



TO: JUDY ROSS, ASSISTANT DIRECTOR, MINETA SAN JOSÉ INTERNATIONAL AIRPORT
FROM: LANDRUM & BROWN, INC.
DATE: FEBRUARY 19, 2019
RE: DOWNTOWN AIRSPACE AND DEVELOPMENT CAPACITY STUDY (PROJECT DADCS)
AIRPORT CASE STUDIES MEMORADUM

DRAFT WORK PRODUCT

Introduction

As part of the Downtown San José Airspace and Development Capacity Study (Project DADCS), three airport case studies were conducted to better understand how other airports and the local development community has worked together to resolve issues of airspace protection and their impacts on proposed developments surrounding the airport environment. As part of the case studies, Landrum & Brown conducted phone interview with staff from the following airports:

- Miami International Airport (MIA)
- Ronald Reagan Washington National Airport (DCA)
- Las Vegas McCarran International Airport (LAS) (later removed due to concerns from the Clark County Department of Aviation, the airport owner, regarding how the information could be used)

Based on the information received from the interviews, the following describes each airport's airspace protection regulatory and policy framework, the development issues faced in the airport area, and the similarities and differences to San Jose's situation along with the best practices used for dealing with airspace protection and high-rise development.

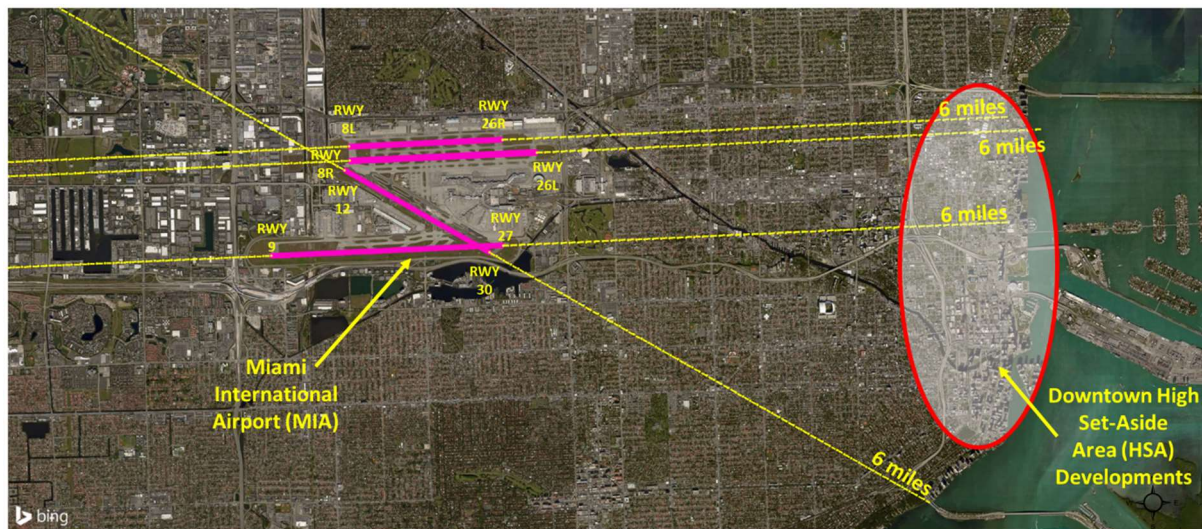
Miami International Airport (MIA) Case Study

Airport Overview

Miami International Airport (MIA) is located in Miami, Florida and is operated by the Miami Dade Aviation Department (MDAD). **Figure 1** depicts the existing runway configuration at MIA and the downtown high-rise development area. MIA operates four active runways Runway 08L/26R (8,600 feet x 150 feet), Runway 08R/26L (10,506 feet x 200 feet), Runway 09/27 (13,016 feet x 150 feet) and Runway 12/30 (9,355 feet x 150 feet), three of which send departures over the downtown high-rise area during west flow conditions.

