REPORT

Merritt Airport Development Plan Review

Final Report

Prepared for:

City of Merritt

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Appendices

Executive Summary

Urban Systems completed an evaluation of the current state of the Merritt Airport – officially know as Saunder's Field CAD5 – and surrounding areas. There are a number of factors that have influenced the development potential of the Merritt Airport and the adjacent properties. Many of these factors stem from the City's desired classification of the airport and the respective Obstacle Limitation Surface (OLS).

The Merritt Airport is a registered aerodrome local airport that serves General Aviation (GA) users, as well as Air Ambulance and Forest Fire Fighting fixed wing aircraft. The airport property is approximately 30 hectares and includes several vacant developable lots. The property is surrounded by a fence that is currently in poor condition and is serviced with a groundwater well and septic system.

The most important aspect of an airport as it relates to development is the OLS. The OLS is a 3-dimensional virtual surface that extends into space in all directions from an airport runway. Essentially, the characteristics of the surface are determined by the type of airplane that the airport can accommodate. Developing a long-term outlook on the future usage of an airport is paramount to facilitating development in the lands adjacent to an airport. This is due to the fact that the slopes and dimensions of the OLS may change if the airport classification changes, and the fact that the OLS extends far beyond the limits of the airport property. The OLS surface therefore limits the heights of objects or buildings that can be constructed or placed on properties that are beneath the surface.

If appropriate foresight is not given to determining the potential future use of the airport, then a scenario could arise where development on adjacent properties is permitted that conforms to the OLS that corresponds to the current airport classification only. In the future, a change in the anticipated airport usage could warrant a change in airport classification (and therefore a change in the dimensions and/or slope of the OLS) to accommodate different aircraft, however existing development within the area covered by the OLS could prevent this change in classification. In the case of the Merritt Airport, this is particularly important given the fact that the area directly to the northeast of the airport is outside of the City's boundaries and therefore not within the City's jurisdiction. Additionally, the Merritt

It is our understanding that in order to prevent a violation of the OLS for the Merritt Airport from development on adjacent properties, the City has placed restrictive covenants on some of the properties on which an intrusion of this surface is possible. With respect to the restrictive covenants outlined by the City, we noted the following:

- The covenant specifies "buildings or structures" however TP312 uses the term "object". This could include vegetation, vehicles, fencing, a pile off logs etc. The covenant also does not distinguish between permanent or temporary objects. All of these are prohibited to break the plane of the OLS
- The covenant is specific to the airport classification that was identified at the time, however it does not account for any future change in classification despite the fact that previous council directives had identified desired future changes in classification. Additionally, the covenants specify classifications that are no longer relevant due to changes in regulations.
- The covenant restrictions are somewhat redundant

Initially, Urban proposed to review the three most recent reports that we were aware of as part of this project, as it was assumed that the report from 1980 was too old to be of relevance. During a visit to meet with City of Merritt staff, however, Urban reviewed a box of files related to the airport and discovered several additional documents that were relevant to the project. Ultimately, Urban reviewed seven documents that were prepared for the Merritt Airport, dating back to 1987. A brief summary of the recommendations made in each of these documents is shown in the following table

Report	Recommendations	Notes
Merritt Airport Facilities Development Plan (1987)	Extend City jurisdiction to all lands on which development could affect the OLS. Ensure developments are within the clearance requirements of current and future airport classification	The City has placed restrictive covenants on properties adjacent to the airport. These covenants did not, however, account for future classification changes
	Undertake periodic review of airport classification	
	Engage Transport Canada to identify hazard beacon locations	Completed in 1991. 5 locations identified
Airport Development Plan (2003)	Add hazard beacons, site lighting and obstruction lights	
	Add instrument approach capabilities	
	Extend site servicing (sewer, water)	
	Extend City jurisdiction to lands surrounding airport to prevent development intrusion into OLS	Agricultural lands to the NE of the airport are not within the City's jurisdiction (TNRD). This could be accomplished through a number of different avenues, including leasing the land from the current owner, purchasing the land and leasing it back to the current owner, or working with the TNRD to pursue a regulatory approach.
Merritt Airport Economic Assessment and Land Use Plan (2005)	Classify and protect the runway as a Code 2B Non-Precision Instrument aerodrome	
	Provide GPS non-precision approach guidance	According to letters found in a file in 2019 at the City, in 2009 JETPRO was retained by the City to design a GPS instrumentation approach. As of 2015, this design had been submitted to NAV Canada for review and approval and no response had been issued at the time the letter was written. It is unclear at this time what the ultimate result of this work was. The letter notes that an annual fee is paid to JETPRO for ongoing "procedure maintenance" and periodic regulatory review. It is also unclear whether this is still ongoing.
	Implement runway maintenance procedures	
	Install airfield security fencing	

Report	Recommendations	Notes
	Install a retro-reflective lighting system until the need for airport lighting becomes necessary	
	Redevelop the terminal	
	Protect additional apron area to the southwest of the existing apron for future expansion	
	Develop additional car parking area to the southwest of the terminal	
	Develop low lying triangular area southwest of the runway as a possible campsite	Currently developed as a compost facility
	Develop area north of fuel facility for attracting helicopter operations	
	Relocate flying club to a separate hangar	A hangar was constructed for the flying club, however according to press releases it is apparent that this was not financially viable, and the City re-acquired the hangar. It is currently leased to TRK Helicopters.
	Develop southwest land parcel for sale or lease and construct a parallel taxiway to accommodate development	
Merritt Airport Master Plan (2006)	Significant upgrades, including taxiway resurfacing, runway extension, lighting, fuel system upgrades, turnabouts, security fencing, GPS navigational aids	Some of the smaller upgrades have been completed (fire extinguishers, tie-downs, etc.)
	Establish an airport development fund with input from all airport stakeholders	
	Adopt the Airport Master Plan	
	Seek annual grant funding for capital upgrades	
Determination of Airport Classification (2018)	Remove the existing fuel tanks and replace with a system that conforms to provincial and federal requirements	
	Create an airport development master plan, which includes demand forecasting and capital and business plans	
	Update City of Merritt Zoning Bylaw for C5 to accommodate airport development best practices	
	Establish a development permit area for all lands within the OLS, rather than the restrictive covenants that are currently in place	It is not clear to Urban whether this approach is legal according to the BC Municipal Act. It is also unclear whether this option gives the City the power to change the requirements for possibly changes or evolutions in regulations (ie. changes in the OLS). Strong legal advice should be sought before moving in this direction.

