrialization strategy completed for the City in 2014.[2]

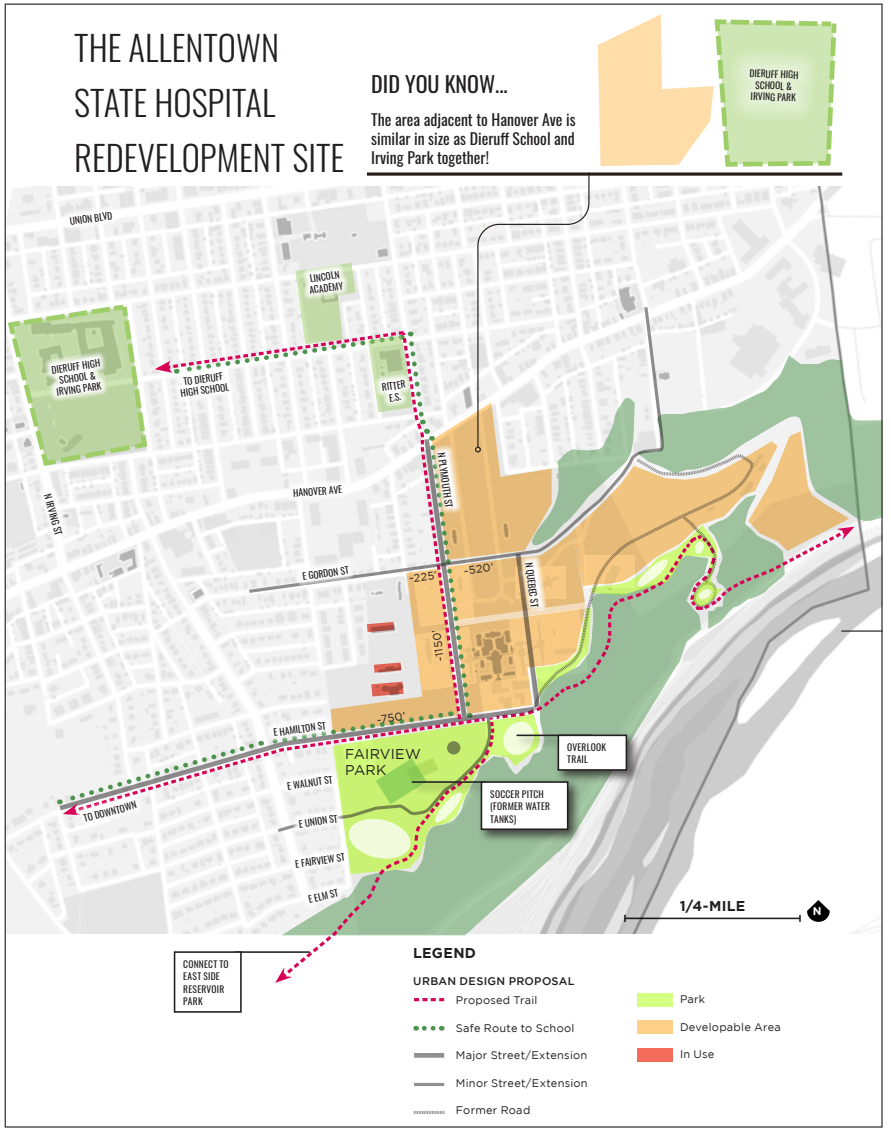
Comprehensive Plan Recommendations

Allentown Vision 2030 identifies several 'catalytic actions' - broad, structural programs or policies impacting multiple urban systems. Urban systems are functional areas such as housing, economic development, services, transportation, and the environment. Two catalytic actions are considered foundational to implementing the plan: a zoning code update, referenced above, and a neighborhood planning framework.

The neighborhood planning framework allows Allentown officials to work with Allentown's distinct neighborhoods. As noted above, the ASH campus is in the East Allentown neighborhood and its redevelopment is identified as a key project in the planning area. The comprehensive and economic development plan's vision for the future of East Allentown includes a priority on transit, destinations improving the neighborhood's sense of place, and redevelopment which includes amenities and adds to the local economy.

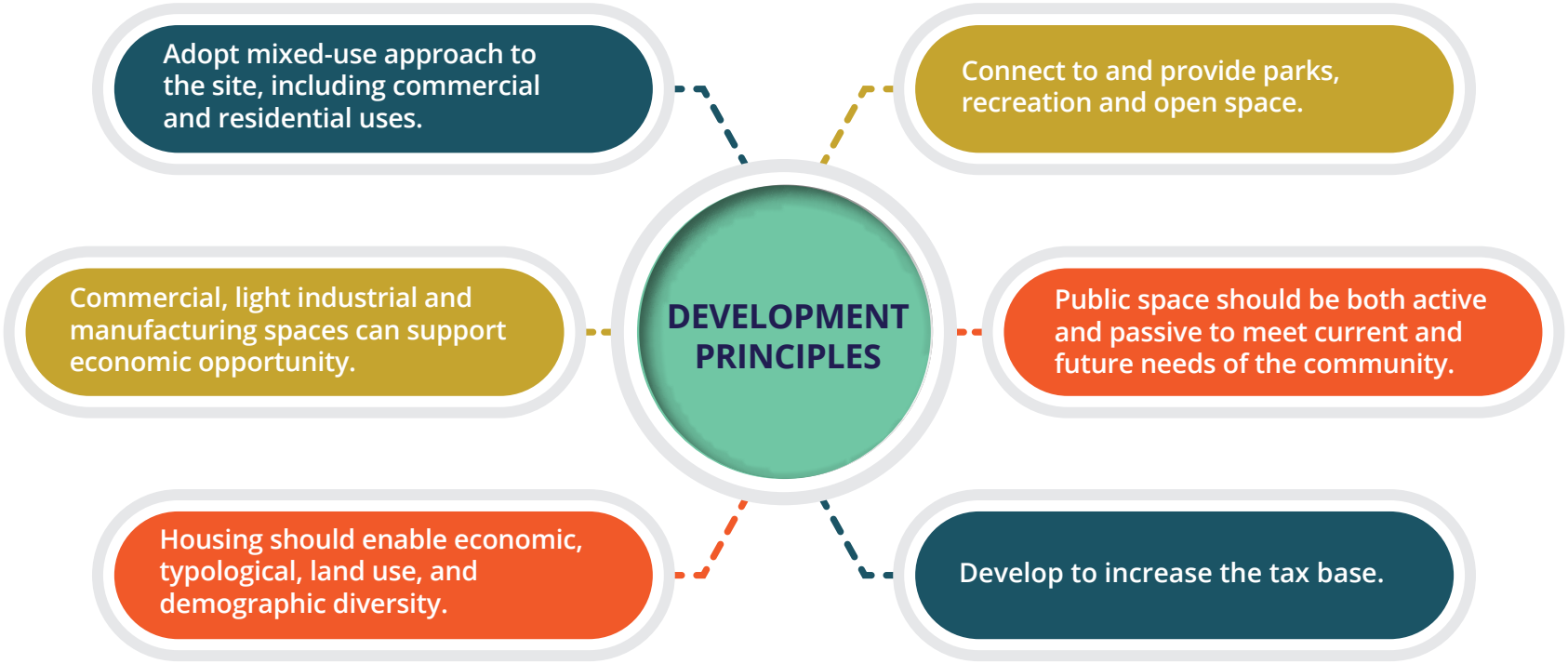
Allentown Vision 2030 envisions redevelopment parcels such as the ASH campus will bring "schools, housing, commercial space, and leisure activities and connect East Allentown to parks and greenways."[3] A high level conceptual redevelopment framework was prepared for the ASH campus including establishing a grid network tying into existing neighborhood roads, creation of a park and trails, and identifying developable area. It was accompanied by several development principles.

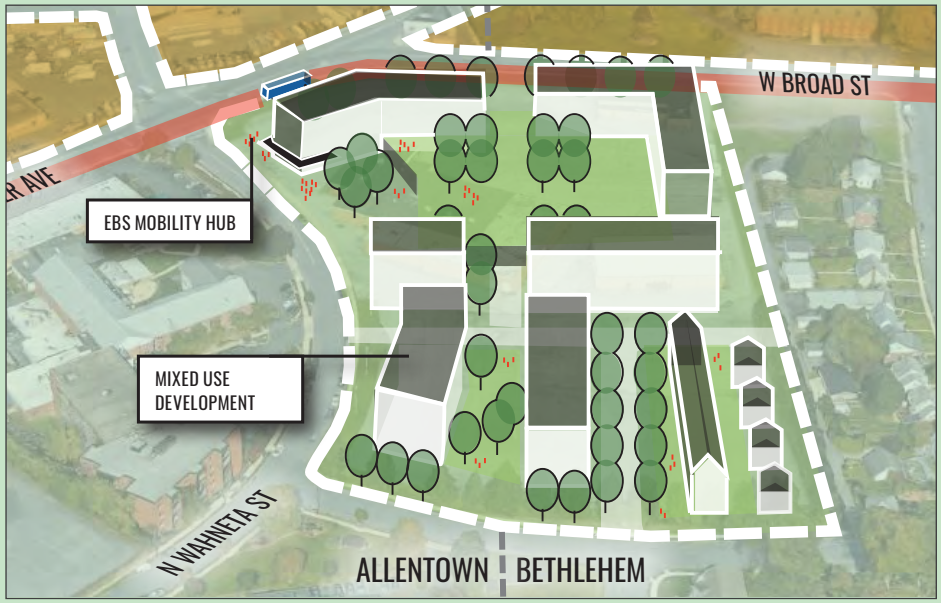
Exhibit 4: Allentown Vision 2030: Urban Design Proposal for Allentown State Hospital Redevelopment



Source: Allentown Vision 2030, p. 194.

[1] *WFMZ.com, Allentown planners back industrial rezoning requests, April 9, 2019. Accessed 08//12/20 at: https://www.wfmz.com/business/allentown-planners-back-industrial-re-zoning-requests/article_5037d30a-e443-50cb-a538-7b34ed1a2af7.html.*
[2] *Allentown Economic Development Corporation, Envision Lehigh Valley, City of Allentown Re-Industrialization Strategy, April 2014, p. 1.*
[3] *Allentown Vision 2030, Comprehensive and Economic Development Plan, November 2019, p. 192.*





The comprehensive plan also envisions other vacant parcels as opportunities for transit-oriented development including a mix of uses with a transit focus. The former Toyota dealership at the corner of Hanover Avenue and North Wahneta Street is an example.

Community input about the future use of the Allentown State Hospital was collected as part of comprehensive and economic development plan outreach. Input is included in the Stakeholder Input section.

SECTION 2: STAKEHOLDER INPUT

Prior to presenting and analyzing the socio-economic and real estate market conditions near the ASH campus and in the region, stakeholder input is presented. This input provides context for the real estate analysis information presented throughout the market study.

Allentown Citizens

Allentown Vision 2030 included community input engaging thousands of community members through meetings, surveys, neighborhood events, and online tools. The redevelopment opportunity available at the ASH campus was included as part of the comprehensive planning process.

Through the planning process the City heard that redevelopment of the property would be a success if it: serves, strengthens, and diversifies the community; establishes East Allentown as a destination; and creates a culture of forward progress.

More specifically, participants in the planning process voiced a few concerns and questions regarding redeveloping the ASH campus.

Community Concerns & Questions

- How can the development serve the existing community?
- Can the redevelopment prioritize training and workforce development opportunities?
- Is the environment produced appropriate for a multigenerational population?
- Does development craft a neighborhood identity?
- Is the resulting development multi-use and does it include different housing types?
- Can the development reconnect the neighborhood to natural sites, trails, and the river?
- Is the result transformative?

Local and Regional Stakeholders

Interviews, in person and via phone, were conducted with local real estate brokers, workforce development providers, and municipal and economic development representatives. The interviews were helpful to gather the following type of information and supplement community input:

- Elements that make the ASH campus a good location for redevelopment
- Constraints limiting potential redevelopment
- Types of end uses that would be the most marketable (residential/retail/office/industrial)
- Incompatible land uses
- Local programs supporting workforce development
- Real estate trends such as square footage requirements, lease rates, and demand

Key findings from stakeholder input are summarized below.

Location Advantages

- The site's location equidistant between the downtowns of the City of Allentown and City of Bethlehem is advantageous, creating interaction between the two communities.
- The property is a large piece of contiguous land in a land constrained area. Large parcels in urban areas are rare.
- The property has infrastructure and population in place. It is infill development and minimizes sprawl and environmental concerns associated with sprawl.

Community Needs

- **Revenue Generation** – Uses maximizing revenue generation would be beneficial and are needed.
- **Job Creation** – Uses which create jobs for local residents would be beneficial.
- **Access for Community Services for Children** – Dedicated road access is needed for Community Services for Children.

Concerns/Constraints

- **Surrounding Neighborhoods** - Identifying access points having minimal disruption to the surrounding neighborhoods should be the goal. Impacting local streets could be a concern for area residents.
- **Transportation Access** –Making local road connections might be difficult. Vehicular accessibility concerns can be addressed by connecting to the existing street network at multiple access points, rather than creating one or two congestion points.
- **Topography** – The site includes many areas with steep slopes resulting in physical limitations to future development. Development should be planned considering steep slope conditions. The topography, as well as the narrow roadbed along River Drive, impedes any potential development opportunities linking Norfolk Southern's adjacent railyard along the Lehigh River to the site.
- **Geotechnical Issues** – After buildings are demolished, the backfill may not be suitable for development, requiring potential re-excavation by a developer. Some areas of the site are known to have shallow bedrock. These locations will need to be quantified as bedrock excavation would significantly increase development costs.

- **Public Perception** – The public's perception about what can actually be developed at the site is a potential impediment. It is important to identify the gap between the public's vision and what is realistic in the real estate market. The site will not be a corporate campus; therefore, citizens need to be realistic about redevelopment opportunities. Unrealistic expectations can impede actual progress.
- **Competition** – Redevelopment should not compete with revitalization efforts in downtown Allentown or Bethlehem.
- **Open Space** - The site should maintain natural greenspace and habitat buffers. However, the City of Allentown does not need additional large-scale parks and recreation space. As part of Allentown Vision 2030 residents discussed the need for trails through the site and the Allentown School District expressed the need for a practice field.

Real Estate Market Viability

Office

- The site is not a viable corporate location for office space, particularly for multi-national, traded companies.
- In addition, downtown locations like Allentown and Bethlehem provide more walkable areas and things to do. This is not the case for the neighborhood surrounding the ASH campus. The site does not lend itself to large regional office spaces, but rather smaller spaces that could serve needs of the surrounding community.
- While large regional office space is not needed, there may be opportunities for smaller medical office space to support the community.
- Office space is typically not sought out in the area. When tenants are seeking locations in the area the space is typically 2,500 SF – 5,000 SF in size with lease rates of $18.00/SF.
- Lease rates of $13.00/SF - $14.00/SF, triple net were also identified.

Industrial

- The site is not suited from a transportation perspective to serve the burgeoning warehouse and logistics industry in the Lehigh Valley.
- While larger regional and national companies are looking for big boxes; smaller, local businesses are looking for flex, light industrial space. Local businesses are looking to expand.
- Smaller industrial space is lacking in the Lehigh Valley.
- Regional demand is for smaller industrial space ranging between 30,000 SF to 80,000 SF. Industrial space size between 6,000 SF and 12,000 SF was also identified.
- Industrial inventory in the area is older, outdated, and requires investment.
- Warehouse/light industrial space in the area currently rents for $6.00/SF - $7.00/SF. Consider looking at the small industrial park across from Iron Pig Stadium/American Parkway for reference. The industrial park is older but has a mix of businesses.
- Business owners would rather lease than buy as building is very expensive due to land and infrastructure. However, some small businesses would like to own. Industrial and flex is the hottest market in the Lehigh Valley.
- Companies are looking for flex space sized between 5,000 SF and 25,000 SF leasing at $10.00/SF - $12.00/SF triple net. Some clients buy buildings or some lease space and prefer not to buy. It depends on each client's needs.

Retail

- Regional retail use is not the best fit for the site as there are many regional retailers in the area.
- Service retail focused on the retail gap of the surrounding community and redeveloped site would be more appropriate.
- Neighborhood retail in the area leases between $15.00/SF - $18.00/SF. Spaces rent rather quickly, depending on the previous use.

Mixed-Use

- Mixed-use development including industrial, housing dictated by market conditions would be appropriate for the site. Service retail should be the focus, not regional retail.
- A right mix of residential and business development could work at the property.
- A mixed-use business park could be viable, but not residential. Flex, office, distribution, manufacturing, and warehouse retail (like kitchen cabinets, countertops) would be good a good mix of uses at the site.

Housing

- Senior and mixed income housing would complement current trends in the City of Bethlehem. Growth in the senior housing market in Bethlehem has been large.
- Residential development unless it was transitional or continuum care senior housing (70s, 80s), would not be realistic. The Lehigh Valley has waiting lists for senior housing with medical support.

Regional Youth Sports Complex

- Both Allentown and Bethlehem receive routine (bi-monthly) requests for land to support a regional youth sports complex. There are concerns that this type of facility would not be attractive for Allentown as would absorb a large amount of property but would not create a substantial number of jobs or ratables.

SECTION 3: COMMUNITY PROFILE

Population Trends

Population continues to grow, outpacing state growth

To understand the demographic characteristics of people who live not only in the City of Allentown and City of Bethlehem (study area) but within the surrounding areas, data was pulled at several study areas. While Allentown's population trends were analyzed in detail as part of Allentown Vision 2030, assessing the potential to draw population from outside the City required data analysis at the regional and state levels to help measure real estate market strength in addition to the local workforce that could potentially be tapped to support retail, industrial, office, or housing development.

Population within the study area, the Allentown-Bethlehem-Easton PA-NJ MSA (MSA), and the 30-minute drive time (PMA) have been growing with continued growth projected to 2024. Population increase within the PMA is nearly 8%, outpacing growth in the study area, and the MSA. Population growth in the Lehigh Valley surpasses state growth and reflects the Lehigh Valley's location within the New York- New Jersey metropolitan area.

Exhibit 5: Population Trends

Market Area	2000	2010	2019	2024 Projected	% Change (2010-2024)
PMA	543,107	605,996	637,838	654,143	7.95%
MSA	740,398	821,173	855,812	872,121	6.20%
Study Area	178,010	193,014	201,675	205,520	6.48%
Pennsylvania	12,281,054	12,702,379	13,012,438	13,160,675	3.61%

Source: Esri Business Analyst

Exhibit 6: Daytime Population (2019)

	PMA	MSA	Study Area
Total	654,143	814,100	198,105
Workers	323,606	384,772	87,126
Residents	321,843	429,328	110,979

Source: Esri Business Analyst

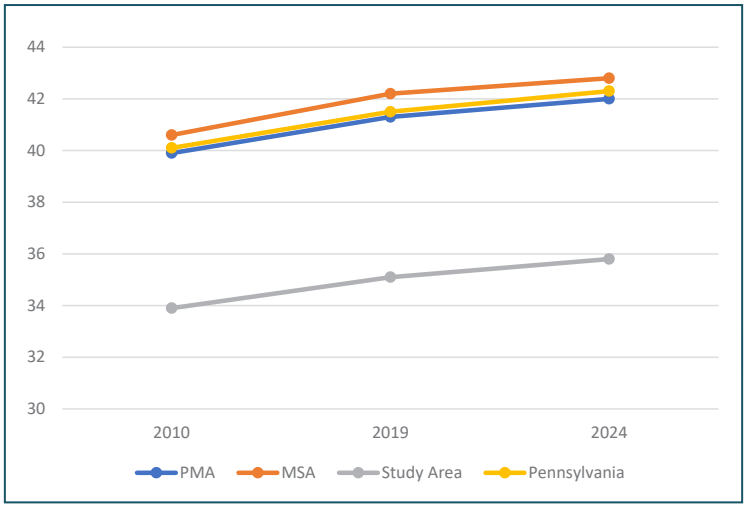
The PMA pulls a large commuter population (daytime population) and has a relatively equal daytime resident population. The percentage of workers and residents for daytime population in the MSA is close to that of PMA, while the study area's daytime population is predominantly residents. The large numbers of workers within the PMA signals potential workforce opportunities for the ASH campus. Additional workforce information is included in the Employment Trends section.