Downtown is located approximately six miles to the east of the airport. Given the distance between the runway departure ends and the downtown high-rise area, airlines do not experience OEI weight penalties and range impacts.

Figure 1: MIA Airport Runway Configuration



Source: Landrum & Brown

Airspace Protection

In 1969, Miami-Dade County (airport operator) established airport height zoning districts enforced by an official Height Zoning Code. The protected airspace surfaces are mostly modeled after FAA airspace safety criteria contained in 14 CFR Part 77. In general, the airspace protection surfaces conform to Part 77 surface standards, however in some cases, airspace protection is more restrictive than the Part 77 imaginary surfaces. MDAD does protect for OEI corridors, which slope upward at a 65:1 surface slope for Runways 8R/26L and 12/30. For both runways, the initial 10,000 feet of the instrument approach surface has a slope of 65:1 with an additional 40,000 feet at a slope of 40:1.

For Runway 9/27, the initial 10,000 feet of the instrument approach district has a slope of 50:1 with an additional 40,000 feet at a slope of 40:1, which is consistent with Part 77 standards.

The Miami-Dade County Height Zoning Code is explicit and municipalities and communities have to follow the code. MDAD does not issue any variances to the height limitations and will not approve any

developments that exceed the airspace heights established as part of the code. MDAD also has memorandums of understanding with local municipalities to ensure that they abide by and enforce the Height Zoning Code for proposed developments.

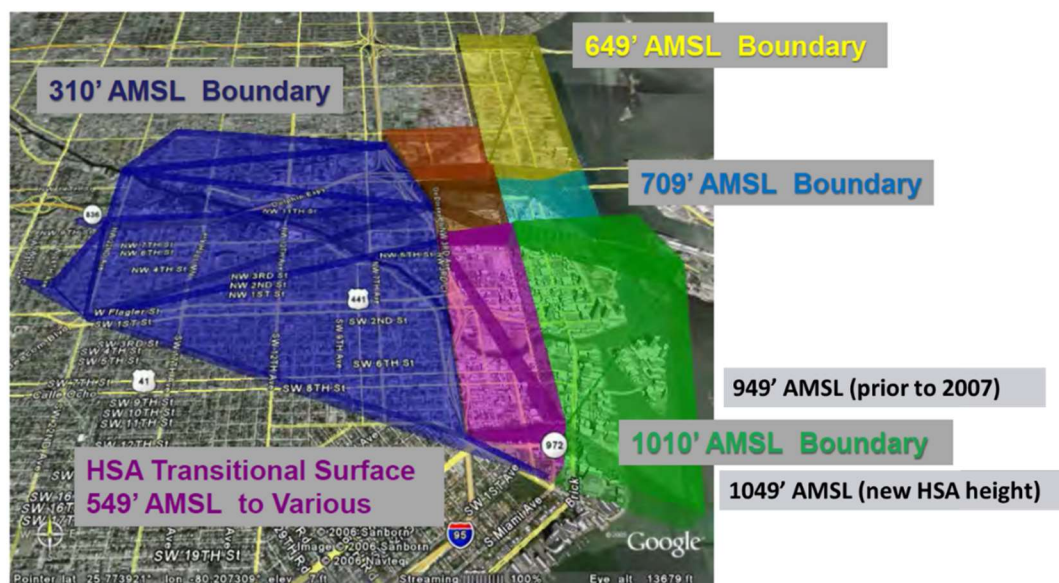
As part of the zoning code, developers are required to file an application with the local municipality and MDAD also requires that the developer to comply with Part 77 by filing a 7460-1 “Notice of Proposed Construction or Alteration” form with the FAA to initiate an airspace study of the proposed development. If the FAA issues a favorable “determination of no hazard”, MDAD will issue a letter of approval to the developer.

There have been cases where a developer has built a structure that penetrated the protected airspace surfaces. MDAD notified the developer by letter and ensured that the incompatible structure height was lowered, as required under the zoning code.