Based on our review of the previous plans and documents regarding the City of Merritt Airport, we recommend the following next steps for moving forward with operational and development planning for the airport and surrounding lands:

1. City Council and City staff should identify a 'vision' for the Merritt Airport for the next 25 years
2. An airport master plan should be established. This master plan should identify:
    a. How to achieve the City's vision for the airport for the foreseeable future
    b. What upgrades are required to achieve this vision, and the costs
    c. How to accommodate and promote development on and around the airport
    d. Prioritization of all upgrades and recommendations previously identified for the Merritt Airport and consistent with Council's vision.
    e. Business plans and capital plans
    f. Options for raising capital to complete the proposed upgrades
3. Determine the current classification of the Merritt airport under the Transport Canada TP312 document. This should have been done in the 2018 report by OEI. Based on our cursory review, we believe that the airport is classified as an 'AGNII Non-Instrument' airport, however we do not currently have enough information to confirm this.
4. Determine the desired future classification of the Merritt airport. Given the information provided in the reports that we reviewed, we believe that a classification beyond 'AGNII Non-Precision Instrument' would likely be unnecessary to serve the needs of the Merritt Airport for the foreseeable future. The City should carefully evaluate both the potential needs of the airport, as well as the figures detailing a 3-dimensional representation of the OLS for the Merritt Airport as shown in Appendix A, when determining this classification. As these figures demonstrate, the instrument approach classification would have significant impact on the development potential of adjacent lots (see Appendix A). Given these development limitations on these properties, it is likely that a 'Non-Precision Instrument Approach' classification may not be feasible at all. Once determined, the desired classification should be formally adopted by Council and included as a formal policy in the Official Community Plan (OCP).
5. Follow up with JetPro and NAV Canada to determine the outcome of the submission of instrument approach and departure procedure designs from 2015
6. Apply for annual grant funding to undertake some of the highest-priority upgrades to the airport. The British Columbia Air Access Program (BCAAP) provides capital funding to assist B.C. aviation facilities with improvements to infrastructure. The program is currently in its fifth year of funding.
7. For lands within the City, once the current and future airport classification has been adopted, evaluate and consider the best approach for the City to implement and enforce the requirements necessary to protect the relevant OLS. Options could be via the Zoning Bylaw, via Development Permit, by changing the existing Restrictive Covenants or perhaps other options. The City should reach out to other municipalities of similar size to find out how they have dealt with similar issues.

8. For lands to the northeast (outside the City) the City should research and evaluate options and consider the best approach to implement and enforce the requirements necessary to protect the relevant OLS. Similar to above, this could include discussions with other municipalities. Options could include:
    a. Establishing a dialogue with the TNRD to determine if and/or how the TNRD could take this on.
    b. Establishing a dialogue with the private landowners of properties directly to the northeast of the airport and discuss if or how the City could engage with them to protect the OLS now and in the future. This could include leasing the land, purchasing the land and leasing it back, or some other legal agreement.

Items 7 and 8 above should be considered as the highest priority items for the Merritt Airport, as they are necessary for the protection of the current airport usage. If a proactive approach is not taken to protecting the OLS from development activities outside of the airport boundaries, ongoing operations at the airport could be at risk.

For item 8, the agricultural area to the northeast presents possibly the greatest risk to the OLS, since it is in the approach area which is a much more critical and restrictive area of the OLS compared to the sides. Also, it is only a couple meters below the elevation of the airstrip, and it is not within the jurisdiction of the City, which limits the City's options with respect to controls on land uses etc. In contrast, for the approach from the southwest, the land is generally significantly lower than the airport, and with the exception of the Coquihalla highway is within the City's jurisdiction.

1.0 Background

Development of the Merritt Airport – officially known as Saunder's Field CAD5 – and the surrounding area has been the subject of several studies over the years. There are a number of factors that have influenced the development potential of the Merritt Airport and the adjacent properties. Many of these factors stem from the City's desired classification of the airport and the respective Obstacle Limitation Surface (OLS) that is dictated by Transport Canada's *Aerodromes Standards and Recommended Practices (TP 312).* This document has changed over the years and is currently in the 5th Edition published in 2015. These two interrelated aspects of the airport impact the potential development of the City-owned airport lands, as well as the adjacent lands.

The purpose of this project was to review the previously-prepared reports regarding the Merritt Airport – dating back to 1987 – and prepare a summary of the recommendations contained within these reports. These recommendations were compared to the current state of the Merritt Airport as well as the desires of City of Merritt Staff and Council with respect to the future of the airport in order to make recommendations for next steps.

1.1 Current State of the Merritt Airport

The Merritt Airport is a registered aerodrome local airport that serves General Aviation (GA) users, as well as Air Ambulance and Forest Fire Fighting fixed wing aircraft. A registered aerodrome is different from a certified airport in that it is not certified as an airport in the Canada Flight Supplement, but is registered with Transport Canada and subject to periodic inspection to verify compliance with the Canadian Aviation Regulations. The airport also includes a marked helicopter landing area, adjacent to the fueling facility. The airport generally consists of the following:

- A paved runway 1219 m long by 23 m wide, with:
  - 3.3 m wide gravel shoulder on each side;
  - A 61 m long gravel stopway at each end, and;
  - A 61 m x 91 m paved apron with tie-down areas on the east and west sides
  - Paved turnarounds at either end
- A 15 m wide paved taxiway between the runway and aprons
- A 300 m long gravel taxiway parallel to the runway with a centerline-to-centerline distance of 57 m
- A 27 m diameter helicopter touchdown area
- A card lock fuel station
- An airport terminal building
- A hangar that is currently leased to TRK Helicopters

The airport property is approximately 30 hectares and includes several vacant developable lots. The property is surrounded by a fence that is currently in poor condition and is serviced with a groundwater well and septic system.

1.2 Obstacle Limitation Surface

The most important aspect of an airport as it relates to development is the Obstacle Limitation Surface (OLS). The OLS is a 3-dimensional virtual surface that extends into space in all directions from an airport runway. In general, and in the case of Merritt Airport, the OLS affecting the greatest area is the OLS relevant to fixed wing aircraft. This OLS is therefore given primary consideration throughout this report. The dimensions and slopes of this surface are prescribed by Transport Canada and are dependant upon the classification of the airport. Essentially, the characteristics of the surface are determined by the type of airplane that the airport can accommodate. Transport Canada rules dictate that no object (temporary or permanent which is not frangibly mounted – on a break-away mounting) may be allowed to encroach above the plane of this surface, otherwise the airport may lose its certification or be forced to change it's classification, thereby potentially eliminating its ability to accommodate certain types of aircraft.

Developing a long-term outlook on the future usage of an airport is paramount to facilitating development in the lands adjacent to an airport. This is due to the fact that the slopes and dimensions of the OLS may change if the airport classification changes, and the fact that the OLS extends far beyond the limits of the airport property. The OLS surface therefore limits the heights of objects or buildings that can be constructed or placed on properties that are beneath the surface.