Age Trends

People living near the Allentown State Hospital are younger

Population in each study area is steadily aging, approximately 5.4% on average projected between 2010 and 2024. The median age in the study area is younger (35.1), with a greater number of Millennials compared to their Gen X counterparts in the PMA (41.3) and MSA (42.2).

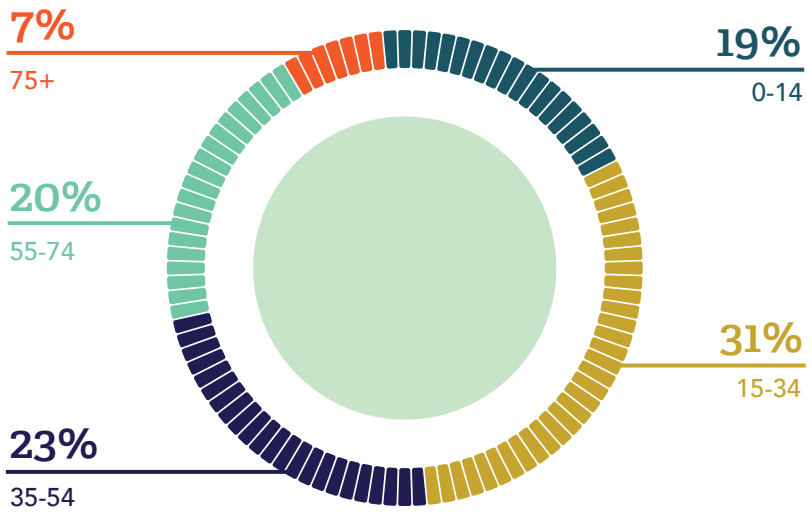
Exhibit 7: Median Age (2010 – 2024)



Source: Esri Business Analyst

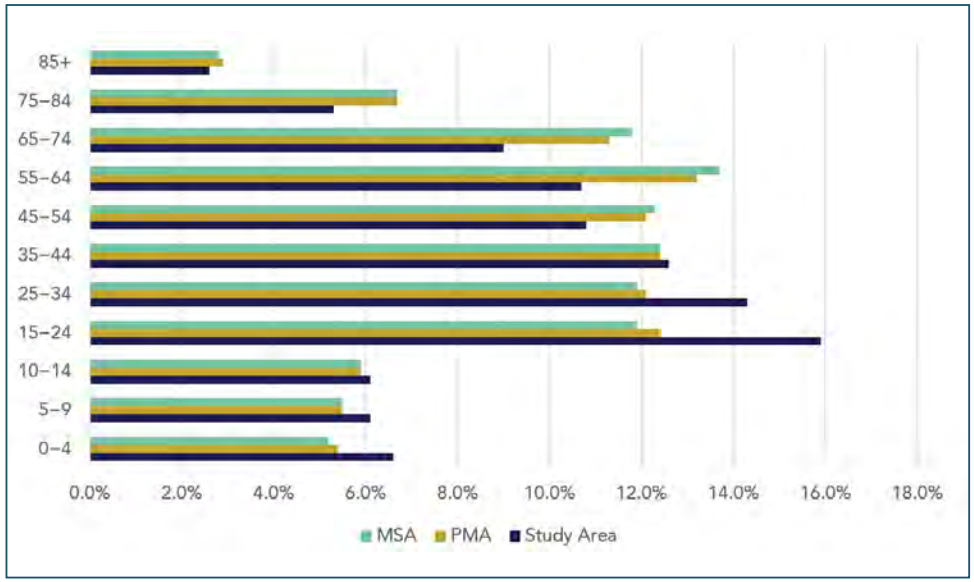
A younger age distribution in the study area is reinforced by looking at the change in age distribution by cohort. Nearly half of the population was younger than 35 years of age in 2019. By 2024 over 60% of residents within the study area are projected to be younger than age 45. Over 50% of population in the MSA and the PMA will be younger than age 45 in 2024 as well. A younger population bodes well for the region, providing an opportunity to educate, train, and retain citizens in the area.

Exhibit 8: Study Area Age Distribution (2019)



Source: Esri Business Analyst

Exhibit 9: Population Distribution by Age Cohort (2024)



Source: Esri Business Analyst

Household Composition

The Lehigh Valley's household size is increasing

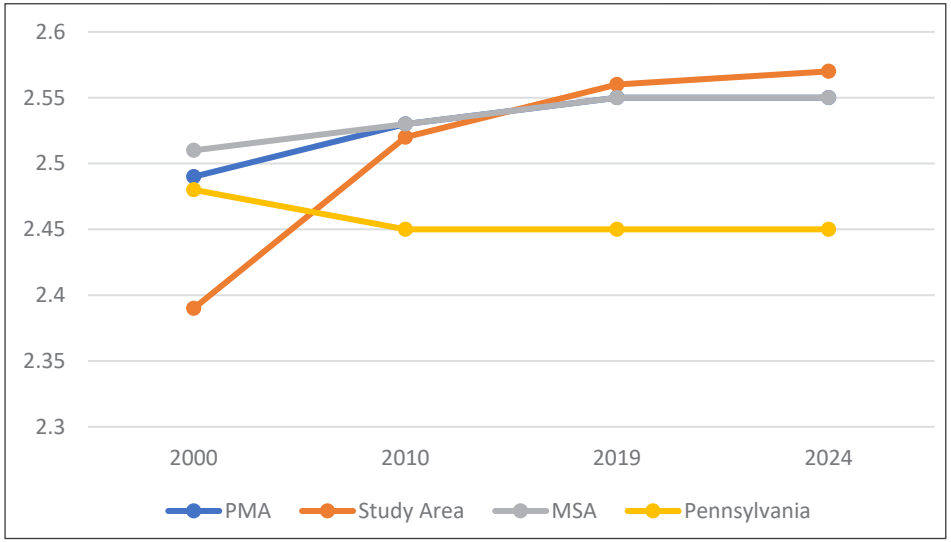
Understanding household composition is important to identify the type of housing and level of community services required in the future. According to the U.S. Census, a household consists of all the people who occupy a housing unit (house, apartment, other group of rooms, or a single room). A household includes both the related and unrelated people who share the housing unit.

- Family households include a group of two or more people living together who are related by birth, marriage, or adoption, with or without children, including married couples and other families such as single parent households.
- Non-family households represent households where unrelated persons live together, or a single person lives alone.
- Group quarters refers to a place where people live or stay in a group living arrangement that is owned or managed by an entity or organization providing housing and/or services for the residents. Group quarters include places such as college residence halls, residential treatment centers, skilled nursing facilities, group homes, military barracks, correctional facilities, and workers' dormitories.

As of 2019, there were a total of 242,352 households within the PMA with an average household size of 2.55. Of these households, 67.4% were family households.

Household size in the study area, the PMA, and MSA have increased slightly and is projected to increase further. Comparatively, household size at the state level has decreased, holding at 2.45 persons per household since 2010.

Exhibit 10: Average Household Size



Source: Esri Business Analyst

Household Income

Household income near the ASH campus is lower than the region, but projected to increase

Median household income, and changes in median household income over time, can provide insight into the potential spending power of consumers in an area. The MSA has the highest median household income of all study areas at $63,855 and is projected to increase to $73,350 by 2024. Median household income within the PMA is slightly lower than the MSA at $62,176. Income levels are higher than the state and are likely tied to the proximity to the New York – New Jersey metropolitan area.

The median household income in the study area is slightly lower than the MSA and PMA suggesting lower consumer spending power compared to the region. By 2024 median household income is projected to increase by nearly 15% in all study areas, increasing by just 13% at the state level.

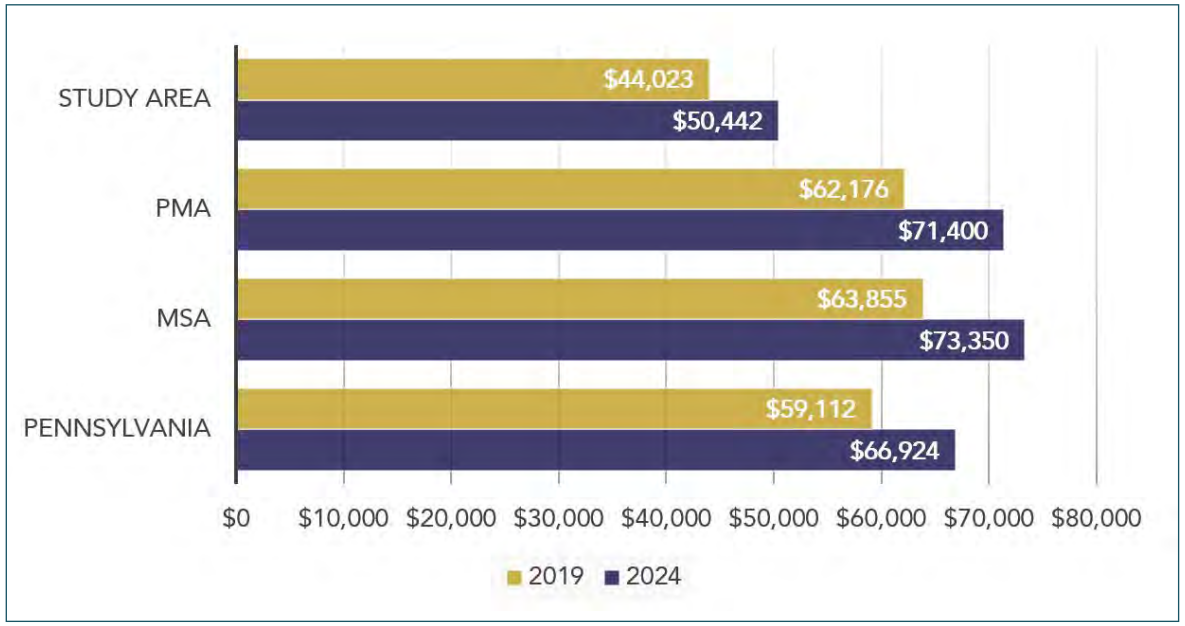
Housing

Home ownership is declining, renting is on the rise, and vacancy rates are increasing slightly

The number of housing units within the study area and PMA has been increasing since 2000. Renter occupied units within the study area are projected to increase by more than 20% between 2010 and 2024, representing potential demand for rental housing options near the ASH campus.

Compared to the state, the percentage of vacant housing units within the PMA and study area is much lower. However, vacancy has been rising in both the PMA and study area, representing the need to address potential deteriorating housing conditions.

Exhibit 11: Median Household Income



Source: Esri Business Analyst

Exhibit 12: Housing Units by Tenure (2000 – 2024)

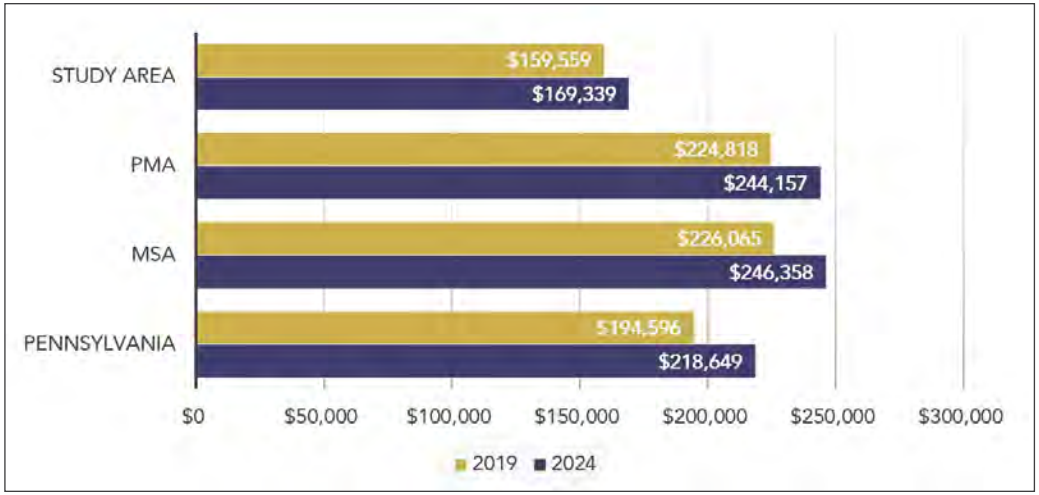
	2000	2010	2019	2024 (Projected)	% Change (2010-2024)	Numerical Change (2010-2024)
PMA	221,530	246,615	257,365	263,805	7.0%	17,190
Owner Occupied Units	53.7%	49.9%	46.6%	46.0%	-7.8%	
Renter Occupied Units	39.4%	42.9%	46.2%	46.7%	8.9%	
Vacant Units	6.8%	7.2%	7.2%	7.3%	1.4%	
Study Area	75,608	78,142	80,520	81,922	4.8%	3,780
Owner Occupied Units	51.0%	46.7%	43.1%	42.4%	-9.2%	
Renter Occupied Units	41.7%	45.7%	49.2%	49.7%	8.8%	
Vacant Units	7.2%	7.6%	7.7%	7.9%	3.9%	
Pennsylvania	5,249,750	5,567,315	5,736,358	5,832,239	4.8%	264,924
Owner Occupied Units	64.9%	62.7%	60.3%	59.5%	-5.1%	
Renter Occupied Units	26.1%	27.4%	29.4%	29.7%	8.4%	
Vacant Units	9.0%	9.9%	10.4%	10.8%	9.1%	

Source: Esri Business Analyst

Median home values near the ASH campus are lower than surrounding study areas

Median home values in the study area are lower than the MSA, PMA, and the state. Home values at the regional level are higher than the state, reflecting the proximity to the New York – New Jersey metropolitan area. However, the median home value within the study area is more than 40% lower than median home values within the MSA and PMA indicating that if housing is constructed at the ASH campus, price points would be consistent with the study area.

Exhibit 13: Median Home Values (2019, 2024)



Source: Esri Business Analyst

Population by Race and Ethnicity

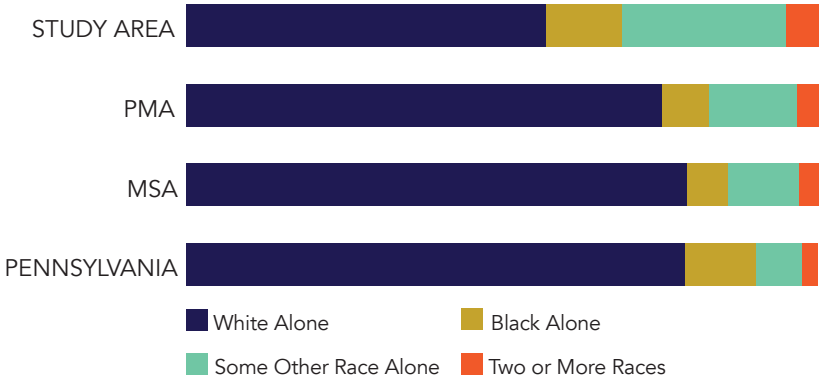
Residents living near the ASH campus are more ethnically diverse compared to the region

U.S. Census Bureau data reflects the race or races with which residents most closely identify. The community surrounding the ASH campus exhibits greater ethnic diversity compared to the PMA or MSA. While 79.4% of residents within the MSA identify they are white alone, this rate drops to 75.3% within the PMA and 56.9% within the study area.

The racial and ethnic composition of the area is also documented through Esri's Diversity Index which represents the likelihood that two persons, chosen at random from the same area, belong to different race or ethnic groups. The index ranks diversity from 0 to 100, the higher the number the greater amount of diversity in an area. The basis of the diversity index is that as the country's non-Hispanic white population ages, non-Hispanic whites marry later in life and have fewer children. Natural decrease (more deaths than births) for non-Hispanic whites is increasing. At the same time, increases in marriages across race and ethnicity raises the level of diversity in younger generations. The index reinforces that areas with older populations are less diverse than areas with younger populations.

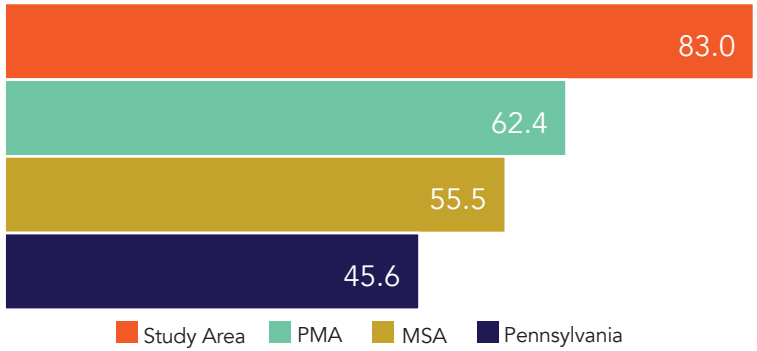
The study area reflects the greatest amount of diversity across study areas at 83.0. The diversity index drops to 45.6 at the state level.