Examples of Collaboration Between the Airport and the Local Development Community

As part of the Height Zoning Code, “high structure-set aside districts (HSAs)” are established. These areas are located between 4-6 miles east of the Airport, including downtown, where high-rise development is most prominent or desired. **Figure 2** depicts the HSA development areas and the associated height limit at the outer edge of each of the individual areas.

Figure 2: MDAD High-Set Aside District Areas Heights Limits



Source: Airspace Solutions and Protection in the City of Miami; “Changes in Zoning Surfaces and UAV Restrictions” presentation. Jose A. Ramos, Division Director of Aviation Planning, Land Use and Grants. December 15, 2015.

In 2014 the local development community proposed a change to the Height Zoning Code to allow additional high-rise development heights in downtown Miami. The proposal was to raise the ceiling of the HSA from a maximum of 1,010 feet above mean sea level (MSL) to 1,049 feet above MSL. MDAD reached out to airlines at MIA to engage them in the analysis of potential impacts to their aircraft operations. The airlines evaluated and verified that there would be no impacts to departure payloads

with the proposed airspace protection modifications, however they were concerned with the prospect of losing non-precision approaches. MDAD, provided this feedback to the FAA and a collaborative effort over the course of three years was undertaken to evaluate the proposed change to the zoning code. The outcome of the process was that airlines at MIA confirmed that the increase to the 1,049-foot MSL height would have no impact on departure payloads and OEI as straight-out OEI protection surfaces do not directly overfly the 1,049-foot MSL HSA zone.

Similarities, Difference and Best Practices for Airspace Protection

Figure 3 summarizes some of the similarities, differences and best practices for that MDAD use for airspace protection at MIA as compared to airspace protection practices at SJC.

Figure 3: Similarities, Differences and Best Practices for Airspace Protection

Similarities	Airport works with developers identifying available heights Protects for OEI
Differences	High-rise development areas 4-6 miles from runways, much of which are outside of flight corridors Height Zoning Code based primarily on Part 77 and protection for OEI MDAD has approval authority over development projects Straight-out OEI on two runways at 65:1 slopes for first 10,000 feet
Best Practices	Height Zoning Code that protects airspace and allows for high-rise development in certain areas Airport, airlines, development community, and FAA work collaboratively to proposed changes to Height Zoning Code

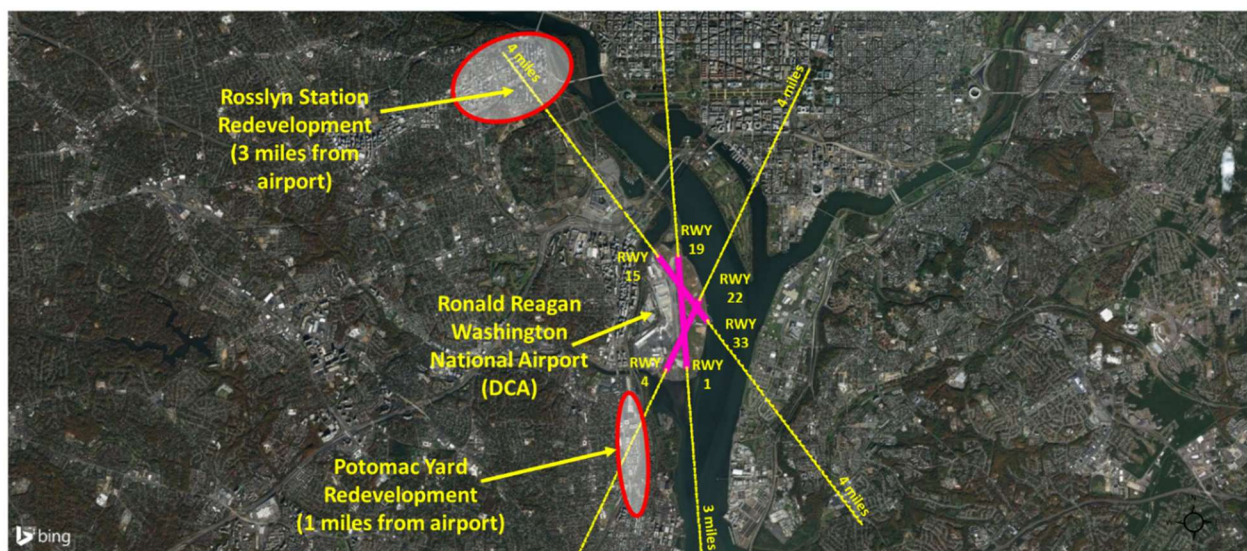
Ronald Reagan Washington National Airport (DCA) Case Study