If appropriate foresight is not given to determining the potential future use of the airport, then a scenario could arise where development on adjacent properties is permitted that conforms to the OLS that corresponds to the current airport classification only. In the future, a change in the anticipated airport usage could warrant a change in airport classification (and therefore a change in the dimensions and/or slope of the OLS) to accommodate different aircraft, however existing development within the area covered by the OLS could prevent this change in classification. In the case of the Merritt Airport, this is particularly important given the fact that the area directly to the northeast of the airport is outside of the City's boundaries and therefore not within the City's jurisdiction.

The figures on the following page are excerpts from the TP312 document that shows the shape of an OLS.

Additionally, Appendix A shows a 3-dimensional representation of the OLS for the Merritt Airport for two possible classifications of the Merritt Airport. These two classifications are for an 'AGNII – Non-Instrument Approach' aerodrome, and an 'AGNII – Non-Precision Instrument Approach' aerodrome, as defined in the 5th edition of the TP312 document. These figures show some examples of the restrictions on object heights for the areas surrounding the airport property. The City should carefully examine these figures when determining the ultimate desired classification of the airport. Implementing a 'Non-Precision Instrument Approach' classification would require widening of the runway strip (which can contain no obstacles, including fencing) from 80 m to 150 m. This would put the boundaries of the runway strip well beyond the current northwest boundary of the Merritt Airport property, significantly restricting (or effectively eliminating) any development potential on the adjacent properties.

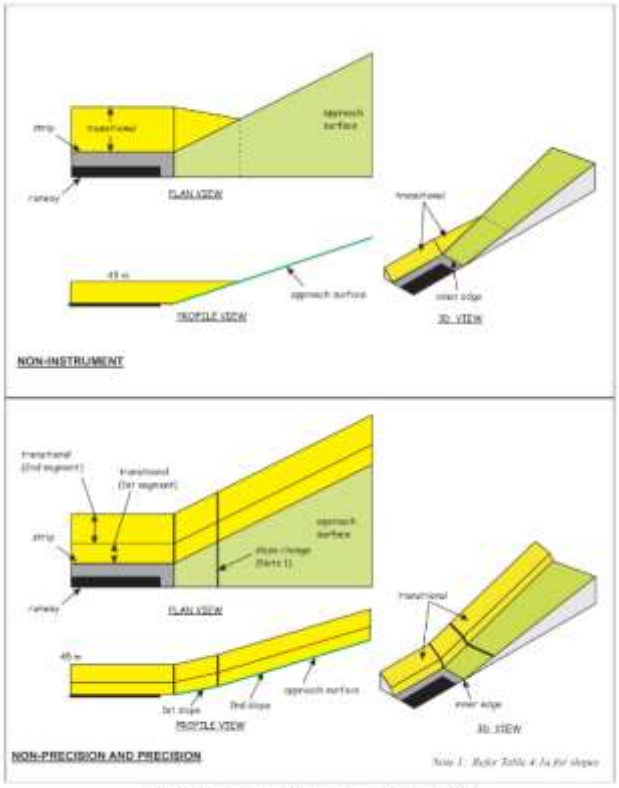


Figure 4-1(a): Obstacle limitation surfaces (OLS)

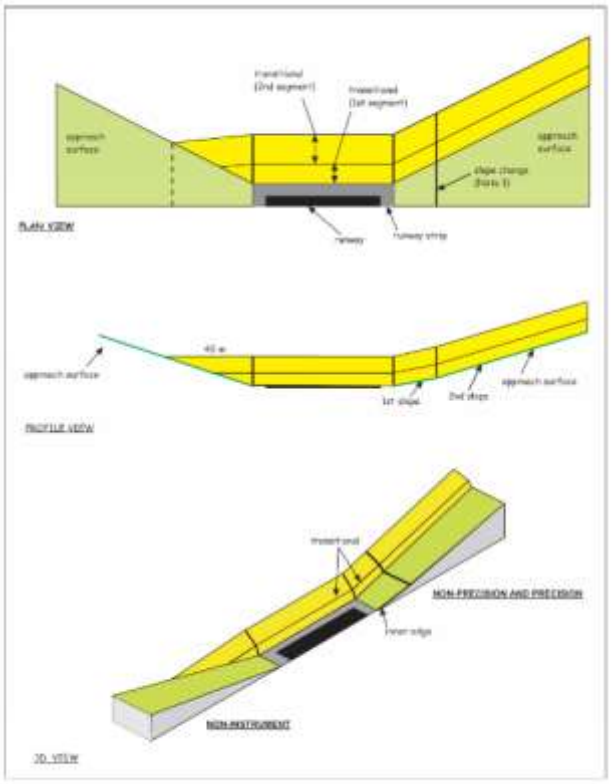


Figure 4-1(b): OLS for a runway with a precision/non-precision end and non-instrument end

2.0 Airport Plan Review

Initially, Urban proposed to review the three most recent reports that we were aware of as part of this project, as it was assumed that the report from 1980 was too old to be of relevance. During a visit to meet with City of Merritt staff, however, Urban reviewed a box of files related to the airport and discovered several additional documents that were relevant to the project. Ultimately, Urban reviewed seven documents that were prepared for the Merritt Airport, dating back to 1987. A brief summary of each of these documents – and the recommendations contained therein – is contained in the following sections.

2.1 Merritt Airport Facilities Development Plan – Urban Systems, 1987

This report was prepared by Urban Systems in response to an RFP issued by the City of Merritt. The City had taken an interest in the development of the airport at that time due to the construction of the Coquihalla Highway and the desire to develop some of the adjacent lands between the airport and the highway as a light industrial area. The general purpose of this report was to identify potential impacts to airport operations from the development of adjacent lands, as well as provide general information related to the operation of the airport and the feasibility of providing beacons and lighting.

Based on the Transport Canada regulations at that time, the airport was classified as '2B Non-Instrument.' This classification was assigned based on the runway length (number 2), and the width of aircraft that could be accommodated (letter B). The 'Non-Instrument' component of the classification means that it is an airport that is intended for the operation of aircraft using visual approach procedures only. Several issues were identified with this classification, mostly in relation to the OLS. These issues included the following:

- OLS limit for a 6.0 m high object was 15 m beyond the airport boundary, and for a 9.0 m high object was 30 m beyond the boundary
- The 'runway strip' is defined as extending 60 m beyond the end of the stopway. This would be 30 m beyond the airport boundary
- Some of the tied-down aircraft adjacent to the runway are within an area that was required to remain free of objects.