Exhibit 14: Population by Race and Ethnicity (2019)



Source: Esri Business Analyst

Exhibit 15: Diversity Index (2019)



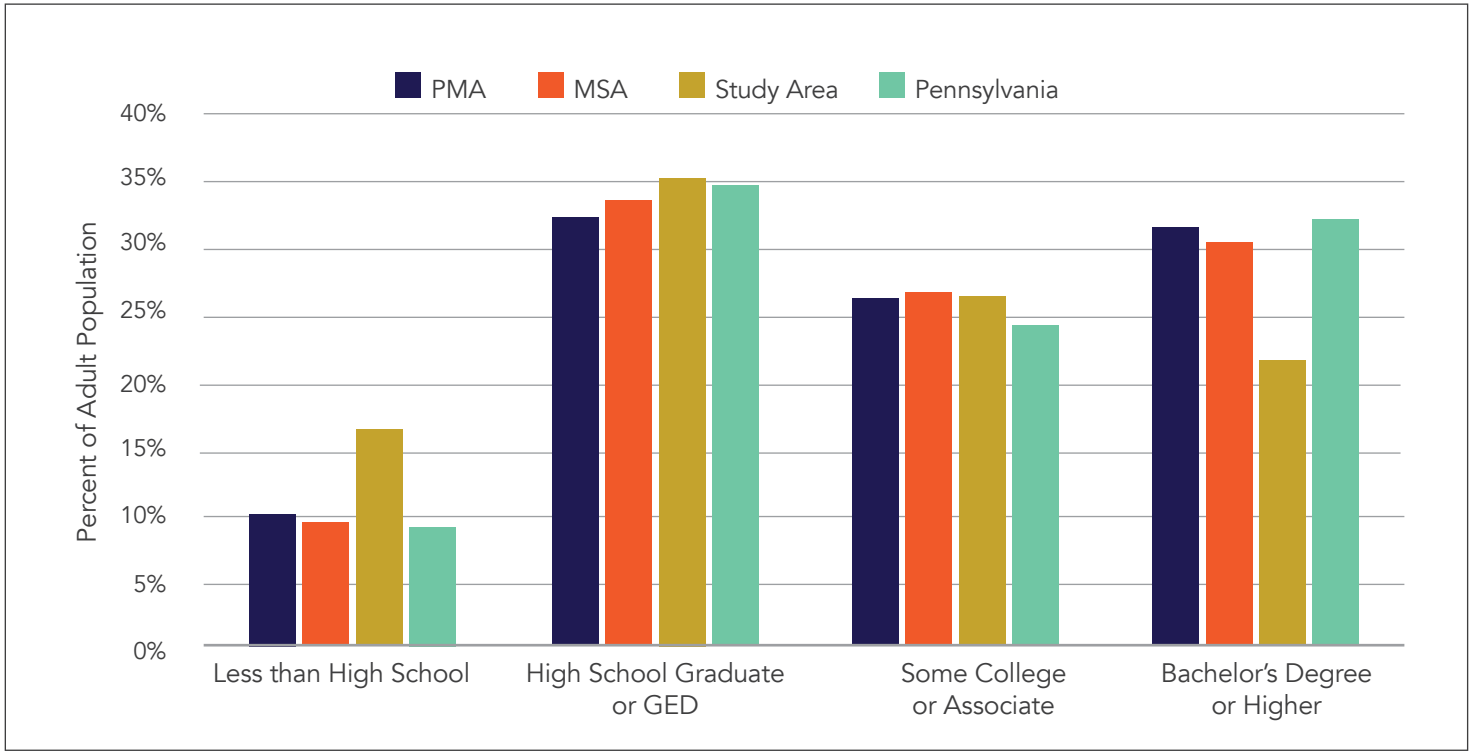
Source: Esri Business Analyst

Education

Residents living near the ASH campus have lower levels of educational attainment

Compared to the PMA and MSA, the percentage of residents with less than a high school education is high at over 16%. Based on 2019 estimates, more than 50% residents in the study area and PMA have earned a high school diploma/equivalent and have completed some advanced education. The attainment of associates, bachelors and advanced degrees is lower; however, than the surrounding region.

Exhibit 16: Highest Level of Educational Attainment (2019)



Source: Esri Business Analyst

Consumer Market Segmentation

Consumer market segmentation is commonly used by the real estate and retail industries to describe the typical consumer lifestyle and spending habits of customers within a retail trade area. Esri Business Analyst provides tapestry segmentation to categorize consumer markets based on socioeconomic characteristics and psychological profiling of consumer behaviors. The information is collected through point of sale (POS) data and consumer surveys and generally represent the activity of the top 75% of consumers in an area. Within the study area, the top tapestry segments are Fresh Ambitions, Front Porches, and Parks and Rec. Descriptions of each segment, which describe the average person, are provided below from Esri Business Analyst.

Fresh Ambitions

These residents tend to be young families who focus on their children. Many are immigrants, and multigenerational families are prevalent. These residents spend what they can on their children and on occasional trips to visit family. They are predominantly renters and most households have at least one vehicle. Unemployment is high, and consumers are price conscious.

Front Porches

This segment reflects a young households comprised primarily of single-parent families or singles living alone. Households own one vehicle and tend to be blue collar with strong labor force participation. Most households rent townhouses or duplexes in older, established neighborhoods.

Parks and Rec

Many of the households in this market are two-income married couples approaching retirement. Homes are primarily owner occupied and more than half of the population in this segment are college educated professionals in health care, retail trade, and education or skilled workers in manufacturing and construction.

SECTION 4: EMPLOYMENT TRENDS

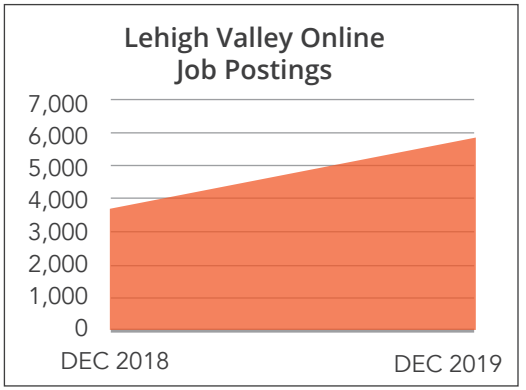
When assessing the dynamics of a local economy, an important factor is the employment growth in its economic base. Past, current, and projected employment data from the U.S. Census Bureau was reviewed for the Allentown-Bethlehem-Easton, PA-NJ MSA (MSA) and the Pennsylvania Department of Labor & Industry data was reviewed for the Lehigh Valley Workforce Development Area (WDA) which includes Lehigh and Northampton counties. In addition, findings from a recent report for the Lehigh Valley's Talent Supply Initiative were reviewed to identify key employment trends for target industries.

The increasing need for workforce in the Lehigh Valley is demonstrated through online job posting information published by the PA Center for Workforce Information & Analysis. The need for employees increased 57.1% between December 2018 and 2019.

Exhibit 17: Online Job Postings (2018 – 2019)

	LVWDA	Pennsylvania
December 2019	5,907	98,250
December 2018	3,759	98,249
Annual % Change	57.10%	1.00%

Source: PA CWIA, Lehigh Valley WDA Profile, January 2020.



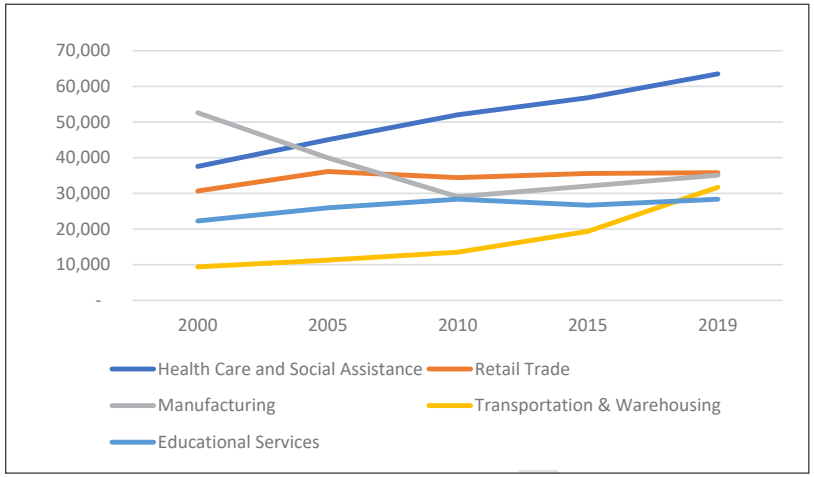
Employment by Industry Sector

Between 2010 and 2019 the MSA added 52,475 new jobs, an 18% increase. The increase is greater than the Commonwealth's job increases during the same period, at only 10%.

Jobs are increasing, particularly in the Health Care and Transportation & Warehousing industries

Within the MSA, the top five industry sectors for employment in 2019 were Health Care & Social Assistance; Retail Trade; Manufacturing; Transportation & Warehousing; and Educational Services. Like the nation, the Health Care & Social Assistance sector has been rapidly increasing. Except for Manufacturing, employment in each of the top five industry sectors has increased since 2000. While Manufacturing dropped between 2000 and 2010, most likely due to the national recession, the sector is continuing to rebound.

Exhibit 18: Top 5 Employing Industry Sectors (2000 - 2019)



Source: Local Employment Dynamics

Not surprisingly, the industry with the greatest numerical increase in employment is the Transportation & Warehousing sector, with a change in employment of 18,188 between 2010 and 2019 or 134%. Industries rounding out the top 5 sectors in terms of employment change include: Health Care and Social Assistance, Administrative and Support and Waste Management and Remediation Services, Manufacturing, and Accommodation and Food Services. Again, increasing employment levels in these industries suggest the potential need for additional facilities to expand.

Exhibit 19: Top 5 Industries for Employment Growth MSA (2010 – 2019)

Industry (2-digit NAICS)	Numeric Change	% Change
Transportation & Warehousing	18,188	134%
Health Care & Social Assistance	11,457	22%
Administrative & Support/ Waste Management & Remediation Services	6,556	35%
Manufacturing	6,047	21%
Accommodation & Food Services	5,206	24%

Source: Esri Business Analyst

Lehigh Valley manufacturing jobs are rebounding, exceeding state level manufacturing growth

While manufacturing employment dipped after the 2008 national recession, it rebounded reflecting a 21% increase in employment between 2010 and 2019. During the same period state growth in manufacturing was only 3%, reinforcing the strength of the manufacturing sector in the Lehigh Valley. Over 40% of the state's 14,499 manufacturing sector jobs added since 2010 were created in the MSA.

Industries trending stagnant or negative include Finance and Insurance; Management of Companies & Enterprises; Retail Trade; Education; and Public Administration.

Trade Area Employment

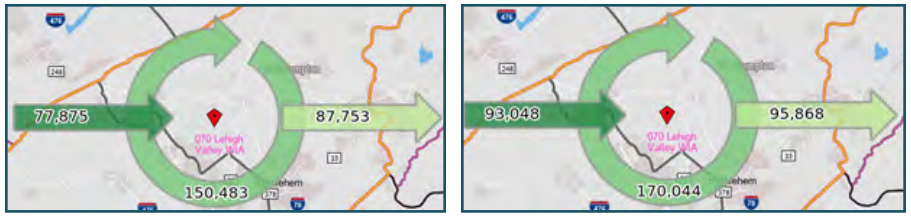
While the MSA has gained employment it has also been retaining more residents who both live and work in the region. The same holds true for the Leigh Valley Workforce Investment Area (WIA) which includes Lehigh and Northampton counties.

Inflow/Outflow data from the U.S. Census Bureau (LEHD Origin-Destination Employment Statistics available via OnTheMap) demonstrates these trends. Employee inflow, represented by the left arrow on the following exhibits, reflect employees travelling into the area but residing elsewhere. Employee outflow, represented by the right arrow, reflects employees living in the area but travelling to another location for work. Employees living and working in the area represented at the bottom of the diagram. Data from 2000 and 2017 demonstrates the increased numbers of people living and working in the MSA and Lehigh Valley WIA.

Exhibit 20: Job Inflow and Outflow Allentown-Bethlehem-Easton, PA-NJ MSA, 2010 (Left) and 2017 (Right)

Source: U.S Census Bureau, LEHD Origin Destination Employment Statistics

Exhibit 21: Job Inflow and Outflow in Lehigh Valley WIA, 2010 (Left) and 2017 (Right)



Source: U.S Census Bureau, LEHD Origin Destination Employment Statistics

While the number of employees living and working within the MSA and WIA has been increasing, Allentown officials note that many city residents, particularly those employed in the manufacturing sectors, travel outside the City to work. Increasing more job opportunities in the City by developing new industrial properties, would provide local residents increased opportunity to live and work in the City, reducing commute times and providing employers with needed employees. To document City residents travelling to other locations for manufacturing jobs, 2017 LEHD Origin-Destination Employment Statistics data for Allentown were reviewed. The data shows there were 6,910 workers in the goods producing industry sectors living in Allentown and 4,324 workers in the goods producing industry sectors working in Allentown. Creating new manufacturing job opportunities in Allentown could potentially provide up to 2,586 Allentown residents with jobs where they live. The ASH campus could be a potential location for locating these new jobs.

Talent Supply Trends

Recognizing that availability of skilled labor and the gap between the existing workforce and the skills employers need are a challenge, LVEDC in conjunction with Workforce Board Lehigh Valley (WBLV) developed a talent supply initiative. The purpose of the initiative is to identify talent (workforce) supply and demand issues and partner with local employers, educators, and other stakeholders to align talent with industry needs.

LVEDC and WBLV commissioned a regional study to formulate a strategic action plan to improve the Lehigh Valley talent market. The study focused on 5 target industry sectors and included outreach with businesses and other regional stakeholders. Findings from the study, Lehigh Valley Education & Talent Supply Report (Summer 2018), document workforce conditions in each target industry sector.

FIVE TARGET INDUSTRY SECTORS

Source: LVEDC, Lehigh Valley Education & Talent Supply Report (2018)

Several key findings from the study demonstrate an active labor market with challenges, but significant opportunities that can be catalyzed through the existing partnerships between businesses and economic, workforce, and education partners. The following information summarizes employer views about the Lehigh Valley's workforce and augments quantitative real estate information presented in upcoming sections of this market study.

Skilled Workforce

Skilled workforce is required for future growth of businesses. Among the more than 300 Lehigh Valley employers surveyed for the study, 89.8% responded that skilled workforce is important.

Hiring

Ninety-one percent of employers surveyed for the study said they hired workers within the past 12 months; and 89% indicated they plan to hire within the next 12 months. The number of employees hired varied by target industry sector, with transportation and warehousing companies hiring the greatest number of employees.

Labor Availability

Most employers responding to the study survey reported hiring difficulties with 71% experiencing challenges in recruiting, hiring, or retaining talent over the past 12 months. Each of the target industry sectors overwhelmingly reported hiring challenges.

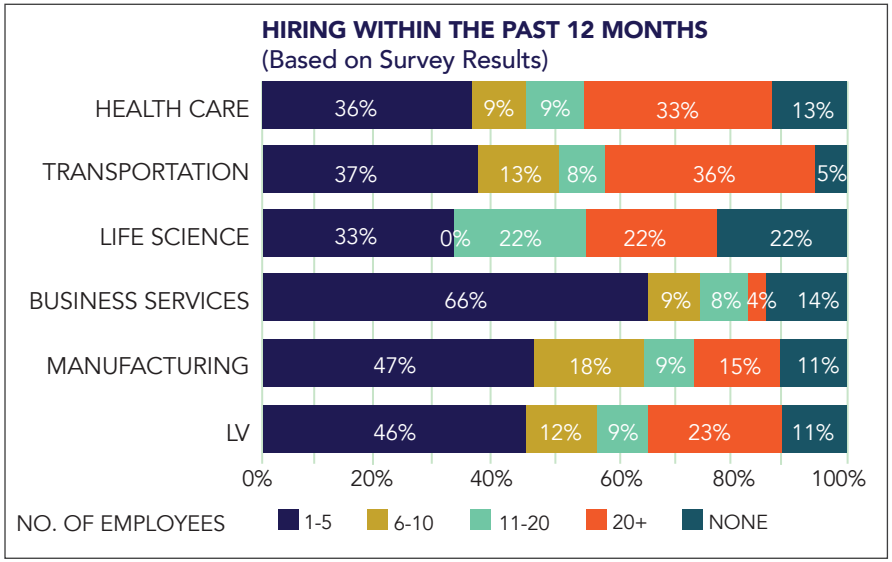
Need to Address Workforce

A key finding from the Lehigh Valley Education & Talent Supply Report was that 90,665 people in the 55 to 64 age group could reasonably be expected to retire within the next 10 years, while only 80,952 people were in the 6 to 15 age group and are likely to enter the talent market in the next 10 years. This leaves the region with a deficit of nearly 10,000 workers over the next 10 years if no actions are taken to address workforce.

Employment Forecast

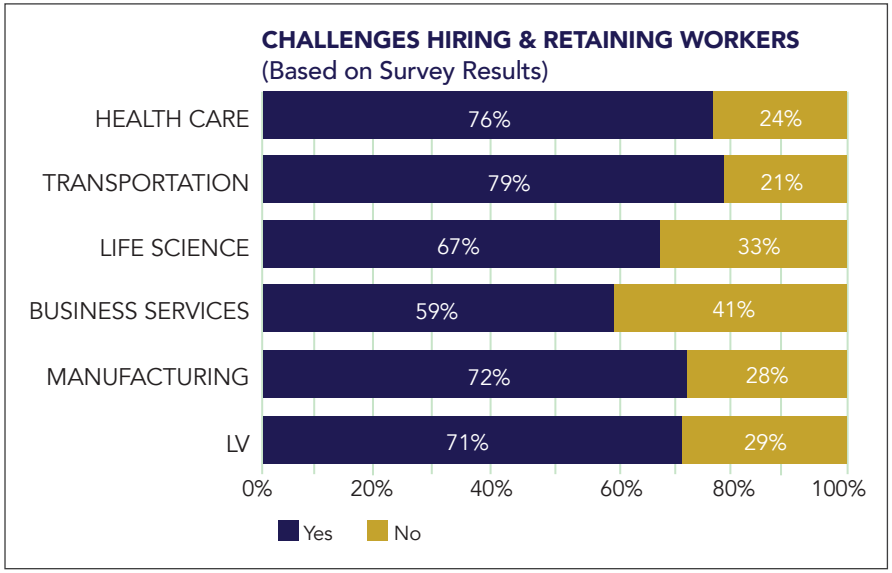
The study estimated replacement demand, which is the sum of employment growth, the number of workers exiting the sector (retirement), and the number of workers transferring from the sector (to jobs in other sectors). Across all target industry sectors replacement demand totals over 96,000 workers.

Exhibit 22: Lehigh Valley Education & Talent Supply Report: Employer Hiring Patterns



Source: LVEDC, Lehigh Valley Education & Talent Supply Report (2018)

Exhibit 23: Lehigh Valley Education & Talent Supply Report: Employer Hiring Challenges



Source: LVEDC, Lehigh Valley Education & Talent Supply Report (2018)

Exhibit 24: Replacement Demand for Target Industry Sectors

	Current Employment	Forecast Employment in 2022	Expected Growth	Replacement Demand[1]
Manufacturing	24,764	23,955	-809	11,956
Business Services	53,126	54,835	1,709	28,952
Life Science	10,388	10,953	565	5,354
Transportation	34,271	35,734	1,463	20,586
Health Care	53,056	57,395	4,339	29,586
Total Target Sectors	**175,605**	**182,872**	**7,287**	**96,826**

Source: LVEDC, Lehigh Valley Education & Talent Supply Report (2018); Chmura JobsEQ® Platform

Occupational Wages & Education Requirements

Occupational wages and employment were assessed for the Lehigh Valley WDA cross referenced with corresponding target industries. The wages and employment forecasts reinforce sectors with employment opportunity over the next 5 years. Specific occupations under each target industry sector are discussed in the Target Industry Sectors & Analysis section.

Exhibit 25: Occupational Wages for Target Industry Sectors

Target Industry Sector	Occupational Title	Average Hourly Wage	Average Annual Wage	Employment Estimated 2016	Employment Projected 2026	Annual Demand
Manufacturing	Production	$19.55	$40,670	24,050	23,830	2,676
Business Services	Business & Financial Operations	$35.45	$73,730	11,820	12,650	1,168
Life Science	Life, Physical & Social Science	$34.65	$72,080	1,690	1,840	167
Transportation	Transportation & Material Moving	$17.36	$36,100	31,680	35,060	4,384
Health Care	Healthcare Support	$16.10	$33,490	10,880	12,470	1,451

Source: Workforce Board Lehigh Valley, PA Occupational Wages, Lehigh Valley WDA (May 2019); Lehigh Valley WDA Occupational Employment 2016-2026 Long-Term Projections.

Occupational wage data also provides insight into the level of education required. Many of the occupations required for the target industry sectors require basic on the job training while others require higher educational requirements. This information is beneficial for employers/ employees to assess workforce training needs.