Airport Overview

Ronald Reagan Washington National Airport (DCA) is located in Arlington, Virginia and is operated by the Metropolitan Washington Airports Authority (MWAA). MWAA also operates Washington Dulles International Airport (IAD). **Figure 4** depicts the existing runway configuration at DCA. DCA operates three active runways Runway 01/19 (7,169 feet x 150 feet), Runway 15/33 (5,204 feet x 150 feet) and Runway 04/22 (5,000 feet x 150 feet). Currently, new high-rise development is taking place in Arlington County, specifically in the Rosslyn Station area which is located approximately 3 miles northwest of the Airport.

Arlington County, specifically Rosslyn, Part 77, TERPS and OEI composite map for Runway 01 and 33

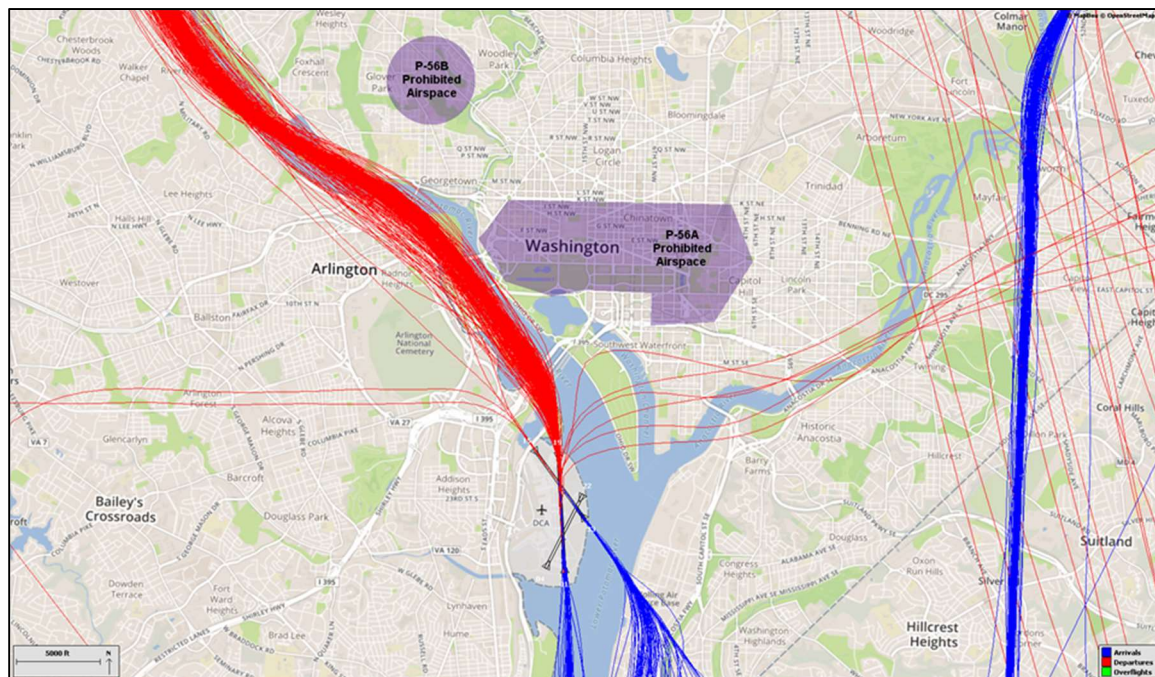
Figure 4: DCA Airport Runway Configuration