At the time, City Council had indicated a desire to have a future airport classification of '2C Non-Precision Instrument Runway with a 2B Parallel Taxiway'. This change in classification would allow the airport to accommodate a larger aircraft (letter C) and allow for aircraft to use non-visual electronic directional guidance during a straight-line approach. The reason for wanting this future classification was to accommodate a de Havilland Canada Dash 7 aircraft. The general airport dimensions could accommodate this change in classification with the following upgrades or restrictions:

- The paved runway would require widening to 30 m
- 2C aircraft would need to taxi on the runway, and the taxiway would need to be clear during a 2C instrument approach
- The slope of the OLS would be reduced, further restricting the developability of adjacent properties
- A paved taxiway was desired to permit access and development of lease lots south of the runway

This report also identified the areas of the City-owned airport property to the south of the runway as having the highest potential for development, and that these lots could potentially have both groundside and airside access. Additionally, the report noted that for non-instrument (ie. visual only) night licensing airport lighting would be required.

The general recommendations provided in this report were as follows:

1. The City should undertake steps to bring all areas potentially affected by present and future airport operations under their jurisdiction and ensure that all structures or developments are within present clearance requirements. Additionally, the City should ensure that all permanent structures do not compromise the desired future airport classification
2. The City should undertake periodic review of the airport classification and clearance requirements
3. The City should review with Transport Canada the required locations of hazard beacons.

2.2 Airport Development Plan for the City of Merritt – Global Approach, 2003

The general purpose of this report was to establish a framework for the development of the Merritt Airport. Similar to the 1987 report, this report also identified the classification of the Merritt Airport as a '2B Non-Instrument' aerodrome, and a Council directive for a future classification as a '2C Non-Precision Instrument' aerodrome. The report also noted that in addition to airport lighting, unrestricted night operations of an aerodrome required obstruction markings on any "obstacles higher than 90 m below the visual circuit altitude of 300 m within a 3 nautical mile radius of the end of each runway". Since Merritt had several obstacles that exceeded these parameters, Transport Canada had in 1990 identified a requirement for 5 hazard beacons to be located around the valley perimeter. Also in 1990, a design was completed for airport lighting that estimated the cost of the beacons and the airport lighting to be approximately $1 million. It is noted that a significant portion of this costs related to installing electrical servicing to each hazard beacon location.

The report evaluated the likelihood of a requirement for a future airport classification higher than '2C Non-Precision Instrument' and concluded that this was not likely within the foreseeable future. Although changes to the airport and the OLS would be required to accommodate a Non-Precision Instrument certification, no ground facilities would be required. Only the design and approval of an instrument approach procedure was noted as being required, which could be completed by NavCanada at no cost or by a third party designer for approximately $25,000.

The report also evaluated the potential for developing the land on and adjacent-to the airport property. It is noted that although the land-use planning, zoning and servicing appears to be generally adequate to accommodate development, there are three potential impediments to developing in this area.

1. *Obstacle Limitation Surface*

   The *TP312E Aerodrome Standards and Recommended Practices* recommends that the inner edge of the take-off approach surface should be located so that the OLS clears the runway boundary by 9m. In order for the Merritt Airport to comply with this recommendation, the boundaries would need to be extended by 250 m in both directions. It is noted that the land extending southwest from the runway drops fairly steeply away from the runway and therefore it is unlikely that any structure or vegetation would reach a height where it infringes on the surface. However, the land towards the northeast slopes more gently and is only approximately 2m below the runway at the property line.

   It was also noted that the existing property is very narrow to accommodate the potential future Code 2C Non-Precision runway strip. Any development on adjacent properties near the property line to the north of the airport would likely violate the OLS.

   The report concludes that although the private landowners appear to be accepting of the limitations of developing adjacent to the airport, the airport has significant risk of development violating the OLS since there were not any formally binding provision that prevent it.

2. *Bird Hazards*

The report notes that the Transport Canada document *TP1247 Land Use in the Vicinity of Airports* sites several concerns with potentially attracting birds towards airports that can present hazards to aircraft. Of these concerns, those relevant to the Merritt Airport include the recommendation that Food Waste Landfill Sites be a minimum of 8 km from an airport, and the moderate concern regarding agricultural practices within 3.2 km from an airport. At the time, only the agricultural usage was a concern and had not been reported as an issue.

It should be noted that since that time, the City has developed a compost facility on Airport Road that is well within the 8 km recommendation.

3. Aircraft Noise

The report notes that aircraft noise is not anticipated to be an issue at the Merritt Airport for the foreseeable future due to the fact that the airport is used by small aircraft, residential development is not anticipated nearby, and the airport currently is only usable during daylight hours. The report recommends, however, that the City be wary of the potential for noise issues if residential development encroaches on the area or for the proposed motel nearby, especially if the airport is certified for night operations.

The report includes the following general conclusions and recommendations:

1. The airport is reasonably well equipped to provide for the current demands for the community
2. The major deficiency of the airport is the lack of control over lands where development or vegetation could impede upon the OLS and impact the viability of the airport. Possible methods of preventing this include:
    a. Acquisition of property surrounding the airport
    b. Imposition of registered airport zoning – essentially “Federal” zoning
    c. Bylaw for airport zoning via the City of Merritt Zoning Bylaw
    d. Development permit restrictions via the City of Merritt Official Community Plan
3. Improvements to the airport to accommodate increased demand could include:
    a. Instrument approach capability
    b. Night lighting
    c. Site servicing with City water and sewer.

2.3 Merritt Airport an Economic Assessment & Land Use Plan – PAPI, 2005

This report effectively built upon the 2003 report with the following intended scope:

- Reviewing economic development within the region;
- Identifying types of commercial businesses that can be attracted by the airport;
- Updating the Land Use Plan for the airport;
- Examining specified operational services , and;
- Making recommendations on the most appropriate layout of facilities

It is noted that the City's vision was to "encourage and promote the introduction and operation of aviation compatible facilities at the airport and other land adjoining the airport". The report notes that the airport configuration and setbacks could accommodate a classification of 2B Non-Precision Instrument. This differs from the previous reports which indicated that Council's preference was for a Code 2C Non-Precision Instrument classification. No information or rationale for this change is presented in the report.