Exhibit 26: Education Requirements for Target Industry Sectors

Target Industry Sector	Manufacturing	Business Services	Life Sciences	Transportation	Healthcare
Doctoral or professional degree			✓		
Master's degree plus experience					
Master's degree			✓		
Bachelor's degree plus experience		✓			
Bachelor's degree		✓	✓		
Associate degree plus experience			✓		
Associate degree			✓		✓
Postsecondary training plus experience					
Postsecondary training or apprenticeship	✓			✓	✓
HS diploma plus work experience	✓			✓	
Long-term training or apprenticeship	✓	✓		✓	
Moderate-term on-the-job-training	✓	✓		✓	✓
Short-term on-the-job-training	✓			✓	✓

Source: Workforce Board Lehigh Valley, PA Occupational Wages, Lehigh Valley WDA (May 2019)

SECTION 5: TARGET INDUSTRY SECTORS & ANALYSIS

As noted above in the Employment Trends section, LVEDC and WBLV began an initiative to proactively link business and education to ensure the Lehigh Valley has a talent pipeline in place to meet existing and future needs of key economic sectors. In 2018 the Lehigh Valley Talent Supply and Industry Sector Analysis & Strategic Action Plan Strategy was developed to define trends and gaps within the talent supply of specific industry sectors in the region. Five target industry sectors were identified with each industry sector aligned to the region's competitive advantages.[4] The target industry sectors were selected based on the following criteria:

- Current employment figures
- Demonstrated growth in employment in the last five years
- Opportunity for growth in the next five years

FIVE TARGET INDUSTRY SECTORS

Manufacturing
(Advanced and Food & Beverage)

High-Value Business Services

Life Science Research & Manufacturing

Transportation, Warehousing, Logistics & Wholesale

Health Care

Source: LVEDC, Lehigh Valley Education & Talent Supply Report (2018)

Target industry sectors were defined using the North American Industry Classification System (NAICS) at the four-digit level. Occupations were defined by the U.S. Department of Labor Standard Occupational Classification (SOC) system.

Each of the 5 target industry sectors, along with workforce needs, has been analyzed for potential compatibility at the ASH campus. The analysis demonstrates the likelihood that each target industry sector and its workforce are potentially geographically compatible with the site and surrounding areas. The 'Site Analysis' column draws from stakeholder findings included in the Stakeholder Input section as well as industrial and office real estate data presented in the Industrial Market Analysis and Office Market Analysis sections.

[4] *Note: While the market study originally scoped analysis of the Lehigh Valley's industry clusters according to methodology developed per the U.S. Cluster Mapping Project, the targeted industry sectors identified as part of the Lehigh Valley Talent Supply and Industry Sector Analysis and Strategic Action Plan were analyzed to ensure consistency with regional strategies.*

Potential for Attracting Target Industry Sector Businesses

Target Industry Sector	Data [1]	Site Analysis
Manufacturing (Advanced and Food & Beverage) Manufacturing will be highly influenced by new technology and processes, requiring highly skilled workers 	• 2nd largest economic sector in the Lehigh Valley • Greatest economic multiplier of any sector (1 manufacturing job equals 4 in other sectors) • High demand occupations: machinists, engineers, welders, electricians/ electrical engineers, general labor • Annual demand: 2,676 workers	• **The ASH campus is a potential candidate for industrial/ flex space.** • Small industrial users are situated in East Allentown on individual parcels or in business parks. • Real estate brokers and economic development professionals report the lack of small sized (less than 80,000 SF) manufacturing space throughout the Lehigh Valley. • Considering its location in a residential neighborhood, industrial vehicle access to the site should be carefully assessed. • The site could help meet the Lehigh Valley's need for high-value industrial/flex space.
High-Value Business Services Corporate demands required to respond to rapid changes in customer expectations drive growth in this sector 	• The Lehigh Valley's location in proximity to the New York and Philadelphia metro areas combined with existing office facilities support industry sector growth. • Downtown Allentown is a significant regional driver for large corporate office space. • High demand occupations: sales and marketing, engineers, accountants, attorneys/ paralegals • Annual demand: 1,168 workers	• **The ASH campus is a potential candidate to locate business services workers requiring smaller office spaces to support local needs.** • Any future office development at the ASH campus should not detract from reinvestment in either downtown Allentown or Bethlehem. • Near the ASH campus, tenants are requesting office space sized between 2,500 SF and 5,000 SF.
Life Science Research & Manufacturing Life sciences is increasing nationally concurrent with increasing demand for health services 	• While over half of industry establishments in PA have fewer than 10 employees, the sector contributes a statewide economic output of $88.5 billion. • Life sciences research and manufacturing are a critical sector for the Lehigh Valley's post-secondary educational institutions. • High demand occupations: Engineers, mechanical /mechanics, chemical operators/ chemical analysts, IT/Web Developer/ Software Developer • Annual demand: 167	• **The ASH campus is a potential candidate to locate life science research and manufacturing businesses.** • A few small life science research and manufacturing firms have expanded in proximity to the ASH campus. • One firm has outgrown space at the nearby Ben Franklin Tech Incubator and will relocate to an existing 40,000 SF building in South Allentown creating 38 new jobs. • Industrial/flex space would accommodate industry sector needs. • The site could help meet future space needs for this high-value sector.

[1] *LVEDC, Lehigh Valley Education & Talent Supply Report (2018); Workforce Board Lehigh Valley, PA Occupational Wages, Lehigh Valley WDA (May 2019)*

Continued on the following page

Target Industry Sector	Data [1]	Site Analysis
Transportation, Warehousing, Logistics & Wholesale Fulfilling increasing customer e-commerce demands has intensified the importance of this sector 	• Fastest-growing sector in the Lehigh Valley's economy • 9.5% year-over-year growth in economic output, adding 10,000 jobs in the last 5 years • High demand occupations: CDL drivers, truck drivers, forklift operators and drivers, mechanical/mechanics, warehouse workers • Annual demand: 4,384 workers	• **The ASH campus is not a potential candidate to site large scale warehouse and logistics users.** • The ASH campus is situated in a residential neighborhood accessed by a two-lane road network. • The site is over 2.5 miles from a US 22 interchange. • Users of large-scale warehouses prefer locations near interstate connections. • Surrounding land uses and the local road network prevent the site from being a candidate to locate industrial warehouse use.
Health Care Health care is a key component of the U.S. economy driven by over 98 million Americans age 65+ by 2060 	• Health Care is the Lehigh Valley's top industry by employment • High demand occupations: nurses, medical assistants, caregivers and home health aides, nurses, administrative assistant, psychologists • Annual demand: 1,451 workers	• **The ASH campus is a potential candidate to site health care operations requiring medical office space.** • The site effectively provided health care services for more than a century. • Stakeholders report increasing need for medical office space. • Medical office space would meet the requirements for the health care industry sector.

SECTION 6: INDUSTRIAL MARKET ANALYSIS

The market area is a geography that a property (in this case the ASH campus) serves. Major metropolitan areas have been divided into real estate markets for the purpose of comparison and statistical analysis. These market areas are often broken into smaller submarkets based upon geographic barriers and local dynamics. The ASH campus is in the Lehigh Valley submarket, which is part of the larger Philadelphia market.

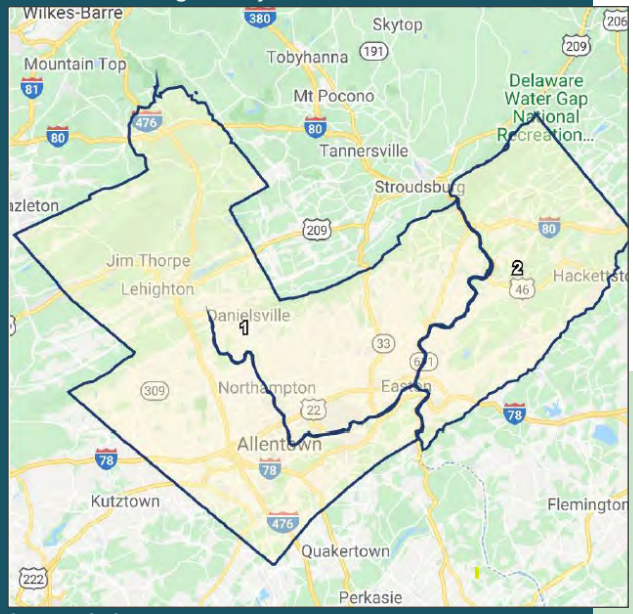
The industrial market analysis for the ASH campus began with an overview of the Lehigh Valley real estate market with data provided by CoStar and LVEDC. Key terms for the industrial and office real estate analysis are included in Appendix A. Industrial data was then supplemented with localized findings obtained from discussions with local and regional real estate and economic development professionals.

Industrial GDP trends from the U.S. Bureau of Economic Analysis (BEA) were also analyzed to measure the strength of manufacturing output, signaling the overall economic performance of the real estate. The resultant market trends were summarized with key findings linked to potential market receptiveness in the study area and at the ASH campus.

Worth noting at the beginning of the industrial market analysis is the type of industrial activity that could potentially take place at the ASH campus. The site is limited by its location adjacent to existing residential neighborhoods and limited access to major transportation corridors. Therefore, an industrial warehouse distribution facility requiring large amounts of land in proximity to a limited access highway would not be suitable at the site, nor would resource intensive, heavy manufacturing. Instead industrial/flex space, smaller sized industrial buildings housing light manufacturing, research and development manufacturing/facilities, industrial showrooms, and data centers would be suitable types of industrial uses at the ASH campus. Further analysis was conducted to quantify potential unmet industrial/flex space demand and the likelihood the ASH campus could capture unmet demand.

As the Lehigh Valley is comprised of two (2) submarkets, Lehigh Valley plus Carbon County and Warren County, NJ, only Lehigh Valley data (Lehigh and Northampton counties) was used in the supply/demand analysis. Subtracting out these geographies provided consistency with WDA employment data used in the analysis.

Exhibit 27: Lehigh Valley Real Estate Market Area



Source: CoStar

The Lehigh Valley is within the Philadelphia Market Area which includes portions of southeast Pennsylvania, southern New Jersey, and northern Delaware.

The Lehigh Valley includes two industrial submarkets Lehigh Valley plus Carbon County and Warren County, NJ.

Key Market Indicators

Consumers' increasing preference for online shopping is bringing international attention to the Lehigh Valley with the market's shipping location attracting international investors, developers, and tenants. While a significant new supply has been placed into the market over the past decade, demand has managed to keep up with millions of SF of speculative supply. Rents have increased correspondingly and though growth has slowed over the past two years; rents remain well over the inflation rate. Sales volume has surpassed expectations for several years as both international and institutional entities purchase large logistics facilities. Since 2010, central and eastern Pennsylvania have delivered more large-scale warehouses than any other regions in the country, the majority in Lehigh Valley. The proximity to international ports in New York-New Jersey, Boston, Philadelphia, and Baltimore are driving growth.

Exhibit 28: Key Industrial Indicators for the Lehigh Valley Market

12 Mo Deliveries in SF	12 Mo Net Absorption in SF	Vacancy Rate	12 Mo Rent Growth
3.1 M	1.7 M	4.5%	1.5%

Source: CoStar (January 2020)

KEY INDICATORS

Current Quarter	RBA	Vacancy Rate	Market Rent	Availability Rate	Net Absorption SF	Deliveries SF	Under Construction
Logistics	103,065,044	5.0%	$5.49	11.5%	31,408	0	8,167,899
Specialized Industrial	23,628,490	2.0%	$6.20	4.0%	(37,600)	0	205,000
Flex	7,740,700	5.8%	$10.31	10.2%	28,308	150,000	419,000
Market	**134,434,234**	**4.5%**	**$5.88**	**10.2%**	**22,116**	**150,000**	**8,791,899**

Annual Trends	12 Month	Historical Average	Forecast Average	Peak	When	Trough	When
Vacancy Change (YOY)	0.6%	8.1%	4.6%	14.1%	2003 Q2	3.9%	2018 Q4
Net Absorption SF	1.7 M	2,527,697	4,328,460	8,497,578	2017 Q1	(1,677,442)	2009 Q1
Deliveries SF	3.1 M	2,693,923	5,045,694	7,940,185	2017 Q3	324,160	2011 Q2
Rent Growth	1.5%	1.9%	0.8%	6.0%	2000 Q3	-3.4%	2010 Q3
Sales Volume	$381 M	$134.8 M	N/A	$466.6M	2017 Q4	$0	2004 Q2

Source: CoStar (January 2020)

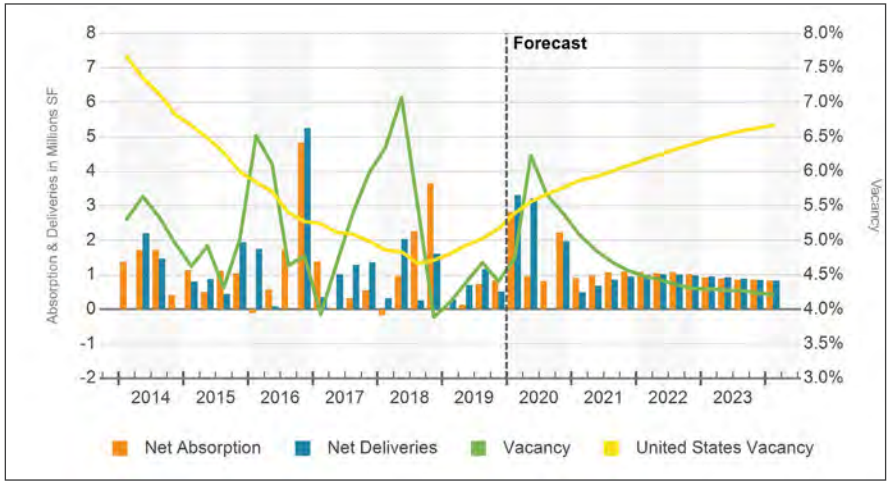
Leasing

The Lehigh Valley's industrial vacancy rate has increased in recent quarters reaching 4.5% at the beginning of 2020. While vacancy rates should not be dismissed, rates are much lower than the historical average of 8.5% since 2000. The market's demand drivers of prime location and increasing e-commerce have not weakened and vacancies are tight for an area that has received a significant amount of supply.

Representative industrial leases in 2019 demonstrate absorption is occurring throughout the Lehigh Valley with a few buildings leased in proximity to the ASH campus. Many of these leases are for smaller industrial space below 80,000 SF in size.

Recent market trends reflect that while the overall vacancy rate for industrial buildings is trending upward, there is a continuing decline in vacancy rates for smaller sized industrial buildings. The vacancy rate for industrial buildings less than 80,000 SF in size is currently 3.1% compared to 5.9% for all industrial buildings and 4.5% for buildings greater than 300,000 SF.

Exhibit 29: Lehigh Valley Industrial Net Absorption, Net Deliveries & Vacancy



Source: CoStar (January 2020)

Exhibit 30: Lehigh Valley Industrial Building Vacancy Rates (Q2 2019 – Q2 2020)

	Overall	Over 300,000 SF	Under 80,000 SF
Q2 2019	4.8%	4.2%	3.4%
Q3 2019	5.0%	4.2%	3.3%
Q4 2019	4.5%	3.4%	3.5%
Q1 2020	4.3%	1.5%	3.2%
Q2 2020	5.9%	4.5%	3.1%

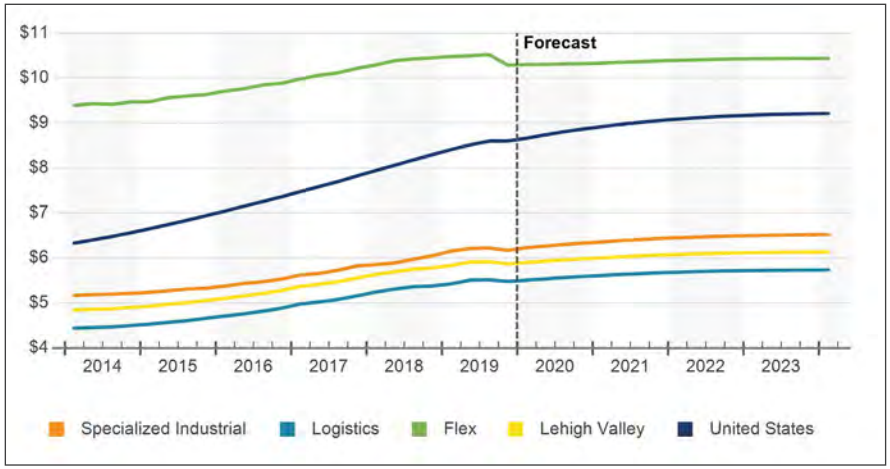
Source: CoStar, LVEDC

Rent

Year-over-year rent gains are 1.5%, with the average tenant signing for space at $5.90/SF. Growth over the past four years demonstrates annual gains over 4% every year since 2015. Until leasing of new construction slows, rent growth is likely to be ahead of the pace of inflation. While there are signs that industrial leasing is slowing down, shipping demand drivers are still strong in the Lehigh Valley.

While recent market trends reflect a general increase in asking rent per SF across all industrial buildings, the asking rent for smaller size industrial buildings is higher. Current asking rents for Industrial buildings under 80,000 SF in size is $6.78/SF compared to $6.10/SF for all industrial buildings and $6.40/SF for buildings greater than 300,000 SF. This reflects the overall demand for smaller sized industrial buildings in the Lehigh Valley.

Exhibit 31: Lehigh Valley Industrial Rent Per SF



Source: CoStar (January 2020)

Exhibit 32: Lehigh Valley Industrial Building Asking Rent per SF

	Overall	Over 300,000 SF	Under 80,000 SF
Q2 2019	$5.64	$5.01	$6.13
Q3 2019	$5.58	$4.95	$6.36
Q4 2019	$5.73	$4.95	$6.71
Q1 2020	$5.94	$5.63	$7.01
Q2 2020	$6.10	$6.40	$6.78

Source: CoStar, LVEDC

Construction and Under Construction

Except for the Inland Empire in California, the Lehigh Valley has seen the fastest growth in its industrial rentable building area (RBA) since 2010 of any market in the U.S. The Lehigh Valley's industrial RBA has grown 25% since 2010, reaching 134 MSF as of 1st quarter 2019. Among the roughly 28 MSF of projects that have been delivered since 2010, only about 10% are listed as available for lease. Meanwhile, the market's overall vacancy rate remains well below its historical average of 8.5% since 2000.

The dominance of industrial warehouse distribution space is further demonstrated by reviewing properties under construction and proposed. Thirteen (13) industrial projects are under construction totaling over 4.5 MSF. An additional 26 projects are proposed totaling nearly 7.2 MSF. Most of the projects under construction and proposed serve the needs of the industrial warehouse industry. Of the over 4.5 MSF of industrial space under construction, nearly 91% is warehouse distribution with a small amount manufacturing (105,000 SF). Only 9% is industrial/flex space including uses such as light manufacturing, research and development manufacturing/facilities, industrial showrooms, and data centers. Due to the ASH campus' location within a residential neighborhood and limited access to major transportation corridors, industrial/flex space would be the more appropriate industrial use at the site.

Only 37,000 SF of industrial space (warehouse) is under construction in the study area and over 2.4 MSF is proposed with nearly 1.8 MSF in Bethlehem. No industrial/flex space is under construction or proposed in the study area.