Source: Landrum & Brown

When operating in north flow, departure flight tracks from Runway 33 are generally routed north and follow the path of the Potomac River as depicted in the in **Figure 5**. Flight tracks (both arrivals and departures must remain clear of the federally protected P-56 airspace. Within the P-56 airspace, operation of commercial and private aircraft near the White House, U.S. National Mall and the Naval Observatory is prohibited which makes options for OEI corridor alignment very restrictive.

Figure 5: Departure Flight Tracks from Runway 33 at DCA



Source: The Metropolitan Washington Airport Authority (MWAA)

Airspace Protection Surfaces

The MWAA produces composite airspace surface protection mapping to provide guidance for airspace height limitations surrounding the Airport. Airspace protection mapping consists of a combination of the lowest controlling FAR Part 77 imaginary, TERPS and OEI surfaces surrounding the Airport. Airspace protection at DCA is not governed by law or enforced by an ordinance, rather it is policy based and used as a planning tool by MWAA to protect the airspace from obstacles which may have an adverse impact on aviation operations. MWAA work directly with airlines operating at DCA to maintain OEI airspace protection corridors to ensure departure operations in north flow are not impacted by incompatible obstacles. Given the defined OEI protection corridors for Runways 01 and 33 at DCA, OEI protection is not an issue for Airlines at the DCA as the primary flight tracks follow the Potomac River and airspace protection surfaces limit heights of building developments.

Developers that seek guidance pertaining to building height impacts on aviation operations at DCA will often coordinate directly with MWAA. However, the formal process for an official airspace evaluation is to require property developers in the vicinity of DCA to file a FAA 7460-1 "Notice of Proposed Construction or Alteration" form with the FAA so that a formal airspace evaluation can be initiated. MWAA receives notifications and monitors the FAA's Obstacle Evaluation/Airport Airspace Analysis (OE/AAA) system for submissions of proposed developments, status updates and final determinations that are accessible from the system. During the OE/AAA evaluation process, if the FAA provides a determination of no hazard to a potential development with heights that may not impact TERPS, but may exceed to OEI corridor height limitations, MWAA will typically try to petition the FAA to consider lowering the determination height. However, this has varied success rates according to MWAA staff. It should be noted that the OEI composite airspace protection mapping developed by MWAA is not

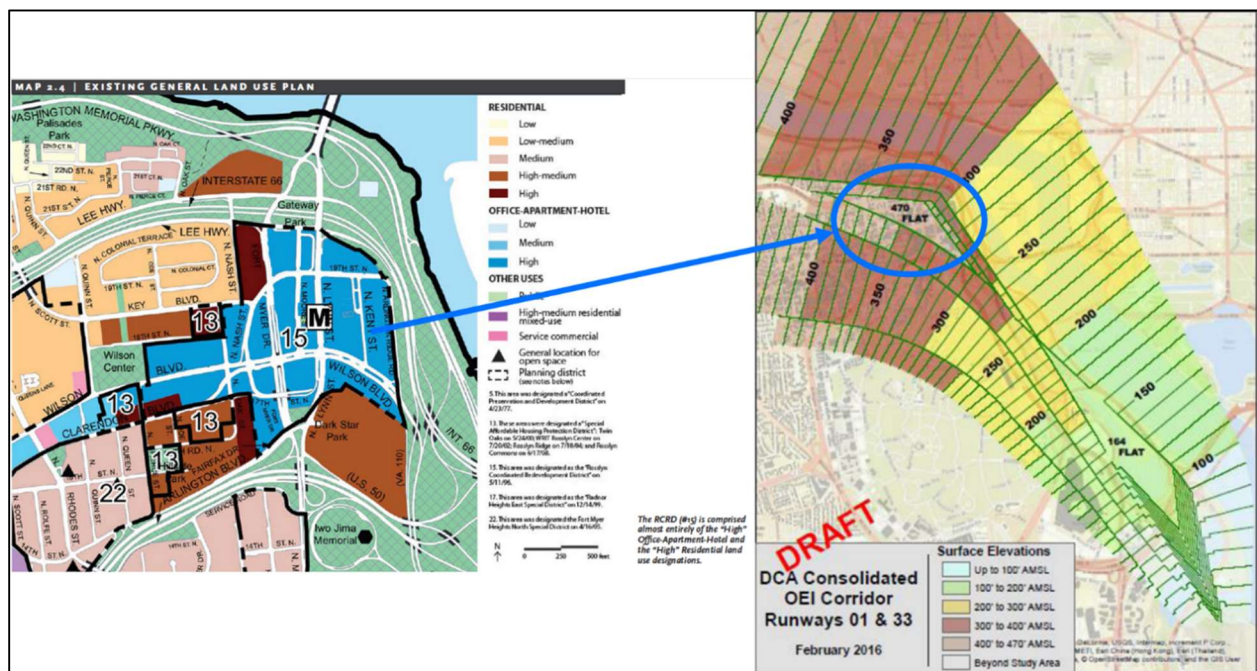
enforced by the FAA, however MWA and the FAA have a collaborative working relationship to help protect the interest of the aviation community.