A SWOTCH (Strengths, Weaknesses, Opportunities, Threats and Challenges) analysis was completed, and it is generally summarized as follows:

Strengths:

- Location – easy access through five main highways connecting the city
- Weather – good climate and excellent visibility
- Tourism attraction – regional tourism

Weaknesses:

- Limited facilities
- Difficult terrain – much of the developable land would require significant filling
- Lack of development recognition from the City as a priority

Opportunities:

- Tourism related air service
- Helicopter operations
- Forestry usage (relating to both wildfire fighting and forestry activities)
- Light commercial businesses
- Flying school
- Aviation events/tradeshows

Threats:

- Economic downturn
- Competition from other regional airports (ie. Kamloops, Kelowna, Abbotsford)
- Cyclical tourism

Challenges:

- Lack of a long-range plan
- No proactive marketing efforts
- Regulatory issues
- Financial limitations

The report developed a comprehensive land use plan in order to allow the City to capitalize on the opportunities identified above which had the highest likelihood of coming to fruition. This land-use plan included the following recommendations in order to facilitate future development at the Merritt Airport:

Airside System Recommendations

1. Classify and protect the runway as a Code 2B Non-Precision Instrument aerodrome
2. Provide GPS non-precision approach guidance
3. Implement runway maintenance procedures
4. Install airfield security fencing
5. Install a retro-reflective lighting system until the need for airport lighting becomes necessary

Terminal Area Recommendations

1. Redevelop the terminal to provide an airport manager's office and a commercial area for a flying school, flight planning area and café/sandwich bar
2. Protect additional apron area to the southwest of the existing apron for future expansion
3. Develop additional car parking area to the southwest of the terminal

Support Facilities Recommendations

1. Introduce an automated credit card payment system for the fuel station

Commercial Development Recommendations

1. Protect area to the southwest of the apron for possible expansion
2. Provide phased development areas for commercial development
3. Develop low lying triangular area southwest of the runway as a possible campsite
4. Develop area north of fuel facility for attracting heli-operations

5. Relocate flying club to a separate hangar
6. Develop southwest land parcel for sale and construct a parallel taxiway to accommodate development

Utility Services Recommendations

1. Extend utility services to the south side of the airport

2.4 Merritt Airport Master Plan – Merritt Flying Club, 2006

This report was prepared by the Merritt Flying Club. The stated purpose of the report was to "incorporate the recent direction of City Council into a strategic plan and future vision for the Merritt Airport". The report is separated into an Airport Master Plan and an Airport Business Plan.

2.4.1 Airport Master Plan

This report contains little information about the state of the airport that is not summarized in the previous reports. It does provide some additional information on the level of use of the airport, including the number of annual aircraft operations from 2000 to 2005 (average of 174) and a projection that the number would increase to 1000 by 2015, however it is unclear what factored into this estimate. It is noted that 80% of the activity is private and from locally based aircraft.

The report notes that at the time there was little private demand for developable land at the airport, and no hangar space available for long term use. There were 8 useable aircraft tie-downs, with 6 being used and 2 available. It is noted as well that the tie-down area is in dire need of maintenance and relocation to accommodate as many as 20 tie-down spaces. The report also notes that although since 1990 there had been a one aircraft per 5 years decrease in demand for tie downs, future development at the airport could result in increases in demand for tie-down spots of one to two aircraft per year.

The report makes several recommendations for upgrades to the Merritt Airport in order to accommodate future increase in demand. The report acknowledges that aside from some of the maintenance requirements, these upgrades are generally not necessary for the current levels of use. The assumption appears to be that completing the upgrades will in turn attract an increase in demand. These recommended upgrades include the following

- Runway repairs and apron maintenance $15,000
- Aircraft Rescue Fire Station (extinguishers) $1,500
- Surfacing of the taxiway $30,000
- Upgrade servicing to terminal building $80,000
- GPS navigational aids $17,000
- Fuel facility upgrades $21,000
- Runway extension (including land purchasing) $1,500,000
- Runway turnabouts $20,000

- Airport lighting and beacons $19,000
- Security fencing $60,000

It should ne noted that these estimated costs are in 2006 dollars, and it is unclear how they were estimated. It is also worth noting that the estimated cost of installing airport lighting and hazard beacons has decreased to less than $19,000 from the 1987 report which estimated approximately $1,000,000. This decrease is undoubtedly the result of technological advancements, particularly with respect to the beacons.

2.4.2 Airport Business Management Plan

The purpose of this report was to develop guiding principles to promote development and management of the Merritt Airport from a business perspective. The report recommends a long-term partnership between the Merritt Flying Club and the City of Merritt for operating the Merritt Airport. It notes the following impediments that affect the ability of the airport to achieve and maintain financial self sufficiency:

- Insufficient volume of air traffic
- Regulatory creep
- Economic conditions in local industries
- Lack of long-range planning and development
- Present condition of the infrastructure and current needs
- Increasing operating costs

According to the financial statements at the time, the Airport was running modest annual deficits ($1,366 in 2004).

The report notes that the year one capital investment required to complete the highest-priority upgrades (including emergency fuel facility power, fire station, tie-down repairs and runway/apron maintenance) was $99,500. Of these upgrades and repairs, the Flying Club intended to fund $5,200 with the City committed to another $4,000.

The general conclusion of the report is that the Merritt Airport will continue to operate at a deficit for the foreseeable future, and that this is common of airports serving communities the size of Merritt. Operating the airport at a surplus is unlikely unless the airside development is built out to maximize income potential, aircraft movements increase to over 2000 per year, and population growth exceeds expectations. In order to maximize the potential of the airport, the report makes the following recommendations:

1. Establishing an Airport Development Fund with input from all stakeholders
2. Utilize volunteer time, labor and equipment to the greatest extent possible
3. Seek grant funding on an annual basis
4. Increase communication and presence in Merritt and seek support from the community
5. Adopt the Airport Master Plan

6. Continue to market the fuel facility, which is the greatest source of income currently for the Merritt Airport

2.5 Proposal for the Management and Development of the Merritt Airport – AV-TECH Consulting, 2006

Although this is not a report per se, we considered a review of this document relevant in comparison to the previously noted Business Management Plan. This proposal recommended a 3-phase approach to developing the airport, including:

Phase 1

- Construct a commercial hangar to be temporarily used for private storage and to lease to a flying school until commercial business can be found
- Relocate existing taxiway and prepare taxi lanes for additional hangars

Phase 2

- Upgrade services to lease lots on south and west end of the airport property to accommodate rotary wing aircraft

Phase 3

- Twin with a Chinese city to develop an international private flight school.

Interestingly, this proposal considers the Merritt Airport to have a number of distinct advantages that could result in positive economic impact, including:

- Location at the hub of the Coquihalla
- Competitive land prices and affordable homes
- Convenient access
- Cost effective management
- Potential interest of aviation companies to relocate to Merritt to take advantage of affordable business environment on airport property

Contrary to the report outlined in the previous section, this proposal expected that the airport could turn a profit as early as 2010.

2.6 Determination of Airport Classification – Operations Economics Inc., 2018

This report was prepared in 2018 in response to a Request for Proposals (RFP) issued by the City of Merritt. The reason for issuing the RFP was to determine what the classification of the Merritt Airport was under the new Transport Canada TP312, 5th Edition document that was released in 2015. This document replaced the previous aerodrome classifications – 2B – Non-instrument for the Merritt airport – with a new classification system that did not take runway length into account. Instead, the updated aerodrome classification system established Aircraft Group Numbers (AGN) for certain types of aircraft that could safely maneuver on an airport property and classifies the airport by these AGNs as well as whether they have instrumentation. The length of the runway only factors into the ability of an aircraft to use the airport on a case-by-case basis.