The lack of small-footprint industrial space is documented by LVEDC. At the end of 2019, only 1 building less than 100,000 SF was under construction, while 8 buildings in the 100,000 SF – 300,000 SF size range and 7 buildings greater than 300,000 SF were under construction.[5]

Exhibit 33: Industrial Properties Under Construction and Proposed in the Lehigh Valley Market Area

	Properties Under Construction	Building SF Under Construction	Properties Proposed	Building SF Properties Proposed
Industrial	10	4,153,409	24	7,007,975
Industrial/Flex	3	419,000	2	173,100
Total	**13**	**4,572,409**	**26**	**7,181,075**

Source: CoStar (January 2020)

[5] *LVEDC 2019 Annual Report.*

Deficit of Small-Footprint Industrial Space

Several trends and data points document the demand for and limited availability of new, small-footprint industrial/flex space in the Lehigh Valley and study area. The ASH campus could serve as a potential location to house this type of industrial space.

- Per the 2014 Allentown re-industrialization strategy, the greatest demand for industrial space is for smaller sized space 8,000 SF or less and 20,000 to 40,000 SF up to 80,000 SF. [6]
- Each of the economic development and real estate professionals contacted as part of this market study noted the shortage of small-footprint industrial/flex space. The actual size needed varied by stakeholder: 6,000 SF – 12,000 SF; 5,000 SF – 25,000 SF; 30,000 SF – 80,000 SF; but it was clearly reported that smaller sized industrial/flex space as a gap in the Lehigh Valley's current industrial real estate market, particularly in the study area.
- LVEDC began tracking the issue of limited availability of small manufacturing space in 2017. According to an LVEDC 2018 commercial real estate report, there was a documented shortage of small-footprint industrial buildings between 40,000 SF and 80,000 SF in size. [7]
- Nearly half of LVEDC's 35 economic development projects completed in 2019 (office and industrial) were for companies requiring a building less than 80,000 SF, with an average of 36,000 SF.
- Nearly 70% of businesses seeking smaller locations in 2019 were manufacturers requiring industrial space. Of the 16 businesses working with LVEDC in 2019 and seeking smaller sized industrial space, 11 (or 69%) were smaller manufacturers. The type of manufacturing varied from medical supply to pharmaceutical manufacturing to commercial machinery to food manufacturing. Review of NAICS associated with each company demonstrates consistency with the Lehigh Valley's targeted sectors of Manufacturing (Advanced and Food & Beverage); High-Value Business Services; Life Science; Transportation, Warehousing, Logistics & Wholesale; and Health Care.
- CoStar data indicates that 25 of the 37 top industrial leases in the Lehigh Valley submarket in the past 12 months were for companies requiring a building sized 80,000 SF or less, nearly 67%. The average industrial space leased in this size range over the past 12 months was 42,000 SF.
- The shortage smaller sized industrial space is also documented by recent vacancy rates. According to LVEDC, the overall vacancy rate for industrial property in the 2nd quarter 2020 was nearly 6%. For industrial/flex space smaller than 80,000 SF, the vacancy rate dropped to 3.1%.
- The demand for or small-footprint industrial/flex buildings is also documented by an increase in asking rents. Current asking rents for industrial buildings under 80,000 SF in size is $6.78/SF compared to $6.10/SF for all industrial buildings and $6.40 for buildings greater than 300,000 SF.
- The construction of new, small-footprint buildings is limited. At the end of 2019, only 1 building less than 100,000 SF was under construction, while 8 buildings in the 100,000 SF – 300,000 SF size range and 7 buildings greater than 300,000 SF were under construction.

[6] *Allentown Economic Development Corporation, Envision Lehigh Valley, City of Allentown Re-Industrialization Strategy, April 2014, p. 10.*
[7] *LVEDC, Commercial Real Estate Report for the Office & Industrial Markets Issue #013, 1st Quarter 2018.*

- Smaller industrial buildings are also older. According LVEDC's 2019 Annual Report, of the 15.4 MSF inventory of small-footprint buildings in the Lehigh Valley, nearly 82% are older than 40 years with only 2% constructed in the past 10 years. Of the 111 buildings constructed post-1980, 94 were 100% occupied in 2018. Newer industrial building stock would help replace existing, older buildings.

- Industrial re-zoning in Allentown further documents the demand for new manufacturing space. Nearly 30 acres of property were rezoned to general industrial in 2019. Changes in zoning to attract economic development focused on industrial uses was an objective in the City's 2014 re-industrialization strategy.

- Finally, LVEDC has made a concerted effort to educate real estate brokers and developers on the deficit of smaller sized industrial space in the region. In 2017 after LVEDC identified and began to track the limited availability of small-footprint industrial/flex space, a panel discussion was convened by LVEDC's Brokers & Developers Council to discuss challenges and opportunities. Nearly 100 developers, real estate brokers, and other Lehigh Valley professionals attended to learn more about the issue and the importance for developing speculative small-footprint industrial/flex space. [8]

Developing an inventory of industrial space is also a factor in retaining existing businesses. Close to one-third of LVEDC's economic development projects completed in 2018 were expansion projects for existing Lehigh Valley companies, reflecting that business retention is an active and key component of the industrial base. Further, nearly all businesses interviewed for Allentown's re-industrialization strategy noted growth and expansion plans within 5 to 10 years. Therefore, unless additional industrial space is identified, Allentown and the region will likely face business retention challenges. [9]

From a geographic perspective, many businesses requiring smaller industrial space have located in proximity to the ASH campus. Within the last year, 8 industrial buildings under 35,000 SF have been leased in the vicinity of the ASH campus according to CoStar. This reinforces stakeholder comments identifying the need for smaller industrial/flex space in the study area.

- One smaller company expanding in the Lehigh Valley and locating near the ASH campus is U.S. Specialty Formulations, LLC. An LVEDC 2019 project, the company relocated from the Ben Franklin TechVentures incubator in Bethlehem into an existing 40,000 SF building in Allentown's Southside neighborhood, across the river from the ASH campus. The company is in the Life Science Research & Manufacturing target industry sector and its current staff of 12 employees is expected to increase to over 50 in 5 years. [10]

- Another company, Royal Industries, is a business promotional products manufacturer that recently relocated from Brooklyn, New York to an existing 80,000 SF building on Plymouth Street 0.67 miles from the ASH campus. The project was announced in 2017 and was projected to result in the creation of 80 new jobs.[11] As industrial businesses from the New York-New Jersey metropolitan area continue to seek locations in the Lehigh Valley due to lower cost space and workforce availability, providing additional industrial space would meet ongoing space demand.

In summary, the location of smaller manufacturers in proximity to the ASH campus combined with a documented lack of industrial/flex space presents a potential market opportunity at the site.

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[8] *LVEDC, Panelists Discuss Shortage of Lehigh Valley Small-Footprint Manufacturing Space. November 3, 2017.*
[9] *Ibid., p. 10.*
[10] *LVEDC, U.S. Specialty Formulations Moving Into New Allentown Space, May 16, 2019. Accessed 02/20/20 at:*
[11] *The Morning Call, Brooklyn company relocating to Allentown, bringing 80 jobs. October 10, 2017. Accessed 02/20/20 at: https://www.mcall.com/business/mc-biz-allentown-royal-industries-relocating-20171010-story.html.*

Growth in Manufacturing Output

An additional measure of an area's industrial market strength is its growth in manufacturing output as measured by GDP. Data from the BEA was analyzed to identify GDP particularly from the manufacturing sector.

According to LVEDC, the Lehigh Valley's GDP reached a record-high $41.2 billion for 2018, a 2.7% gain from 2017. The manufacturing sector comprises $7.3 Billion nearly 18% of the region's economic output, higher than the U.S. at 12.8%. [12]

Over the past several years, the Lehigh Valley's manufacturing sector has been strong with respect to both durable and non-durable goods production. Durable goods are products consumers do not need to purchase often and are generally, higher priced items such as cars, appliances, furniture, and electronics. Non-durable goods are products that are used or consumed more quickly such as paper products, cleaning products, clothes, and shoes. Typically, if a product lasts more than three years it is a durable good. In general, businesses and consumers generally place orders for durable goods when they are confident an economy is good. An increase in durable goods is a signal of a strong economy and manufacturing sector.

Durable goods manufacturing in the Lehigh Valley increased nearly 10% between 2015 and 2018, from $2.7 Billion to $3.0 Billion. This is indicative of a strong manufacturing sector and is another measure to document the need for increased manufacturing space. The development of additional industrial property will continue to support the Lehigh Valley's strong manufacturing output.

[12] *TLVEDC. Accessed 08/12/20 at: https://lehighvalley.org/about-lehigh-valley/economy/#:~:text=Balanced%2C%20Diversified%2C%20%26%20Growing,a%20total%20of%2045%20billion.*

Industrial Market Potential

Findings	Data	Site Analysis
The dominant real estate driver in the Lehigh Valley continues to be industrial warehouse distribution space.	• Approximately 28 million SF of industrial warehouse space has been delivered since 2010 with only 10% available for lease. • 13 industrial properties are under construction totaling over 4.5 MSF,91% is warehouse distribution. • 26 industrial properties are proposed totaling over 7.2 MSF, 98% is warehouse distribution.	• The ASH campus is in a residential neighborhood, accessed by a two-lane road network. • It is located over 2.5 miles from a US 22 interchange. Users of large-scale industrial warehouses prefer a location near limited access highways. • Surrounding residential land uses and the local road network prevent the site from being a candidate to locate industrial warehouse space.
The Lehigh Valley has documented demand for and limited availability of small-footprint industrial/ flex space, particularly in the study area.	• According to an LVEDC 2018 Commercial Real Estate Report, there is a shortage of small-footprint industrial buildings (40,000 – 80,000 SF) in the Lehigh Valley. • Per Allentown's 2014 Re-Industrialization Strategy, the greatest demand for industrial space is for small sized space less than 80,000 SF. • Each of the economic development and real estate professionals contacted as part of this market study noted the shortage of small-footprint industrial/ flex space. • LVEDC reports that at the end of 2019, only 1 building less than 100,000 SF in size was under construction. • Nearly half of LVEDC's 2019 economic development projects (office and industrial) required buildings sized less than 80,000 SF. Based on industry type, 7 were manufacturing, 2 R & D, and 3 distribution. • Compared to an overall industrial vacancy rate of nearly 6%; the vacancy rate of industrial/flex space less than 80,000 SF is just 3%. • Current asking rents for industrial/flex buildings under 80,000 SF is $6.78/SF compared to a lower rate of $6.10/SF for all industrial buildings. • Industrial re-zoning in Allentown supports the demand for new industrial space.	• The ASH campus would help meet the Lehigh Valley's need for industrial/flex space. • The lack of smaller sized industrial space in the Lehigh Valley presents a real estate market opportunity at the ASH campus. • Constructing industrial/flex space 80,000 SF in size or less would help meet current demand. Average building sizes are currently 42,000 SF.
Smaller industrial buildings in the Lehigh Valley are older.	• Of the 15.4 MSF inventory of small-footprint buildings in the Lehigh Valley, nearly 82% are older than 40 years with only 2% constructed in the past 10 years. • Of the 111 buildings constructed post-1980, 94 were 100% occupied in 2018.	• The ASH campus provides an opportunity to construct new, modern small-footprint industrial/flex space. • Newer industrial building stock would help replace existing, older buildings.

Continued on the following page

Findings	Data	Site Analysis
The Lehigh Valley's manufacturing sector as measured by GDP is strong.	• The Lehigh Valley's GDP reached a record-high $41.2 billion in 2018. • The manufacturing sector comprises nearly 18% of the region's economic output, higher than the U.S. at 12.8%. • Durable goods manufacturing increased nearly 10% between 2015 and 2018, indicative of a strong manufacturing sector.	• The ASH campus provides a location to continue expansion of the region's economic output.
Allentown's Re-Industrialization Strategy points to advantageous industrial conditions in the study area.	Allentown's advantageous industrial conditions were documented as: • Lower-cost space • Lower-cost labor • Access to a dense labor market within a short commute, often within walking distance • Access to city amenities for workers and entrepreneurs and increased commercial activity • An incubator and related services specifically dedicated to manufacturing and serving as a focal point for a manufacturing entrepreneurial network • Existing infrastructure	• The ASH campus provides a location to increase Allentown's, and Bethlehem's, industrial space inventory.
An inventory of industrial space is a key business retention factor.	• Close to one-third of LVEDC's economic development projects completed in 2018 were expansion projects for existing Lehigh Valley companies • Nearly all businesses interviewed for Allentown's re-industrialization strategy noted growth and expansion plans within 5 to 10 years.	• The ASH campus provides a location for existing Lehigh Valley and study area businesses to expand.
Businesses requiring smaller industrial space have located in proximity to the ASH campus with out of state business attraction increasing as well.	• Within the past year, 8 industrial buildings under 35,000 SF have been leased in the vicinity of the ASH campus. • A specialty pharmaceutical manufacturer expanded from the Ben Franklin TechVentures incubator into an existing 40,000 SF building across the river from the ASH campus. The company is projected to employ 50 over 5 years. • A manufacturer recently relocated from Brooklyn, NY to an existing 80,000 SF building on Plymouth Street ½ mile from the ASH campus. The project will result in the creation of 80 jobs over 3 years. • Industrial businesses from the New York-New Jersey metropolitan area continue to seek locations in the Lehigh Valley due to lower cost space and workforce availability.	• Constructing industrial/flex space at the ASH campus would serve the needs of businesses requiring smaller sized buildings near the site. • Additional industrial space would also provide sites for businesses relocating to the region from the New York-New Jersey metropolitan area.

Industrial Space Demand

Methodology

Potential industrial space demand is focused on the amount of industrial/flex space available and the amount of industrial/flex space in demand.

Since substantial amounts of industrial warehouse distribution facilities have been constructed in the Lehigh Valley, each requiring sizable amounts of land and access to limited access highways, it was determined that warehouse space is not compatible with the ASH campus. Therefore, industrial warehouse space is referenced for context, but not included in the calculation of industrial space demand.

Further, heavy manufacturing is not a candidate at the ASH campus due to the site's location in a residential neighborhood. Heavy manufacturing uses were not included in calculating industrial space demand.

The following methodology was used to quantify potential unmet industrial/flex space demand and the likelihood the ASH campus could capture unmet demand. For purposes of this analysis, industrial/flex space includes light manufacturing, research and development manufacturing/facilities, industrial showrooms, and data centers.

Document the amount of industrial/flex space available in the Lehigh Valley

CoStar data was used to assess the existing amount of industrial space under construction, proposed, and available for sale or lease in the Lehigh Valley submarket. The location of industrial/flex space available in the study area (Allentown and Bethlehem) was identified to determine localized space availability.

Estimate the number of new workers

PA Center for Workforce Information & Analysis long-term industry employment projections (2016 – 2026) were used to identify the number of new workers in growing industrial sectors, subtracting those employed in the Transportation & Warehousing industries and those employed in heavy manufacturing industries.

Calculate future industrial/flex space demand

An employee space requirement of 469 SF/worker was used to estimate the total new flex space demand for new workers estimated. In addition, GDP data was analyzed to determine the level of growth in manufacturing output that could likely be attributed to the study area.

Assess industrial/flex space availability versus demand

The amount of flex space available in the Lehigh Valley was compared to future demand driven by new workers to determine the potential demand for new space. Study area level data was identified, as available. Qualitative information from stakeholder outreach was used to supplement data analysis findings.

Available Industrial Space

According to CoStar data for the Lehigh Valley submarket, 4,572,409 SF of industrial space is under construction with 37,717 SF located in the study area, in Bethlehem. An additional 7,181,075 SF is proposed with over 2.4 MSF proposed in the study area. Subtracting out warehouse distribution space, 419,000 SF of industrial/flex space is under construction and 173,100 SF is proposed. None of the space is located within the study area.

Existing industrial property for sale totals 560,115 SF through 17 properties and approximately 7.7 MSF of industrial space available for lease through 97 properties. Subtracting warehouse distribution space, 294,413 SF of industrial/flex space is available for sale or lease in the Lehigh Valley with nearly 77% located in the study area. Annual average lease rates are close to $10.00/SF. [13]

[13] *For lease rate data presented as a range or an estimate, the higher rate was selected to determine average lease rate per square foot per year.*

Exhibit 34: Industrial/Flex Space Available for Sale and Lease in the Lehigh Valley

	Properties	Building SF	Building SF (Study Area)	Average Rent/SF/Yr
Sale	2	39,106	39,106	$9.98
Lease	19	255,307	186,857	$9.83
Total	**21**	**294,413**	**225,963**	

Source: CoStar (March 2020), Michael Baker International

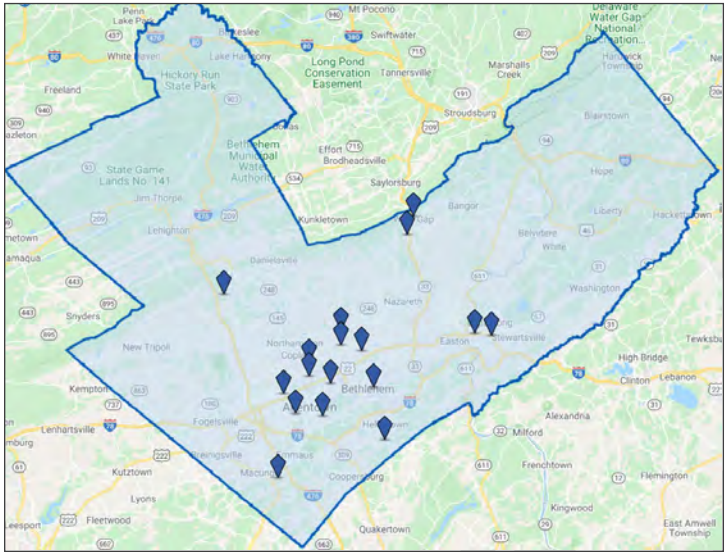
A total of 886,513 SF industrial/flex space is available or will soon come onto the market in the Lehigh Valley. Of this amount, 225,963 SF is in the study area of Allentown and Bethlehem. The available industrial/flex supply is relatively new with only 6 of 21 properties for sale or lease constructed prior to 1980.

New Industrial/Flex Space Demand

The PA Center for Workforce Information & Analysis prepares 10-year, long-term industry employment projections for all industries in Pennsylvania. Long-term industry projections are prepared for the state, workforce development areas (WDAs), and metropolitan statistical areas (MSAs). The Lehigh Valley WDA is comprised of Lehigh and Northampton counties. WDA data was selected for this analysis as the Lehigh Valley WDA includes the same geographic area as the Lehigh Valley real estate submarket.

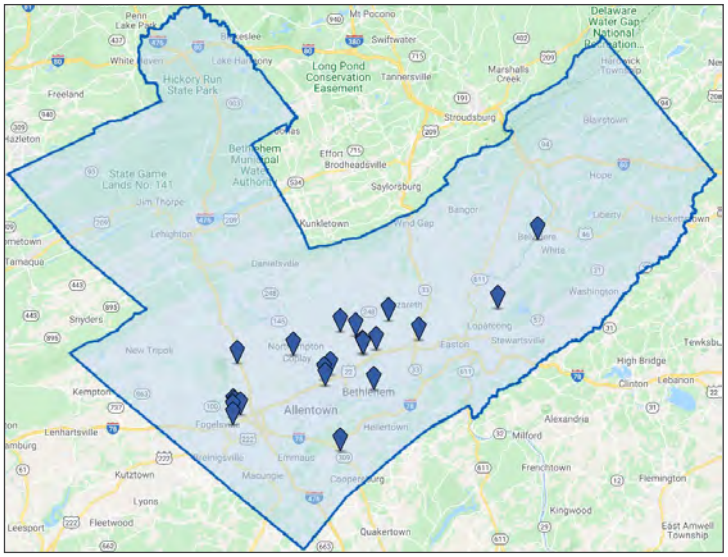
Employees working in industrial sectors were identified based on the Lehigh Valley WDA long-term industry employment projections for 2016 – 2026. The Transportation & Warehousing sector was removed from this analysis, as the ASH campus is not a viable location for the warehouse distribution industry.