According to MWA staff, there have been cases when pressure from outside entities to raises FAA arrival and departure minimums for aircraft operations to foster increased developments surrounding the Airport. However, impacts to the aviation community at DCA is a priority and MWA does not typically promote increasing arrival and departure procedures minimums at DCA, which would raise protected airspace surfaces to accommodate taller developments surrounding the Airport.

Examples of Collaboration Between the Airport and the Local Development Community

Figure 6 depicts an example of the DCA Consolidated OEI Corridor composite mapping for Runways 01 and 33. The mapping primarily consist of several OEI corridors with various surface slopes, however MWA staff worked with the airlines and the FAA to modify OEI protection heights by assessing the impacts of incorporating a section of heights governed by TERPS into the composite OEI protection mapping.

Figure 6: DCA Consolidated OEI Corridors – Runways 01 & 33



Source: The Metropolitan Washington Airport Authority (MWA)

A land use redevelopment known as the Rosslyn Coordinated Development District (RCRD) in Arlington, Virginia, which is located approximately 3 miles northwest of DCA, consist of the redevelopment of the Rosslyn Station Area (RSA). RSA redevelopment includes various developments including high-rise building developments. During the planning process for RSA, it was determined that the existing OEI protection surfaces over RCRD would limit the ability to build high-rise developments to desired heights.