Interestingly, this report – despite the title – does not actually establish what the current Merritt Airport classification is, or what it should be.

The report does note that the obstacle limitation surface (OLS) has not been surveyed in recent years to ensure that there are no violations of the limitation. Additionally, the report notes that the fuel tanks are underground and are therefore non-compliant with current Federal regulations.

The report also notes that the current City of Merritt Zoning Bylaw for C5 Airport Commercial zoning is overly restrictive and fragmented and does not reflect best practices at Canadian airports. The bylaw does not distinguish between aviation and non-aviation uses, and the rear line setback of 21 m significantly restricts potential development and land-use. It is possible that this setback was derived with the assumption of the future Airport classification of '2C – Non-precision Instrument".

The report includes the following recommendations:

1. Remove the existing fuel tanks and replace with a system that conforms to provincial and federal regulations
2. Create an airport development master plan, which should include
    a. Conducting demand forecasting
    b. Prepare a development strategy and master plan with capital and business plans
    c. Amend the Zoning Bylaw to match recommendations of the development plan and master plan
3. Create a development permit area that includes all properties within the limits of the OLS to ensure the OLS is protected. This is a better alternative than placing restrictive covenants on adjacent properties.

3.0 Airport Planning Documents

It is our understanding that in order to prevent a violation of the OLS for the Merritt Airport from development on adjacent properties, the City has placed restrictive covenants on some of the properties on which an intrusion of this surface is possible. Urban Systems reviewed some of these covenants. As an example, the following covenant was found in relation to LOT A SEC 23 & 24, TP91 KDYD KAP54971. This lot is adjacent to the airport property

i. *"Height" means the distance from the natural ground adjoining a building or structure (including an antenna, pole or fence) to the highest point on the building or structure*

   "Runway" means the paved surface of the take-off and landing area within the Merritt Airport

   "Stopway" means the 60.96 metres wide gravel stopway at each end of the Runway

ii. *No building or structure shall be built or placed on the Lands unless the height of that building or structure is less than the height limited by a line drawn from the nearest point on the centerline of the Runway and the Stopway, rising at an angle of one metre vertically for every five metres of horizontal distance from the centerline*

iii. *Without limiting Section (ii), no building or structure shall exceed the clearance requirements for a 2B non-instrument runway, as follows:*

   a. *Runway strip width, extends 30.0 metres each side of the runway centerline*

   b. *Slope of obstacle limitation surface: 1:5 which implies:*

      i. *Distance from edge of strip to 6.0 metres high object: 30.0 metres;*

      ii. *Distance from edge of strip to 9.0 metre high object: 45.0 metres;*

With respect to this restrictive covenant, we noted the following:

- The covenant specifies "buildings or structures" however TP312 uses the terms "objects" or "obstacles". This could include vegetation, vehicles, fencing, a pile off logs etc. The covenant also does not distinguish between permanent or temporary objects. All of these are prohibited to infringe upon the plane of the OLS
- The covenant is specific to a '2B Non-Instrument' airport classification. As noted previously, the City has in the past indicated a desire for a future change in airport classification (such as implementing non-precision instrument approach capabilities) to accommodate different aircraft if a change in demand is anticipated. This change in airport classification may change the dimensions and slopes of the OLS. A development on private property that conforms to the current covenant may not conform to the future change in classification. Additionally, the 5th edition of the Transport Canada TP312 document that was released in 2015 altered the airport classification nomenclature, and the '2B' airport classification no longer exists.

- The covenant restrictions in Sections (ii) and (iii) are redundant. The dimensions of an OLS extend from the outer edges of an airstrip, not from the centerline. Therefore, a line extending from the centerline of the runway or stopway and rising at an angle of one meter vertically for every five meters of horizontal distance (per Section (ii)) would be at a higher elevation (i.e. less restrictive) than the OLS.

4.0 Summary of Previous Recommendations

Report	Recommendations	Notes
Merritt Airport Facilities Development Plan (1987)	Extend City jurisdiction to all lands on which development could affect the OLS. Ensure developments are within the clearance requirements of current and future airport classification	The City has placed restrictive covenants on properties adjacent to the airport. These covenants did not, however, account for future classification changes
	Undertake periodic review of airport classification	
	Engage Transport Canada to identify hazard beacon locations	Completed in 1991. 5 locations identified
Airport Development Plan (2003)	Add hazard beacons, site lighting and obstruction lights	
	Add instrument approach capabilities	
	Extend site servicing (sewer, water)	
	Extend City jurisdiction to lands surrounding airport to prevent development intrusion into OLS	Agricultural lands to the NE of the airport are not within the City's jurisdiction (TNRD). This could be accomplished through a number of different avenues, including leasing the land from the current owner, purchasing the land and leasing it back to the current owner, or working with the TNRD to pursue a regulatory approach.
Merritt Airport Economic Assessment and Land Use Plan (2005)	Classify and protect the runway as a Code 2B Non-Precision Instrument aerodrome	
	Provide GPS non-precision approach guidance	According to letters found in a file in 2019 at the City, in 2009 JETPRO was retained by the City to design a GPS instrumentation approach. As of 2015, this design had been submitted to NAV Canada for review and approval and no response had been issued at the time the letter was written. It is unclear at this time what the ultimate result of this work was. The letter notes that an annual fee is paid to JETPRO for ongoing "procedure maintenance" and periodic regulatory review. It is also unclear whether this is still ongoing.
	Implement runway maintenance procedures	
	Install airfield security fencing	

Report	Recommendations	Notes
	Install a retro-reflective lighting system until the need for airport lighting becomes necessary	
	Redevelop the terminal	
	Protect additional apron area to the southwest of the existing apron for future expansion	
	Develop additional car parking area to the southwest of the terminal	
	Develop low lying triangular area southwest of the runway as a possible campsite	Currently developed as a compost facility
	Develop area north of fuel facility for attracting helicopter operations	
	Relocate flying club to a separate hangar	A hangar was constructed for the flying club, however according to press releases it is apparent that this was not financially viable, and the City re-acquired the hangar. It is currently leased to TRK Helicopters.
	Develop southwest land parcel for sale or lease and construct a parallel taxiway to accommodate development	
Merritt Airport Master Plan (2006)	Significant upgrades, including taxiway resurfacing, runway extension, lighting, fuel system upgrades, turnabouts, security fencing, GPS navigational aids	Some of the smaller upgrades have been completed (turnabouts, fire extinguishers, tie-downs, etc.)
	Establish an airport development fund with input from all airport stakeholders	
	Adopt the Airport Master Plan	
	Seek annual grant funding for capital upgrades	
Determination of Airport Classification (2018)	Remove the existing fuel tanks and replace with a system that conforms to provincial and federal requirements	
	Create an airport development master plan, which includes demand forecasting and capital and business plans	
	Update City of Merritt Zoning Bylaw for C5 to accommodate airport development best practices	
	Establish a development permit area for all lands within the OLS, rather than the restrictive covenants that are currently in place	It is not clear to Urban whether this approach is legal according to the BC Municipal Act. It is also unclear whether this option gives the City the power to change the requirements for possibly changes or evolutions in regulations (ie. changes in the OLS). Strong legal advice should be sought before moving in this direction.