Exhibit 35: Industrial/Flex Space Available for Sale



Source: CoStar

Exhibit 36: Industrial/Flex Space Available for Lease



Source: CoStar

Industries analyzed included those in the Manufacturing sector that would likely require industrial/flex space. Light industrial buildings are typically used for the assembling, finishing, packaging, and repairing of materials. Space size requirements for light industrial buildings vary. Currently, the size of small-footprint manufacturing space required by companies working with LVEDC averages 42,000 SF.

A flex building typically houses research and development facilities, data centers, and showrooms.

- **Research & Development** – Research and development (R&D) space is the first stage in developing new products; used to test and refine new products. Pharmaceutical and software/ technology companies tend to occupy R&D space and space requirements vary. Currently, the average space required for R&D companies working with LVEDC is 30,000 SF.
- **Data Centers** - Also known as Switching Center, Cyber Center, and Web Hosting Facility, this type of flex building is used exclusively to house telecommunications equipment for outside companies. Data centers have floors that can handle heavy loads, extremely heavy power to run large amounts of electrical equipment, backup generators, and air conditioners, and have very little need for office space. Up to 200 Watts of power/SF (residential properties require 5 to 7 Watts/SF) and proximity to fiber optic lines are also required. Verizon provides fiber in zip code 18109, the location of ASH campus. Building size ranges from 130,000 SF to 150,000 SF.
- **Showroom** - A building where merchandise is exhibited for sale or where samples are displayed. Showroom buildings could include up to 30% office space and have clear ceiling heights, from 14 feet and up. which may include office with up to 50% site coverage and office areas up to 30%. Building size ranges from 25,000 SF to 150,000 SF.

In calculating new jobs, it is important to note that the manufacturing sector is projected to shed 700 net jobs by 2026. Apparel Manufacturing is projected to lose 530 jobs alone. Therefore, in order to demonstrate future space demand only those industries in the manufacturing sector which are projected to gain new jobs were analyzed. In addition, industries identified as heavy manufacturers were not analyzed as heavy manufacturing is not a suitable use for the site considering its location in a residential neighborhood.

The estimated amount of space demand was derived by identifying industries employing workers requiring industrial/flex space and applying long term WDA employment projections for each industry. Manufacturing sector industries projected to lose jobs and heavy manufacturing industries were subtracted from the calculation. Using industry projections, a total of 600 jobs are projected. Applying an industrial space standard of 469 SF/employee per BOMA, a total demand of 281,400 SF of flex space is estimated.[14]

In summary by 2026, industrial/flex space demand (excluding industrial warehouse) to house 600 new workers is estimated at 281,400 SF.

Exhibit 37: New Industrial/Flex Space Demand by Jobs (2026)

Industry	New Jobs	New Space Demand (SF)
Machine Shops & Threaded Products	40	18,760
Architectural & Structural Metals	30	14,070
Beverage Manufacturing	30	14,070
Office Furniture & Fixtures Mfg	30	14,070
Other Food Manufacturing	10	4,690
Other Fabricated Metal Product Mfg	10	4,690
Merchant Wholesalers, Durable Goods	260	121,940
Scientific Research & Development Svc	120	56,280
Data Processing & Related Services	70	32,830
TOTAL INDUSTRIAL/FLEX	**600**	**281,400**

Source: PA CWIA, Lehigh Valley WDA 2016-2026 Long-Term Industry Employment Projections; Michael Baker International

[14] *BOMA International, 2018 Industrial Experience Exchange Report.*

Assessment

While an estimated 821,513 SF of industrial/flex space is available, under construction, or proposed, and the projected demand is less at 281,400, no industrial/flex space is under construction or proposed in the study area and several properties were constructed prior to 1980. There is opportunity to construct industrial/flex space to meet the demand documented by recent LVEDC economic development projects and identified by stakeholders.

Calculating space demand by employee provides an estimation of space requirements, but it does not consider the overall growth in the Lehigh Valley's GDP. While some manufacturing industries in the Lehigh Valley have reported job losses, manufacturing remains strong is the second highest employing industry in the Lehigh Valley behind health care.[15] The growth in manufacturing output has been significant with the manufacturing sector comprising $7.3 Billion, nearly 18%, of the Lehigh Valley's economic output. Durable goods manufacturing increased nearly 10% between 2015 and 2018, indicative of a strong manufacturing sector.[16] As the economic output from the Lehigh Valley's manufacturing sector increases, the ASH campus provides a potential location for site manufacturers seeking industrial/flex space.

Key Findings

A limited amount of industrial/flex space is available in the study area

With an estimated 19.5 MSF of industrial space available, under construction, or proposed in the Lehigh Valley, only 886,513 SF of industrial/flex space is available. Of this amount just 225,963 SF is available in the study area.

Continued growth in industrial GDP signals increasing industrial space needs

The growth in manufacturing output has been significant with the manufacturing sector comprising $7.3 Billion, nearly 18%, of the Lehigh Valley's economic output. Durable goods manufacturing increased nearly 10% between 2015 and 2018, indicative of a strong manufacturing sector. With the region's manufacturing economic output growing, industrial/flex space is needed to keep pace with demand. the ASH campus provides a potential location for site manufacturers seeking industrial/flex space.

The demand for industrial/flex space is well-documented in the study area

There is documented demand for industrial/flex space in the study area based on recent LVEDC economic development projects, CoStar data, stakeholder discussions, and Allentown's re-industrialization strategy. While the regional supply of industrial/flex space (886,513 SF) exceeds calculated demand (281,400 SF), constructing industrial/flex space 80,000 SF in size or less would help develop an inventory to meet current and future demand in the study area. The ASH campus provides an opportunity to construct new, modern industrial/flex space to help replenish older industrial building stock. Recent industrial re-zoning in the City of Allentown also supports increased industrial/flex space demand. Further, as industrial businesses from the New York-New Jersey metropolitan area continue to seek locations in the Lehigh Valley due to lower cost space and workforce availability, finding suitable locations in the study area is necessary to meet ongoing demand.

[15] *LVEDC, Commercial Real Estate Report, Issue #019, 3rd Quarter 2019.*
[16] *U.S. Department of Commerce, Bureau of Economic Analysis, CAGDP2 GDP by County and Metropolitan area.*

SECTION 7: OFFICE MARKET ANALYSIS

Key Market Indicators

The office market analysis began with an overview of the Lehigh Valley market with data provided by CoStar. Key terms for the industrial and office real estate analysis are included in Appendix A. The data was then supplemented with localized findings obtained from local and regional real estate and economic development professionals. Office market trends were summarized with key findings linked to potential market receptiveness at the ASH campus. Further analysis was conducted to quantify potential unmet office space demand and the likelihood the ASHs could capture some of the demand.

Exhibit 38: Key Office Indicators for the Lehigh Valley Market

12 Mo Deliveries in SF	12 Mo Net Absorption in SF	Vacancy Rate	12 Mo Rent Growth
296 K	(448 K)	8.0%	0.3%

Source: CoStar (January 2020)

KEY INDICATORS

Current Quarter	RBA	Vacancy Rate	Market Rent	Availability Rate	Net Absorption SF	Deliveries SF	Under Construction
4 & 5 Star	4,257,478	10.7%	$25.3	10.5%	44,722	0	762,000
3 Star	14,480,557	9.2%	$19.09	11.1%	(2,333)	0	246,600
1 & 2 Star	10,671,746	5.3%	$17.67	6.1%	41,570	0	0
Market	**29,409,781**	**8.0%**	**$19.57**	**9.2%**	**83,959**	**0**	**1,008,600**

Annual Trends	12 Month	Historical Average	Forecast Average	Peak	When	Trough	When
Vacancy Change (YOY)	0.4%	8.5%	7.7%	11.0%	2004 Q2	3.5%	1997 Q3
Net Absorption SF	(448K)	220,334	385,850	1,894,436	2006 Q4	(804,644)	2019 Q3
Deliveries SF	296 K	333,809	438,400	1,288,398	2006 Q4	0	2013 Q1
Rent Growth	0.3%	1.1%	0.1%	7.3%	2001 Q1	-7.2%	2010 Q2
Sales Volume	$84.1 M	$56.3M	N/A	$206.2M	2008 Q3	$0	2005 Q3

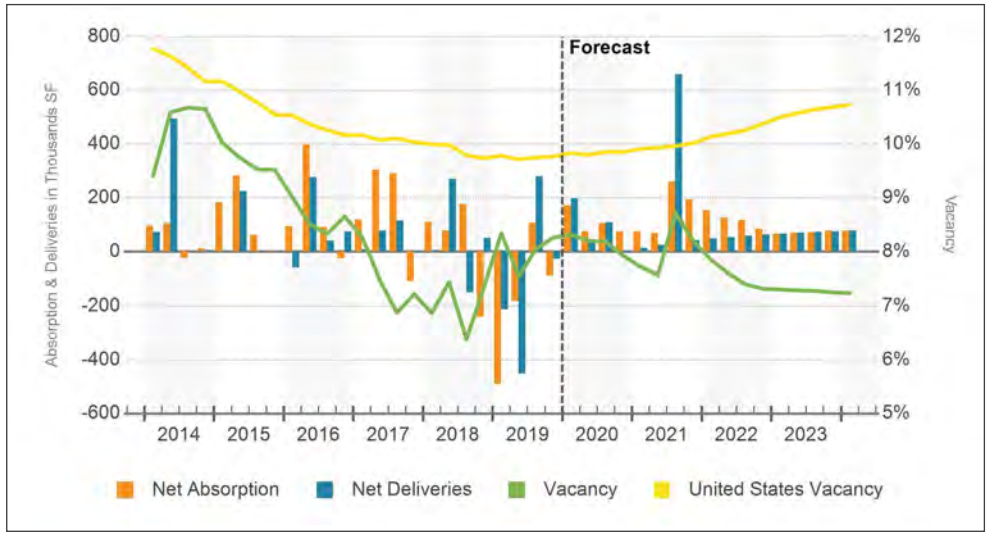
Source: CoStar (January 2020)

Leasing

Vacancy and availability trends reflect that office market conditions are tight throughout most areas of the Lehigh Valley. The current vacancy rate of 8.0% is below the U.S. average and has only been this low once in the past 15 years. Since the beginning of 2015, net absorption has averaged about 500,000 SF annually which is almost double annual supply growth of 280,000 SF.

The incentives discussed above have helped to helped catalyze more than 1 MSF of office development since 2014, anchored by big named firms such as Morgan Stanley and Merrill Lynch. The impact of the downtown incentives is leading to the increase in office vacancy rates around other portions of the Lehigh Valley, however. According to CoStar, the vacancy rate for properties over 50,000 SF in size is over 15% in some areas along I-78 south of downtown Allentown.

Exhibit 39: Lehigh Valley Office Net Absorption, Net Deliveries & Vacancy



Source: CoStar (January 2020)

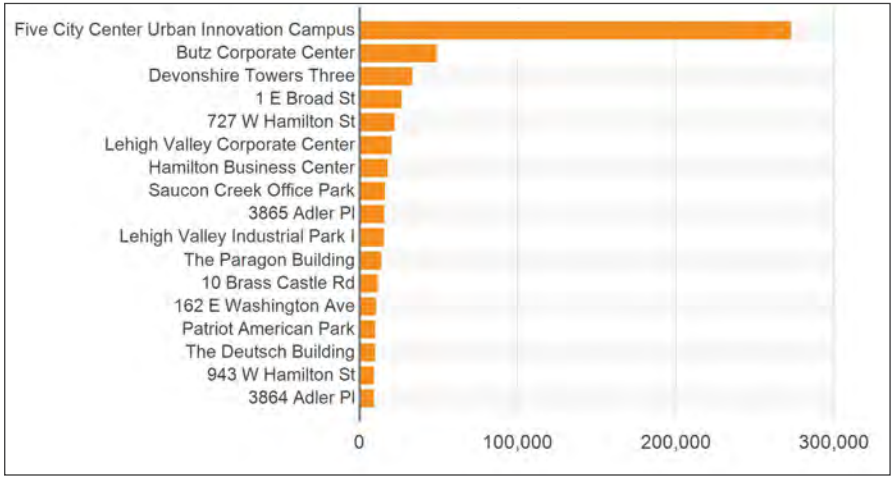
Absorption is taking place throughout the Lehigh Valley, but sizable amounts are occurring in downtown Allentown and Bethlehem. The 295,000 SF Five City Center building in downtown Allentown absorbed 272,700 SF of office space in 2019, when ADP relocated from Iron Run Corporate Center in Upper Macungie Township. Beyond Allentown, 1 East Broad Street in downtown Bethlehem absorbed 26,570 SF of office.

Review of several office leases demonstrates availability of smaller sized office spaces, less than 10,000 SF in size. Of the 189 properties available for lease, 124 are less than 10,000 SF in size.

Rent

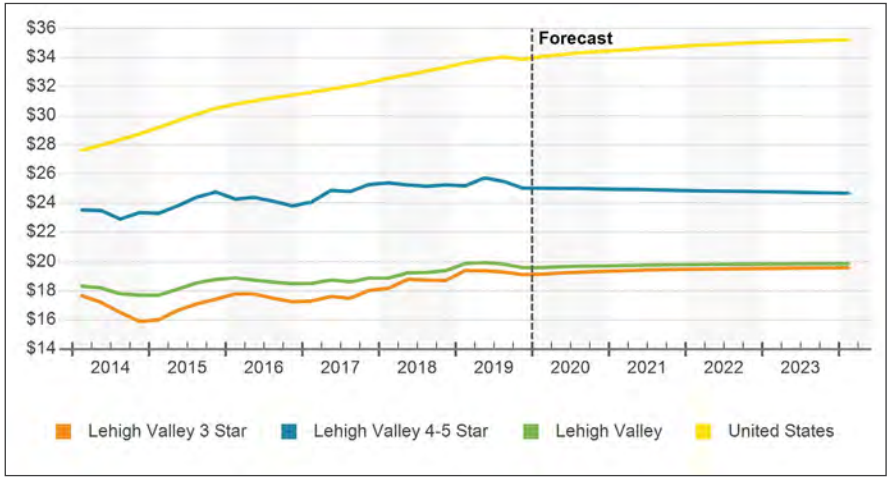
Over the past three years, rent has grown 1.0% on average annually. Year-over-year rent growth is 0.3% with average space leasing for $19.60/SF. Among properties over 80,000 SF, some of the highest rents listed on CoStar range from $21.00/SF–$24.00/SF plus electricity. These properties are typically found in newer buildings throughout the Lehigh Valley market, particularly built after 1990 such as Crown Pointe Corporate Center in Bethlehem and Roma Corporate Center in Allentown. Local real estate brokers report that office space near the ASH campus leases for around $18.00 SF, with lease rates of $13.00/SF - $14.00/SF, triple net also identified.

Exhibit 40: Lehigh Valley Absorption in Select Buildings (2019)



Source: CoStar (January 2020)

Exhibit 41: Lehigh Valley Office Rent Per SF



Source: CoStar (January 2020)

Construction and Under Construction

Since office development began to increase in 2014, the Lehigh Valley's office inventory has grown by about 1% (or 250,000 SF) per year, with larger new construction projects concentrated in Center City Allentown, due in large part to economic incentives. Approximately 1.8 million SF of office space has been delivered since 2010, and 92% of it is occupied. There is just over 1.1 MSF of office space under construction or proposed.

Competition with Downtown Office Space

Community and economic development professionals note that constructing large amounts of office space at the ASH campus would not be attractive for current office real estate developers and their tenants. It would also compete with downtown revitalization efforts. The site is not viewed as a viable corporate location for office space, particularly for multi-national, traded companies. Rather than large regional office spaces, the site lends itself to smaller office inventory that could serve needs of the surrounding community.

It was reported that office space is typically not sought in the East Allentown area. However, when tenants are seeking locations, the amount of space needed typically ranges between 2,500 SF – 5,000 SF. Excluding office leases over 100,000 SF, the average size for an office lease in the Lehigh Valley was 8,334 SF in 2019.

Local real estate brokers report that office space near the ASH campus leases for approximately $18.00/SF triple net with lease rates of $13.00/SF - $14.00/SF triple net also identified. The average space in the Lehigh Valley leases for close to $19.60/SF.

The medical office market was identified as a potential need in the Lehigh Valley, and near the ASH campus. Stakeholders report that there may be opportunity for small medical office space to support the community. As reported by LVEDC in 2018, 100% of office space added in the Lehigh Valley in 2017 was medical office space, and of the total 26.5 million SF of office space in the Lehigh Valley, 3.4 million SF (12.8%) was medical.[17] From an occupation perspective, Health Care & Social Assistance employed 63,526 in 2019.

From a community health care perspective, the closest urgent care health center is approximately 2 miles from the site (Airport Road EmergiCenter).

[17] *LVEDC, Commercial Real Estate Report for the Office & Industrial Markets Issue #013, 1st Quarter 2018.*

Office Market Potential

Findings	Data	Site Analysis
State and federal tax incentives in Allentown and Bethlehem have attracted office growth and revitalization in each city's downtown	• Approximately 1.8 MSF of office space has been delivered in the Lehigh Valley market since 2010, and 92% is occupied. There is just over 1 MSF under construction or proposed. • Absorption is taking place throughout the Lehigh Valley, with sizable amounts occurring in downtown Allentown. • Current office vacancy of 8% is below the national average and has not been this low over the past 15 years. • Since the start of 2015, net absorption has averaged about 500,000 SF annually, which is close to double annual supply growth of 280,000 SF. • In Downtown Allentown, 272,700 SF of space was absorbed in one building in 2019. • Allentown's NIZ is a 128-acre specialty tax zone in Downtown Allentown. • Businesses locating in the NIZ may potentially offset lease rates up to 30% - 40% • Additional tax incentive programs operating in Allentown and Bethlehem include state level KOZs, CRIZ, NIZ, and federal QOZs.	• The office market in the Lehigh Valley is active with recent large-scale corporate office development concentrated in downtown Allentown. • ASH campus would not be a candidate to site large corporate office development.
Office development which would compete with revitalization in downtown Allentown or Bethlehem would detract from revitalization occurring in each city's central business district	• Both Allentown and Bethlehem have active revitalization strategies in their central business districts. • Each city has added amenities such as retail, restaurants, and residential to meet needs of office employees and residents. • Community and economic development professionals note that large amounts of office space at the ASH campus would compete with downtown revitalization efforts.	• Developing large scale office space at the ASH campus would compete with downtown revitalization efforts and should not be encouraged.
The majority of office leases in the Lehigh Valley are for smaller spaces	• Excluding office leases over 100,000 SF, the average size for an office lease in the Lehigh Valley is 8,334 SF • Local real estate brokers report typical space requests near the ASH campus between 2,500 SF – 5,000 SF	• As the ASH campus is not a candidate for large scale office development, it could fill the need for small sized office users requiring 8,000 SF or less.
Medical office space is growing in the Lehigh Valley	• 100% of office space inventory added in 2017 was medical office space • 12.8% of the Lehigh Valley's office space in 2017 was medical office. • Stakeholders report the need for medical office space near the ASH campus. • Health Care is a Lehigh Valley Target Industry Sector	• The ASH campus could provide office space to serve the Lehigh Valley's Health Care target industry sector.