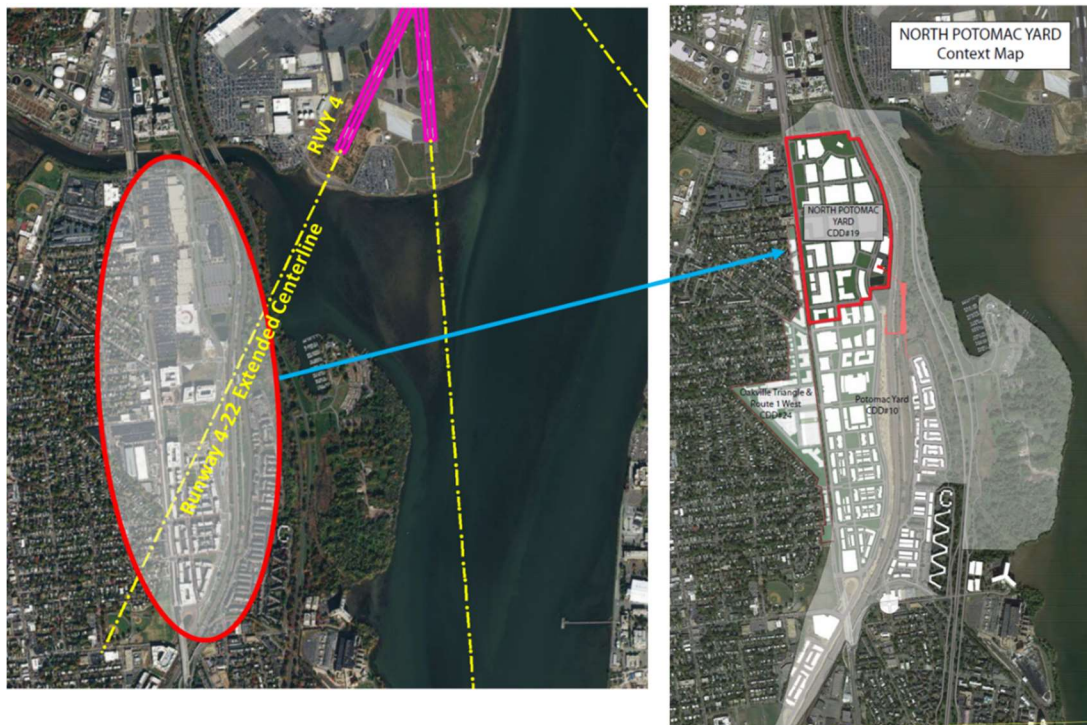
Property developers desired additional development height within the RCRD to accommodate taller structures which would require modifications to the OEI protection heights. The lowest governing

TERPS surface within this area is a non-precision instrument Vertical Navigation (VNAV) surface with a height of 470 feet above MSL. This surface is a flat surface which will allow for the additional heights for high-rise developments within the RCRD. Through coordination with the airlines, it was determined that the additional heights would not have adverse impacts on OEI operations at DCA. Additionally, there would be no impacts to TERPS according to the FAA, so MWAA modified the OEI protection surfaces and incorporated the 470 feet AMSL flat surface protection over the desire high-rise development area.

Another example of MWAA coordination with the local development community involves the redevelopment of the North Potomac Yard, located approximately 1 mile southwest of DCA and directly under the final approach and departure of Runway 04/22. As depicted in **Figure 7**, the North Potomac Yard redevelopment consists of various commercial and residential developments. Property developers requested additional development heights as primary airspace protection over North Potomac Yard is governed by FAR Part 77 imaginary surfaces according to MWAA's composite airspace surface protection map.

To allow increased development heights in this area, MWAA worked with the airlines and the FAA to increase the glide path angle (GPA) for approaches to Runway 04 at DCA. Runway 04 at DCA is a non-precision instrument runway with visibility minimums greater than $\frac{3}{4}$ statute miles and is not a primary arrival runway at the Airport, therefore increases to the GPA for this runway would have minimal impacts on aviation operations. There was no impact to OEI operations as Runway 22 is not a primary departure runway and aircraft departure in South Flow would primarily use Runway 33 with a flight path following the Potomac River.

Figure 7: North Potomac Yard Redevelopment Area Proximity to Runway 4 at DCA



Source: Landrum & Brown and <https://www.alexandriava.gov/uploadedFiles/PYLandbayMap.pdf>

Similarities, Difference and Best Practices for Airspace Protection

Figure 8 summarizes some of the similarities, differences and best practices for that MWAA use for airspace protection at DCA as compared to airspace protection practices at SJG.

Figure 8: Similarities, Differences and Best Practices for Airspace Protection

Similarities	Airport works with developers identifying available heights Use of Part 77, TERPS and OEI composite airspace height mapping Rosslyn high-rise development area 3.0 miles from runway along flight path Potomac Yard redevelopment area 1.0 miles from runway along flight path Policy-based
Differences	Unique OEI corridors based on restricted airspace
Best Practices	Redevelopment plans integrating airspace protection surfaces FAA, Airport and development community coordination to adjust procedures

Source: Landrum & Brown