5.0 Recommendations and Next Steps

Based on our review of the previous plans and documents regarding the City of Merritt Airport, we recommend the following next steps for moving forward with operational and development planning for the airport and surrounding lands:

1. City Council and City staff should identify a 'vision' for the Merritt Airport for the next 25 years
2. An airport master plan should be established. This master plan should identify:
    a. How to achieve the City's vision for the airport for the foreseeable future
    b. What upgrades are required to achieve this vision, and the costs
    c. How to accommodate and promote development on and around the airport
    d. Prioritization of all upgrades and recommendations previously identified for the Merritt Airport and consistent with Council's vision.
    e. Business plans and capital plans
    f. Options for raising capital to complete the proposed upgrades
3. Determine the current classification of the Merritt airport under the Transport Canada TP312 document. This should have been done in the 2018 report by OEI. Based on our cursory review, we believe that the airport is classified as an 'AGNII Non-Instrument' airport, however we do not currently have enough information to confirm this.
4. Determine the desired future classification of the Merritt airport. Given the information provided in the reports that we reviewed, we believe that a classification beyond 'AGNII Non-Precision Instrument' would likely be unnecessary to serve the needs of the Merritt Airport for the foreseeable future. The City should carefully evaluate both the potential needs of the airport, as well as the figures detailing a 3-dimensional representation of the OLS for the Merritt Airport as shown in Appendix A, when determining this classification. As these figures demonstrate, the instrument approach classification would have significant impact on the development potential of adjacent lots (see Appendix A). Given these development limitations on these properties, it is likely that a 'Non-Precision Instrument Approach' classification may not be feasible at all. Once determined, the desired classification should be formally adopted by Council and included as a formal policy in the Official Community Plan (OCP).
5. Follow up with JetPro and NAV Canada to determine the outcome of the submission of instrument approach and departure procedure designs from 2015
6. Apply for annual grant funding to undertake some of the highest-priority upgrades to the airport. The British Columbia Air Access Program (BCAAP) provides capital funding to assist B.C. aviation facilities with improvements to infrastructure. The program is currently in its fifth year of funding.
7. For lands within the City, once the current and future airport classification has been adopted, evaluate and consider the best approach for the City to implement and enforce the requirements necessary to protect the relevant OLS. Options could be via the Zoning Bylaw, via Development Permit, by changing the existing Restrictive Covenants or perhaps other options. The City should reach out to other municipalities of similar size to find out how they have dealt with similar issues.

8. For lands to the northeast (outside the City) the City should research and evaluate options and consider the best approach to implement and enforce the requirements necessary to protect the relevant OLS. Similar to above, this could include discussions with other municipalities. Options could include:
    a. Establishing a dialogue with the TNRD to determine if and/or how the TNRD could take this on.
    b. Establishing a dialogue with the private landowners of properties directly to the northeast of the airport and discuss if or how the City could engage with them to protect the OLS now and in the future. This could include leasing the land, purchasing the land and leasing it back, or some other legal agreement.

Items 7 and 8 above should be considered as the highest priority items for the Merritt Airport, as they are necessary for the protection of the current airport usage. If a proactive approach is not taken to protecting the OLS from development activities outside of the airport boundaries, ongoing operations at the airport could be at risk.

For item 8, the agricultural area to the northeast presents possibly the greatest risk to the OLS, since it is in the approach area which is a much more critical and restrictive area of the OLS compared to the sides. Also, it is only a couple meters below the elevation of the airstrip, and it is not within the jurisdiction of the City, which limits the City's options with respect to controls on land uses etc. In contrast, for the approach from the southwest, the land is generally significantly lower than the airport, and with the exception of the Coquihalla highway is within the City's jurisdiction.