Office Space Demand

Methodology

The following methodology was used to quantify potential unmet office space demand and the likelihood the ASH campus could capture unmet demand.

Document the amount of office space available in the Lehigh Valley

CoStar data was used to assess the existing amount of office space under construction, proposed, and available for sale or lease in the Lehigh Valley submarket. The location of space constructed in the study area (Allentown and Bethlehem) was also identified.

Estimate the number of new office workers in the Lehigh Valley

PA Center for Workforce Information & Analysis long-term industry employment projections (2016 – 2026) were used to identify the number of new workers added to each industry. Applying a percentage of workers by industry that were assumed to work in an office setting, the number of new office workers was estimated.

Calculate future office space demand for new office workers

An office employee space requirement of 158 SF was used to estimate the total office space demand for the number of new office workers estimated.

Assess office space availability versus office space demand

The amount of office space available in the Lehigh Valley was compared to future office demand driven by new workers to determine if new office space is needed. Qualitative information from stakeholder outreach was used to supplement data analysis findings.

Available Office Space

Medical office space was noted as a need based on industry projections and stakeholder observations; therefore, available medical office space was identified.

According to CoStar data for the Lehigh Valley, 1,134,504 MSF of office properties are under construction or proposed with 925,259 SF located in the study area (Allentown and Bethlehem). None of the space was specifically identified as medical office.

There is approximately 170,570 SF of office space available for sale with average annual rent of $7.76/SF, approximately 70% is in the study area.[18] Close to 60% of total office space available is medical office. Over 2.3 MSF of office space available for lease through 189 properties. Because there were so many properties, the amount located in the study area was not determined. A total of 45 medical properties are available for lease totaling just over 400, 000 SF, with nearly 70% in the study area.

A total of 3.6 MSF of office space is available or will soon come onto the Lehigh Valley market. Of this amount, just over 1 MSF is in the study area. Currently 512,586 SF of medical office space is available for sale or lease with 343,895 SF in the study area.

Exhibit 42: Office Space Available for Sale and Lease in the Lehigh Valley

	Properties	Building SF for Sale	Building SF (Study Area)	Average Rent/SF/Yr
Total Office Space for Sale	15	170,570	118,572	$7.76
Medical Office Space for Sale	7	100,319	53,520	$8.68
Total Office Space for Lease	189	2,336,675	N/A	$19.60
Medical Office Space for Lease	45	412,267	290,375	$17.33

Source: CoStar (March 2020), Michael Baker International

[18] *For lease rate data presented as a range or an estimate, the higher rate was selected to determine average lease rate per square foot per year.*

New Office Space Demand

The PA Center for Workforce Information & Analysis prepares 10-year, long-term industry employment projections for all industries in Pennsylvania. Long-term industry projections are prepared for the state, workforce development areas (WDAs), and metropolitan statistical areas (MSAs). The Lehigh Valley WDA is comprised of Lehigh and Northampton counties. WDA data was selected for this analysis as the Lehigh Valley WDA includes the same geographic area as the Lehigh Valley real estate submarket.

Employees for each industry sector were identified based on the Lehigh Valley WDA long-term industry employment projections for 2016 – 2026. The data shows that 17,740 net new jobs will be added by 2026. To determine what percentage of new workers will be performing their work from office space, U.S. Department of Labor, U.S. Bureau of Labor Statistics (Workforce Statistics, 2018) data was reviewed. The percentage of occupations in industry sectors that typically work in an office setting was derived. This percentage was applied to total new jobs in those industry sectors typically employing office workers to calculate new office workers. Of the 17,740 net new jobs added by 2026, 12,570 are estimated to be in industry sectors employing offices workers and 5,784 of those workers are estimated to be working from an office space.

An office employee space requirement of 158 SF was used to estimate the total office space demand for the number of new office workers estimated. A total of 158 SF was identified in a 2018 Cushman & Wakefield as office space employee requirements for the Philadelphia market.[19] By 2026 an estimated 913,939 SF of new office space will be needed to house 5,784 net new office workers.

Demand for new office space should also consider the type of office space required by various industry sectors. For example, workers in the Health Care & Social Assistance sector, the sector with the highest amount of estimated office jobs in the Lehigh Valley, typically require medical office space. Professional office space would suit the needs of those working in the Professional & Technical Services and Finance & Insurance sectors. Different office types were considered and compared to Lehigh Valley's target industry sectors.

Exhibit 43: Net New Office Space Demand (2026)

Sector	New Jobs	New Office Jobs	New Office Space Demand (SF)
Health Care & Social Assistance	5,910	3,199	505,409
Accommodation & Food Services	2,220	73	11,470
Administrative & Waste Services	1,940	172	27,158
Educational Services	1,210	902	142,502
Professional & Technical Services	1,010	1,010	159,580
Management of Companies & Enterprises	320	320	50,560
Real Estate & Rental & Leasing	140	140	22,120
Finance & Insurance	100	100	15,800
Information	-280	-194	-30,666
Manufacturing	-700	-131	-20,660
	12,570	**5,784**	**913,939**

Source: PA CWIA, Lehigh Valley WDA 2016-2026 Long-Term Industry Employment Projections; U.S. Bureau of Labor Statistics, Workforce Statistics (2018); Michael Baker International

There will be an estimated new demand of 505,409 SF in medical office space required to meet the needs of the Health Care & Social Assistance sector (Health Care target industry sector). Professional office space demand of 254,558 exists to meet the needs of the Professional & Technical Services; Finance & Insurance; Administrative & Waste Services; Management of Companies & Enterprises; Real Estate & Rental & Leasing; and Information sectors (High-Value Business Services target industry sector).

The ASH campus could potentially accommodate some of the new office space demand (estimated at 759,967 SF) required by the Health Care, High-Value Business Services, and Life Science Research & Manufacturing target industry sectors. However, with over 3.6 MSF SF of office space is either under construction, proposed, or available for sale or lease, the supply exceeds the estimated demand for space.

[19] *Cushman & Wakefield, Space Matters: Key office trends and metrics for U.S. occupiers. 2018*

While the demand for office space is met, the ASH campus could still fill the reported need for medical office space within the study area. The closest community health center is approximately 2 miles from the site.

Key Findings

Over 3.6 MSF of office space is available, under construction, or proposed in the Lehigh Valley

An estimated 2.3 MSF of office space, including 512,586 SF of medical office space is available for sale or lease according to CoStar. Currently, 1.1 MSF of office space is under construction or proposed, with 925,259 SF in the study area (Allentown and Bethlehem). No medical office space is under construction.

Net new office workers are projected at 5,784

Employment growth projections by PA L&I Center for Workforce Information and Analysis indicate 17,740 net new jobs will be added to the Lehigh Valley by 2026. The percentage of these new employees working in an office is estimated at 5,784. Of those employees, 3,199 are estimated to be employed in the Health Care & Social Assistance industry, requiring medical office space.

By 2026 net new office demand is estimated at over 913K SF, with 759,967 SF of demand in Target Industry Sectors

Applying an average office space of 158 SF/worker per a 2018 Cushman & Wakefield study, net new office space demand in the Leigh Valley is estimated at 913,939 SF. This includes 505,409 SF of medical office space to accommodate workers from the Health Care target industry sector and 254,558 SF of professional office space to accommodate the High-Value Business Services target industry sector.

Medical office space is needed to accommodate estimated demand

While over 3.6 MSF of office space available for sale, lease, under construction or proposed in the Lehigh Valley, new office space demand is met. However, the supply of medical office space available for sale or lease is 512,586 SF, slightly higher than projected demand of 505,409 SF. No medical office space is proposed or under construction, signaling an opportunity to fill the reported demand for medical office space within the study area.

SECTION 8: RETAIL MARKET ANALYSIS

Overview

To gain a clear understanding of which retail uses could potentially be attracted to the ASH campus, a retail gap analysis was performed. A retail gap analysis is used to understand the potential for new retail stores and restaurants in a community. The analysis compares the supply, represented by the number of sales to customers, and demand, represented by consumer spending. The data can show a "leakage" (residents leave the community for their shopping needs) and a "surplus" (stores within an area are drawing customers from outside the community to shop).

The market area for the retail gap analysis was conducted at the 15-minute drive time radius from the ASH campus. A 15-minute drive time was selected to reflect the site's distance from a major highway (over 2.5 miles from US 22) and transportation access from a neighborhood scale street network.

The following exhibits show industry groups exhibiting retail leakage (residents leave the study area to shop elsewhere) and retail surplus (those sectors that draw outside customers into the neighborhood for specific retail). Data is presented for the year 2019.

A few subgroups within each industry group (represented by 4-digit NAICS) present retail opportunity. In most cases the main industry group (3-digit NAICS) presents a retail opportunity; however, in some cases the main industry group does not. For example, Food & Beverage Stores reflect an overall retail market opportunity with a retail leakage of over $25 million. Within that industry group, Grocery Stores are a greater retail market opportunity with a retail leakage of over $62 million. The subindustry groups within the Food & Beverage Stores sector (Specialty Food Stores and Beer, Wine & Liquor Stores); do not demonstrate a retail leakage. To streamline the data presented, retail surplus is shown for 3-digit NAICS only.

Exhibit 44: Retail Market Study Area

Source: Esri Business Analyst; Michael Baker International

Exhibit 45: Market Area Leakage (Market Opportunity)

	NAICS	Demand	Supply	Retail Gap
Automobile Dealers	4411	$350,184,302	$230,158,991	$120,025,311
Motor Vehicle & Parts Dealers	441	$429,515,579	$322,237,887	$107,277,692
Grocery Stores	4451	$357,157,167	$294,511,432	$62,645,735
Gasoline Stations	447, 4471	$205,707,400	$165,105,664	$40,601,736
Food & Beverage Stores	445	$392,989,734	$367,872,561	$25,117,173
Other Motor Vehicle Dealers	4412	$44,219,095	$25,096,010	$19,123,085
Other Miscellaneous Store Retailers	4539	$57,988,623	$44,148,559	$13,840,064
Miscellaneous Store Retailers	453	$91,323,484	$83,822,330	$7,501,154
Lawn & Garden Equip & Supply Stores	4442	$9,913,552	$3,372,768	$6,540,784
Special Food Services	7223	$5,182,606	$2,553,965	$2,628,641
Office Supplies, Stationery & Gift Stores	4532	$20,764,334	$20,095,439	$668,895
Used Merchandise Stores	4533	$8,265,445	$8,250,150	$15,295

Source: Esri Business Analyst

Exhibit 46: Market Area Surplus

	NAICS	Demand	Supply	Retail Gap
Nonstore Retailers	454	$44,011,126	$473,929,779	-$429,918,653
Clothing & Clothing Accessories Stores	448	$120,766,638	$304,315,992	-$183,549,354
General Merchandise Stores	452	$316,519,093	$444,730,366	-$128,211,273
Health & Personal Care Stores	446	$128,328,465	$230,093,561	-$101,765,096
Food Services & Drinking Places	722	$218,731,536	$311,796,994	-$93,065,458
Sporting Goods, Hobby, Book & Music Stores	451	$61,063,103	$103,917,264	-$42,854,161
Furniture & Home Furnishings Stores	442	$73,515,496	$113,589,716	-$40,074,220
Electronics & Appliance Stores	443	$69,404,190	$73,265,633	-$3,861,443
Bldg Materials, Garden Equip. & Supply Stores	444	$126,077,561	$129,392,532	-$3,314,971

Source: ESRI Business Analyst. To streamline the data presented, retail surplus is shown for 3-digit NAICS only.

A few caveats should be considered when using retail data. The first is that area consumers may not spend what might be considered a typical amount on retail products. For example, residents in urban, walkable communities might spend less disposable income on automobiles than residents in suburban areas. Similarly, spending per square foot for retail in a given area may not match what is typical. Finally, consumers are likely more willing to drive longer distances to shop for some retail items. As an example, for higher priced consumer goods like appliances or automobiles, consumers might be more willing to shop in a larger trade area, rendering a local retailer not as important. Therefore, while there is a large dollar amount of leakage for automobile dealers and other motor vehicle dealers in the retail market area, establishing a new automotive dealer might not be successful due to competition with auto dealers in other communities. This is substantiated by the closure and relocation of the former Toyota dealership on Hanover Street near the ASH campus.

Retail Growth Potential

While leakage by retail store type has been identified, additional analysis was conducted to determine the overall viability of the market area to support additional retail establishments.

Certain retail store types were not included in this additional analysis due to a variety of factors such store types as having highly localized demand (i.e., gas stations), requiring more extensive analysis (i.e., hospitality, automobile dealers), or limited or no service to local customers (e.g., internet sales only, catering only, etc.). While data was available for the following retail subsectors, the subsectors were not included within this analysis:

- Automobile Dealers (NAICS 4411)
- Other Motor Vehicle Dealers (NAICS 4412)
- Gasoline Stations (NAICS 447, 4471)
- Non-Store Retailers (NAICS 454)
- Special Foodservices (NAICS 7223)

This analysis was completed by quantifying the dollar value of the gap for retail industry types with a leakage. Additional square feet of retail supported was determined by applying sales per square foot for each retail type for those retail types exhibiting a leakage. A median gross leasable area was then applied to each retail type to determine the number of additional retail establishments that could be potentially supported by the projected square footage.

While the 'Additional Establishments Supported' is a guide based on average retail store type size, there is considerable range in most retail store type categories. Therefore, greater emphasis should be placed upon additional square feet supported rather than number of establishments.

Based upon existing conditions, the market area can support approximately 154,270 SF of additional retail. Considering the average establishment size, average sales by establishment, and average sales per square foot for each retail store type, the trade area may be able to currently support 1 grocery store and several miscellaneous retail stores (examples: art supply store, collectors' items, trophy shop, flower shop).

Retail Market Potential

Overall, the market area surrounding the ASH campus, is well-served by current retail offerings. At a macro level Retail Trade and Food & Drink establishments show a surplus of nearly $850 million provided through 1,620 retail businesses. The large amount of retail offerings available in the market area is verified by regional real estate brokers. In their view, retail, particularly regional retail is not the best fit for the site as large amounts are in the market area.

The market area is estimated to support an additional 154,270 SF of retail store space. The viability of locating a portion of this square footage at the ASH campus should be considered in the overall context of potential industrial, office, and residential end uses contemplated. Service retail supporting the eventual end uses at the site would be in keeping with the character of the surrounding residential neighborhoods.

Neighborhood retail in the area leases between $15.00/SF - $18.00/SF with retail space leasing quickly according to regional real estate brokers.

Exhibit 47: Additional Retail Space Supported in the Market Area (2019)

	NAICS	Retail Gap	Additional SF Retail Supported	Additional Establishments Supported
Lawn & Garden Equip & Supply Stores	4442	$6,540,784	19,642	2.0
Grocery Stores	4451	$62,645,735	75,996	1.5
Office Supplies, Stationery & Gift Stores	4532	$668,895	1,635	0.1
Used Merchandise Stores	4533	$15,295	42	0.0
Other Miscellaneous Store Retailers	4539	$13,840,064	56,955	19.0
TOTAL			**154,270**	

Source: Esri Business Analyst; Michael Baker International

SECTION 9: HOUSING ANALYSIS

Multifamily Housing

The Lehigh Valley has reported strong population growth for over 20 years. With that national trend of urbanization, where the United States' metropolitan areas are continuing to grow at a much faster pace than rural areas, it is plausible that the study area will continue to grow in the long-term, given the Lehigh Valley's central location between the City of Philadelphia and New York City. The Lehigh Valley also boasts a lower cost of living than its metropolitan neighbors, particularly New Jersey, making it an attractive location.

In terms of the multi-family housing market, Lehigh Valley has been outperforming by the standards of central and northeastern Pennsylvania. Employment growth in the transportation and healthcare sectors, combined with state and local tax incentives to spur downtown Allentown's development, has helped support healthy apartment leasing. Newly delivered projects lease at a healthy pace, and investors from New York and across the mid-Atlantic chase mid-sized and large apartment communities which are trading at cap rates well above the national average. One of the market's newest properties, the 95-unit 4 Star Five 10 Flats began leasing units in January of 2019 and was close to being fully occupied by the end of the year. Of five properties delivered in 2018, only one has vacancies higher than 5%. Near the ASH project site, the Summit Ridge luxury apartments has a healthy 2.9 percent vacancy, demonstrating the demand for Allentown's multifamily housing market beyond the downtown. Summit Ridge has 204 units.

Methodology

For purposes of the housing analysis, a 15-minute drive time from the ASH campus is used as the primary market area. To estimate residential demand for the primary market area, this analysis utilizes two primary components:

- Estimated demand generated by household growth
- Estimated demand generated by lost inventory (e.g., replacement demand)

Household Growth

Demand for new housing units is driven by household growth within a primary market area. According to Esri Business Analyst 5-year household growth projections, the primary market area is estimated to gain an additional 1,411 households by 2024, or an annualized growth rate of 0.34%. Using the 2019-2024 annualized growth rate and projecting forward to 2029, households are projected to grow to 84,906 by 2029. This equates to a projected increase of 2,866 new households over the 10-year period. This study assumes that for each new household projected, there is a corresponding demand for one new housing unit in the primary market area.

Lost Inventory

In addition to estimating demand generated by household growth, additional demand is generated by the need to replace lost inventory. Each year, residential units are lost through demolition, natural disasters, conversion to non-residential uses, units falling into disrepair, and other reasons resulting in obsolescence. The U.S. Department of Housing and Urban Development (HUD) estimates lost inventory at the national level through its Components of Inventory Change (CINCH) data. Based on the most recent CINCH data set, the annual rate of loss is 0.59%.

Utilizing the projected number of occupied housing units present in each year (obtained through the household growth calculations), a total of 4,933 units in the study area will be lost between 2019 and 2029, or approximately 500 units per year.

Summary of Demand

The housing analysis calculations are shown below.

Exhibit 48: Primary Market Area Demand for Housing, 2019-2029

Year	# of Households Annualized Growth Estimated at 0.34%	Demand for New Residential Units Accumulated Demand from 2019 Base Year	Lost Inventory Estimated 0.59% of Units Lost Each Year	Total Demand Accumulated Demand plus Needed Replacement units
2019	82,040			
2020	82,322	282	486	768
2021	82,605	565	487	1,053
2022	82,890	850	489	1,339
2023	83,175	1,135	491	1,625
2024	83,461	1,421	492	1,913
2025	83,748	1,708	494	2,202
2026	84,036	1,996	496	2,492
2027	84,325	2,285	498	2,782
2028	84,615	2,575	499	3,074
2029	84,906	2,866	501	3,367

The analysis suggests a total of 2,202 new housing units will be needed by 2024 in the primary market area, or approximately 440 units per year. The 10-year projection estimates a total 3,367 new housing units will be needed by 2029, or approximately 337 units per year. The annual average increase of units is applied to create "conservative" and "high" demand scenarios, shown below.

Exhibit 49: Housing Demand Scenarios

	5 Year Estimated Housing Demand	Demand for New10 Year Estimated Housing Demand
High Demand Scenario: 5-year Annual Demand Scenario = 440 Units	2,202	4,404
Conservative Demand Scenario: 10-year Annual Demand Scenario = 337 Units	1,684	3,367

Capture Rate

To estimate demand capture rate, this analysis looks at two scenarios assuming 3% and 5% capture rate. As noted throughout the City's Comprehensive Plan, the ASH campus is a large property prime for redevelopment in a built-out urban area. There are not many competing sites of this magnitude in the City.

Utilizing the demand scenarios and a 3% and 5% capture rate for the ASH campus, the project site is estimated to have demand for between 51 and 110 units between 2019-2025 and between 101 and 220 units by 2029.

Exhibit 50: Capture Rate Assumption, 2025-2029

	Conservative Demand Scenario 2025 1,684 Units	High Demand Scenario 2025 2,202 Units	Conservative Demand Scenario 2029 3,367 Units	High Demand Scenario 2029 4,404 Units
3% Capture Rate	51	66	101	132
5% Capture Rate	84	110	168	220

Based on the capture rates, the project site could absorb up to 220 units by 2029. For purposes of the alternatives analysis, a capture rate of 3% of 2029 demand is used to estimate potential absorption of up to 101 units.

Senior Housing

An aging population is a trend occurring across the country as America's baby boomer generation reaches retirement age. At the national level, residents age 65 and over grew from 35.0 million in 2000 to 49.2 million in 2016, accounting for 12.4 percent and 15.2 percent of the total population, respectively . By 2030, all baby boomers will be older than age 65. This will expand the size of the older population so that 1 in every 5 residents will be retirement age.

With the aging of the baby boomer generation, it is estimated the country will need nearly 881,000 new senior housing units between now and 2040. Pennsylvania, ranked as the 8th oldest state in the nation, is positioned to capture a portion of this demand, especially in the populous northeast and southeastern portions of the state.

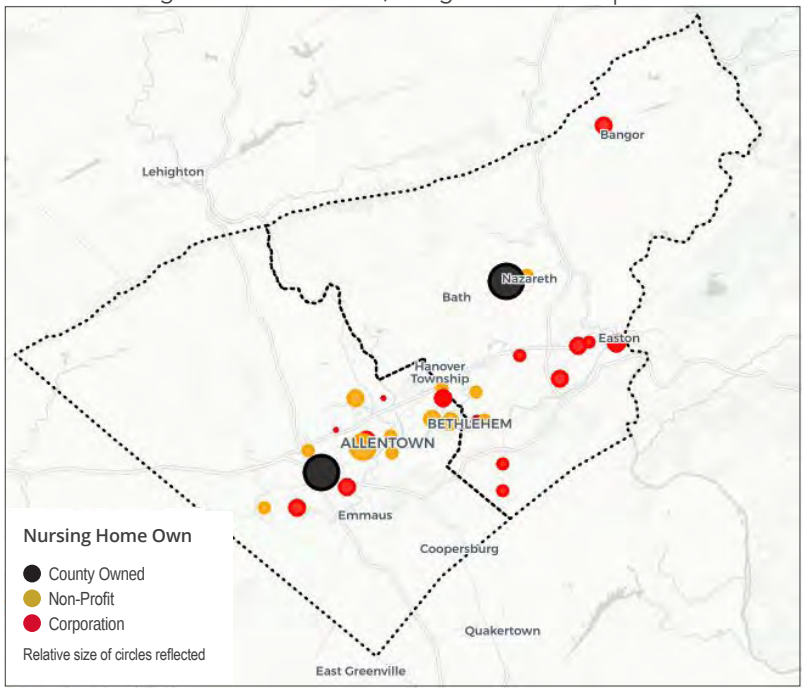
Based on Pennsylvania Department of Health Data, there are currently a total of 4,841 senior living beds in Lehigh and Northampton Counties, largely concentrated near the Cities of Allentown and Bethlehem. That map below shows the location and size of each.

Types of Senior Housing

There are five categories of senior living based on the level of care provided, including:

- Independent living
- Assisted living
- Memory care
- Long-term care
- Nursing care

Exhibit 51: Long-term Care Facilities, Lehigh and Northampton Counties



Continuing Care Retirement Communities (CCRC) represent a hybrid model, offering a community campus that features typically all five categories of care. The model enables seniors to age in place, beginning their tenure in an independent living apartment and then transiting to higher levels of care as needed. Interestingly, CCRC's are more common in Pennsylvania, being home to 15% of all CCRC facilities in the nation.

According to the Pennsylvania Bar Association in 2019, there were approximately 290 licensed CCRCs in the Commonwealth, an increase from the 230 operations reported in 2011. While new construction of CCRCs remains relatively slow nationally, the Philadelphia regional market has shown growth. It is also reported that independent living communities demonstrate stronger growth than its counterparts, which "report significant decreases both in the number of operations and number of residents in stand-alone skilled care and assisted living facilities".[20]

[20] *https://dickinsonlaw.psu.edu/sites/default/files/2019-10/PA-BAR-Pearson-Sarcone-Jan-2019_RevB.pdf*

The ASH campus fits the CCRC site selection criteria nicely, given the open space of the site, transit access to both Allentown and Bethlehem, and proximity to hospitals.

Methodology

For purposes of estimating the demand for senior housing, Lehigh County was utilized as the primary market area, given senior housing facilities serve a broader market (e.g., extending beyond a 15-minute drive time). To estimate senior housing demand for the primary market area, this analysis utilizes two primary components:

- Estimated demand generated by 75+ household growth, and
- Extrapolating the current ratio of 75+ citizens to current long-term care beds.

According to Esri Business Analyst 5-year population growth projections, the primary market area (Lehigh County) is estimated to gain an additional 1,978 age 75+ households by 2024, or an annualized growth rate of 3%. Using the 2019-2024 annualized growth rate and projecting forward to 2029, age 75+ households are projected to grow to 16,106 by 2029. This equates to a projected increase of 4,454 new households age 75+ over the 10-year period. Senior housing penetration rates vary. For purposes of this study, a 10% penetration rate is utilized. That is, 10% of the 75+ age households in Lehigh County will reside in local long-term care living facilities. Using this 10% penetration rate assumption, a total of 445 new beds will be needed.

As a comparison to present day data, currently there are 0.07 long-term care beds (2,104) for every Lehigh County resident age 75+ (30,061). If the ratio of beds to residents age 75+ stays constant, by 2029 there will be 2,909 long-term care beds, an increase of 805 beds.

Based on the above two analyses, this study estimates there is demand for between 445 and 805 long-term care beds in the County. Of the long-term care facilities located in Lehigh County, the average facility size is 124 beds. It is plausible the ASH project site could attract one new long-term care facility with approximately 124 beds.

Exhibit 52: Primary Market Area (Lehigh County) Demand for Long-term Care Beds, 2019-2029

Year	75+ Population Assumption: Annualized Growth Estimated at 3%	Number of Households Assumption: Average Household Size of 2.68 Persons	Accumulated Demand for New Residential Units	Total Demand Assumption: 10% Penetration Rate
2019	30,061	11,651		
2020	31,081	12,047	396	40
2021	32,136	12,456	805	80
2022	33,228	12,879	1,228	123
2023	34,356	13,316	1,665	166
2024	35,164	13,629	1,978	198
2025	36,358	14,092	2,441	244
2026	37,592	14,571	2,919	292
2027	38,868	15,065	3,414	341
2028	40,188	15,577	3,925	393
2029	41,552	16,106	4,454	445

SECTION 10: SUGGESTED COMMERCIAL END USES

The focus of this market study tested the receptiveness of the real estate market for the industrial, office, retail, and residential sectors. Stakeholder input and local media reports have identified a few additional end uses in the commercial real estate market. These end uses are briefly assessed in this section.

Commercial - Public School

The ASH campus was identified as a possible location for a new Allentown School District middle school.[21] A school is classified under the Educational Services industry sector according to NAICS.

According to local government officials, the location of a school at the ASH campus is no longer being considered by the Allentown School District.

Commercial - Regional Youth Sports Complex

Stakeholders identified receiving requests, approximately every two months, for a location to site a regional youth sports complex. Such facilities like Spooky Nook in Lancaster County are large indoor and outdoor venues providing real estate locations for the growing youth sports market and provide areas in which they are located additional conference space as well. While the ASH campus would likely not fit operator requirements to site such a facility, a cursory review of this type of facility was conducted.

These types of facilities are classified under the and Arts, Entertainment, and Recreation industry sector as Fitness and Recreational Sports Centers. They are closely aligned with the Accommodation and Food Services sector as they can help create demand for new and existing hotels and restaurants and would require workers primarily classified under the personal care & service occupations.

Local economic development professionals referenced the lack of jobs and tax revenues as compared to manufacturing establishments as a deterrent to locate such a facility in Allentown. While a regional youth sports complex' long-term sustainability to create jobs and generate tax revenues is hard to predict as such facilities of this scale are relatively new to the real estate market, they nonetheless create jobs and generate tax revenue. According to a 2017 economic impact study prepared for Spooky Nook's Lancaster County facility by Tourism Economics, revenue and off-site ancillary spending was estimated to result in 1,391 jobs (direct, indirect, and induced) and state and local tax revenue of $7 million.[22]

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[21] *The Morning Call. Possible sale of Allentown State Hospital in the works. October 23, 2017. Accessed 02/20/20 at: https://www.mcall.com/news/pennsylvania/capitol-ideas/mc-nws-allentown-state-hospital-browne-sale-20171023-story.html.*

[22] *Spooky Nook Sports. Accessed 02/20/20 at: https://www.spookynooksports.com/blog/manheim/spooky-nook-sees-record-numbers-in-first-half-of-2019.*

Parcel size and building requirements needed to locate such a complex have been drawn from Spooky Nook's Lancaster County facility. It is 700,000 SF in size and was a former industrial warehouse located on over 50 acres.

While job creation, revenue potential, and the ability to spark growth in nearby accommodation and dining establishments is documented, as of summer 2019 Spooky Nook employed 750 and has sparked development in hotels and restaurants, a significant limiting factor for such a facility at the ASH campus, and one that limits it from future consideration, is transportation.

- The facility is located directly adjacent to I-283, a prime location for warehouse and distribution.
- While parking analysis conducted as part of local land development review when the facility was opened recommended parking for 600 cars, during peak demand parking for 2,500 cars is required. [23]
- Attendance can reach as high as 20,000 per day.
- In 2017, 2018, and 2019 the number of annual visitors was over 1 million. In 2019, 1 million visitors were reached in July.[24]

While the ASH campus certainly has the acreage required to site a regional youth sports complex, it is limited by transportation and site access. Locating such a facility at the ASH campus would essentially be placing a warehouse distribution sized facility in an urban area along with significant parking space requirements. With the potential to generate well over 1 million visitors per year, it would also likely generate more traffic than tractor trailers serving such facilities in suburban locations throughout the Lehigh Valley.

[23] *Urban Land Institute, Technical Assistance Panel. Spooky Nook Corridor: Planning for a Sustainable Future. 2015.*
[24] *Spooky Nook Sports, Ibid.*

SECTION 11: REPORT CONCLUSION

The real estate market study was conducted to assess market receptivity for potential redevelopment end uses including retail, industrial, office, and housing at the Allentown State Hospital campus. Based on the analysis conducted the site would likely attract each real estate type at varying amounts.

Industrial

Industrial/Flex. Constructing small-footprint (80,000 SF or less) industrial/flex space would help alleviate the documented deficit in the Lehigh Valley and study area.

- The average industrial space leased in this size range over the past 12 months was 42,000 SF.
- The vacancy rate of small-footprint industrial/flex space is 3%, compared to an overall industrial vacancy rate of nearly 6%.
- An inventory of industrial space is a key business retention factor as nearly all businesses interviewed for Allentown's re-industrialization strategy noted expansion plans within 5 to 10 years.

Office

Large Corporate. Although, the office market in the Lehigh Valley is active with recent large-scale corporate office development concentrated in downtown Allentown and Bethlehem, the ASH campus would not be a candidate for large corporate office development due to competition and proximity of the two downtowns.

Health Care. The ASH campus could provide medical office space to serve the Lehigh Valley's Health Care target industry sector. The supply of medical office space available for sale or lease is 512,586 SF, slightly higher than projected demand of 505,409 SF. No medical office space is proposed or under construction, signaling an opportunity to fill the reported demand for medical office space.

Retail

Service Retail. The Market Analysis shows there is support for additional retail space. The viability of locating a portion of this square footage at the ASH campus should be considered in the overall context of potential industrial, office, and residential end uses contemplated. Service retail supporting the eventual end uses at the site would be in keeping with the character of the surrounding residential neighborhoods.

- The 15-minute drive time retail market area is estimated to support an additional 154,270 SF of retail store space.
- Neighborhood retail in the area leases between $15.00/SF - $18.00/SF with retail space leasing quickly according to regional real estate brokers.

Housing

The potential market for new housing in the area is strong for several reasons.

Vacancy rates are low. Vacancy rates have dropped indicating that not enough homes exist in the region.

Incomes are increasing. The median income in the area, according to block group Census data, is categorized as low-income, however, area incomes are expected to increase 13% by 2024, raising the income level to a more moderate classification. Although the census blocks surrounding the campus are currently low-income, redevelopment of the campus using a more integrated approach to residential development would begin to create a healthier mix of income levels in this area of Allentown.

Overabundance of Jobs. The projected increase in jobs is significant (example: 57% increase in Health Care jobs). Local studies indicate that employers are having trouble filling existing available positions creating a shortage of nearly 10,000 workers. If these job shortages are filled in the in the near future, this adds more support and need for additional housing in Allentown. Residential development on the Allentown State Hospital campus can help fill the housing gap Allentown is experiencing.

Mortgage rates are low. According to Greater Lehigh Valley Realtors Group, Dec. 2019, home seekers are entering the housing market at a time of historically low mortgage rates and a strong economy. Millennials face a very limited supply of existing homes available for sale, especially homes in the entry-level price range. In 2019 the median price a homebuyer expected to pay was $254,000 however one quarter of the total homebuyers were hoping to buy a home for under $150,000.

Current home sales, Realtor.com, range between $130,000 to $170,000. The median home sales price is $152,000 for a 3-bedroom single family selling. According data related to current housing needs, future residential development should include a variety of unit sizes particularly 3-bedroom units. It should be noted, a majority of the households living in the census blocks surrounding the project site are low median income and are considered cost burdened spending more than 30% of their income on housing costs.

Population Increase. There is a projected 7-8% rise in population and households within the 30-minute drive time area, this in combination with low vacancy rates also indicate there is and will be a low supply of available housing.

Strong Rental Market. Roughly 50% of the dwelling units in the project area are rental. The median rent in Allentown is $968.

Public Transportation. Hanover Avenue is located within a priority Enhanced Bus Service corridor that is projected to experience significant population growth through increased development densities that support transit.

Senior Population. Stakeholder interviews report there are waiting lists for senior housing with medical support. There is a current market and growth for the development of senior and mixed income housing in Bethlehem.

APPENDIX A: KEY REAL ESTATE MARKET ANALYSIS TERMS

Absorption Rate: The amount of real estate that will be leased or sold in a given period, typically one year. This does not include lease renewals, unless the renewal would result in an increase in occupied space, or pre-lease of non-existing space. For example, if the absorption rate is lower than the availability, then there will be an expected increase in vacant properties or a potential downward pressure on rents or sales prices.

Asking Rent: The rent that a landlord is asking, typically per square foot, for a property. This does not mean the asking rent represents the actual rent that would be paid.

Availability Rate: This is the percentage of property that is currently available for sale or lease on the market as a percentage of total inventory in the market. It is measured on the last day of each quarter or the current date of the current quarter. Low availability rates mean an extremely tight market and less choice for lessees or buyers. A high availability rate means more choice.

Cap Rate: The income rate of return for a property that divides the net operating income (the actual or anticipated rental income after operating expenses are deducted, but before debt service or other expenditures are deducted) by the sale price or value of the property. This is a way to compare investment returns on an annual basis similar to comparing different loans with an annual percentage rate. This is important to developers, investors, and landlords as it indicates potential profit.

Comparables: These are properties similar to the subject property or study area that can be compared to reach an estimate on the study area or subject property's market value. It is important that similar types of properties, with sales or leases within a reasonable time period (typically one to two years) and a proximate geographic area are studied to help determine potential rents or sales prices as these are recent indicators of what the market commands.

Deliveries: This is the amount of construction, typically in square feet, that was built during a period, typically one year.

Demolition: The deletion of available building stock in the market due to destruction of property, typically measured in one year.

Flex: A type of building that is capable of multiple uses, typically in a single facility, including office, research and development, retail sales, light manufacturing, and small warehousing and distribution space.

Inventory: The total amount, typically in square feet, of a particular structure type in the market at a given point in time.

Logistics: Industries that deal with the supply chain, including shipping, transport, warehousing and distribution.

Market Rent: This is the rent that a landlord would receive, typically per square foot, for a property (what the market would command). This differs from asking rent in that this is the actual negotiated rent, and not what is being asked.

Net Absorption: The change in square feet of occupied inventory over a specified period, including the addition or deletion of building stock during that period of time, typically one year. This also includes subtraction for properties that are vacated during the same period of time, such as a tenant moving out.

Price per Square Foot: Sale price divided by the rentable square feet of the building. This is used in properties for sale or sold as opposed to properties leased or for lease.

Pro forma: A financial statement that projects gross income, operating expenses, and net operating income for a future period for a specific property or development. A pro forma considers a specific building or development, construction costs, operations and maintenance, financing and debt, permitting, and expected income through lease or sale. It also considers a time period assumption for vacancy to full occupancy. A real estate market analysis can help inform inputs into a pro forma, such as expected rent, sales, and vacancy rates. The pro forma helps a developer or investor determine the performance of the potential investment, risk, and whether it is financially feasible.

RBA (Rentable Building Area): This is the actual square footage of a building that is available for rent. This includes all usable portions of the building and shared common spaces. This is like gross leasable area in retail estate market analysis.

Real Estate Market Analysis: The study of demand and supply of real estate including property and/or buildings. The demand consists of users or would be users of the property, and the supply consists of a mix of existing property, buildings and future buildings that will be coming onto the market soon. The market analysis provides a snapshot on what could potentially be built or leased. This serves as part of the cash flow analysis that developers and investors use when calculating their proformas (calculations of costs and profits for individual development).

Rent Growth: The change in actual rent per square foot within a given period, typically one year.

Risk: The potential that the return on an investment or loan will not be as high as expected.

Sales Volume: This is the total amount of dollars, in nominal value, of real estate sales in a given period, typically one year.

Specialized Industrial: Buildings typically built to house specific industry types that require highly customized environments such as specialized food manufacturing.

Tenant Improvements: Improvements made to the property either at the tenant's expense or made by the landlord as part of the lease agreement negotiation.

Under Construction: This is the amount, typically in square feet, of promised new inventory that is currently still in the construction phase. Construction phasing typically means that permits have been obtained and at least a foundation has been completed. For example, the mass grading of land with no structural construction is not considered "under construction."

Vacancy Rate: The amount of existing inventory by square feet of structure that is unoccupied and available for sale or lease.

[i] *https://www.census.gov/newsroom/press-releases/2017/cb17-100.html*
[ii] *https://seniorhousingnews.com/2019/10/07/nearly-1-million-new-senior-living-units-needed-by-2040/*