Appendix A

Obstacle Limitation Surface 3D Model

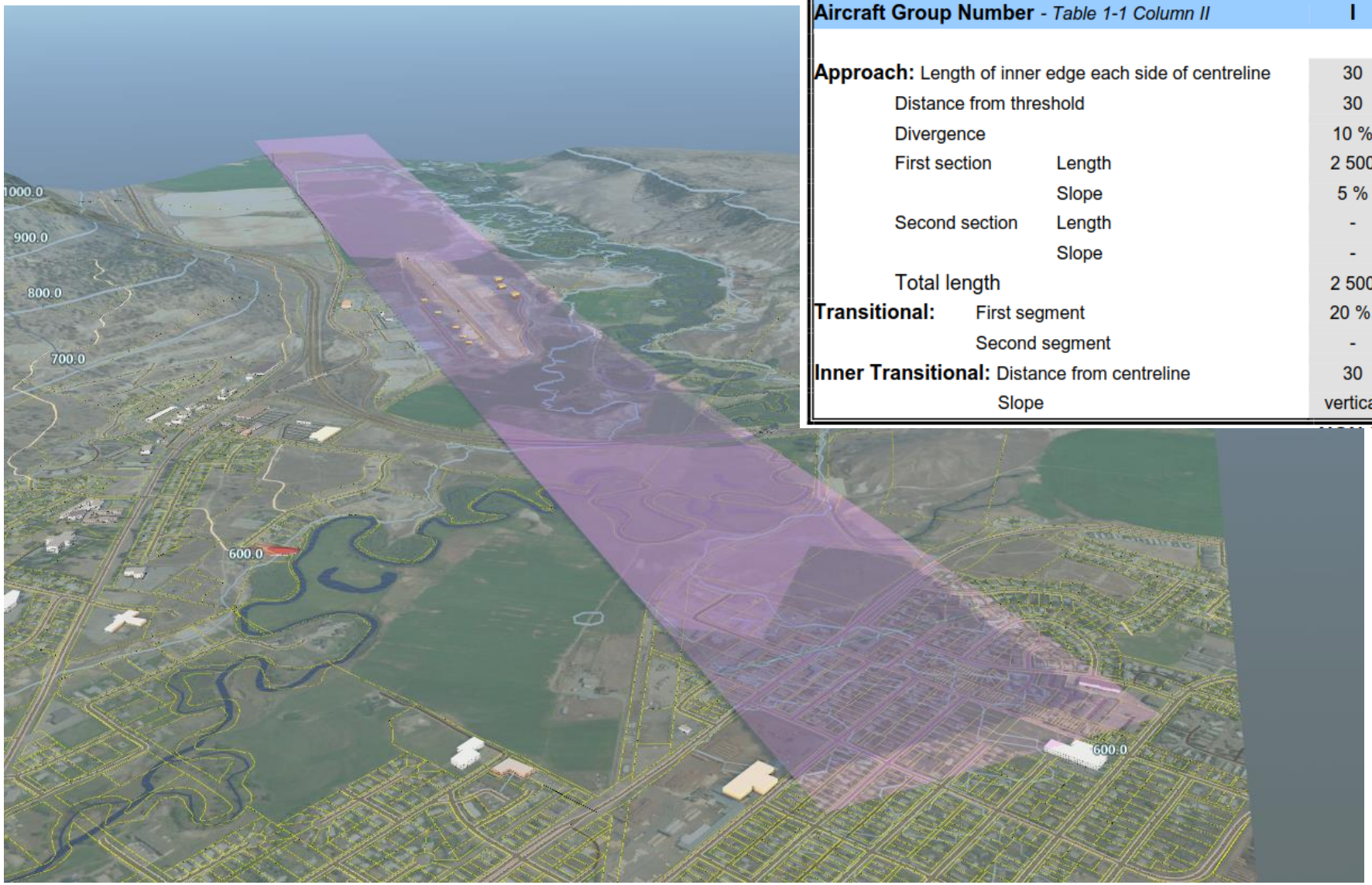
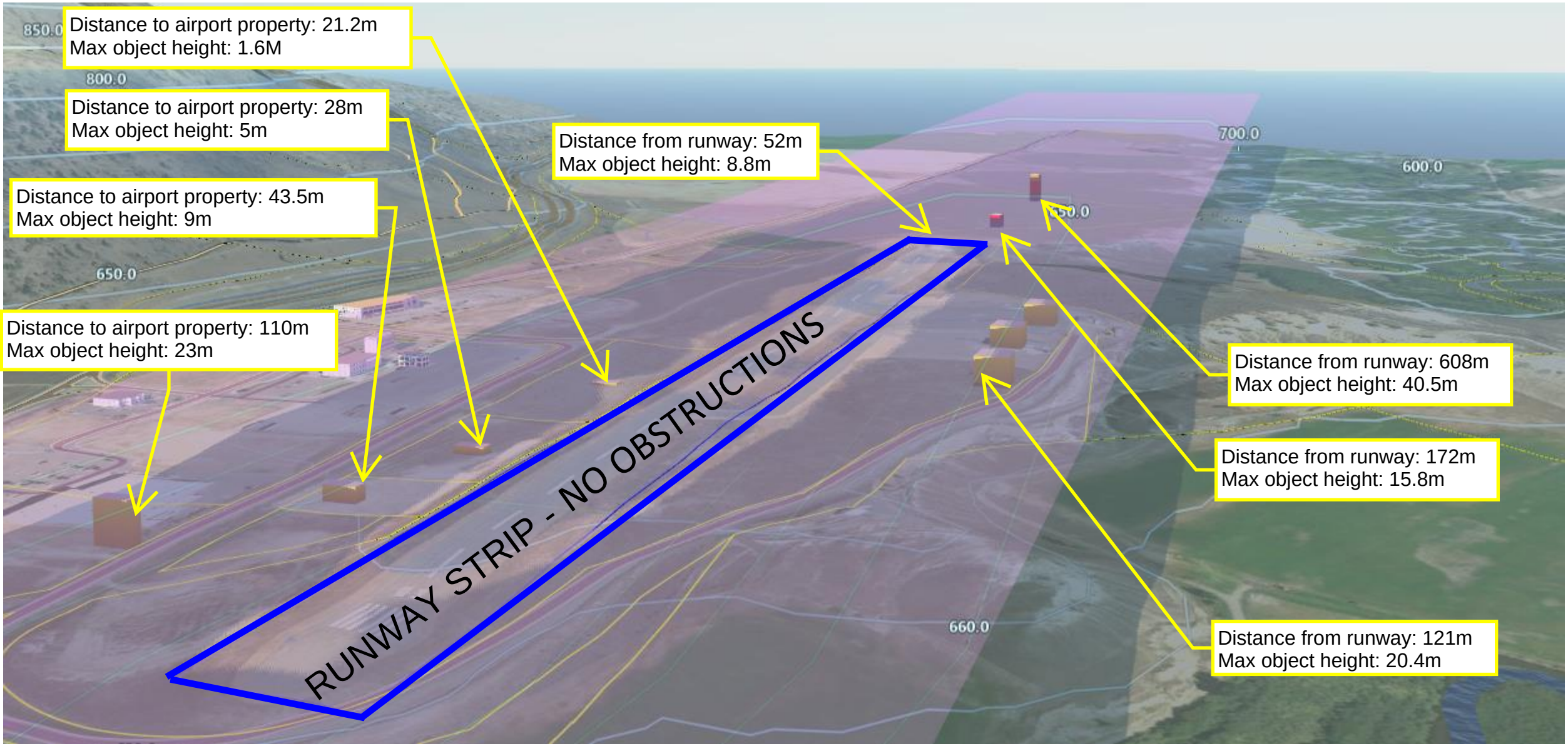


Table 4-1(a)—Obstacle Limitation Surfaces								
NON-INSTRUMENT								
Aircraft Group Number - *Table 1-1 Column II*			I	II	IIIA	IIIB	IV	V	VI
Approach: Length of inner edge each side of centreline			30	40	40	75	75	75	75
Distance from threshold			30	60	60	60	60	60	60
Divergence			10 %	10 %	10 %	10 %	10 %	10 %	10 %
First section	Length		2 500	2 500	2 500	3 000	720	720	720
	Slope		5 %	4 %	4 %	3.33 %	2.5 %	2.5 %	2.5 %
Second section	Length		-	-	-	-	2 280	2 280	2 280
	Slope		-	-	-	-	2.9 %	2.9 %	2.9 %
Total length			2 500	2 500	2 500	3 000	3 000	3 000	3 000
Transitional:	First segment		20 %	20 %	20 %	14.3 %	14.3 %	14.3 %	14.3 %
	Second segment		-	-	-	-	-	-	-
Inner Transitional: Distance from centreline			30	40	40	61	61	61	61
Slope			vertical	vertical	vertical	vertical	vertical	vertical	vertical

AGN 2 – NON-INSTRUMENTAL



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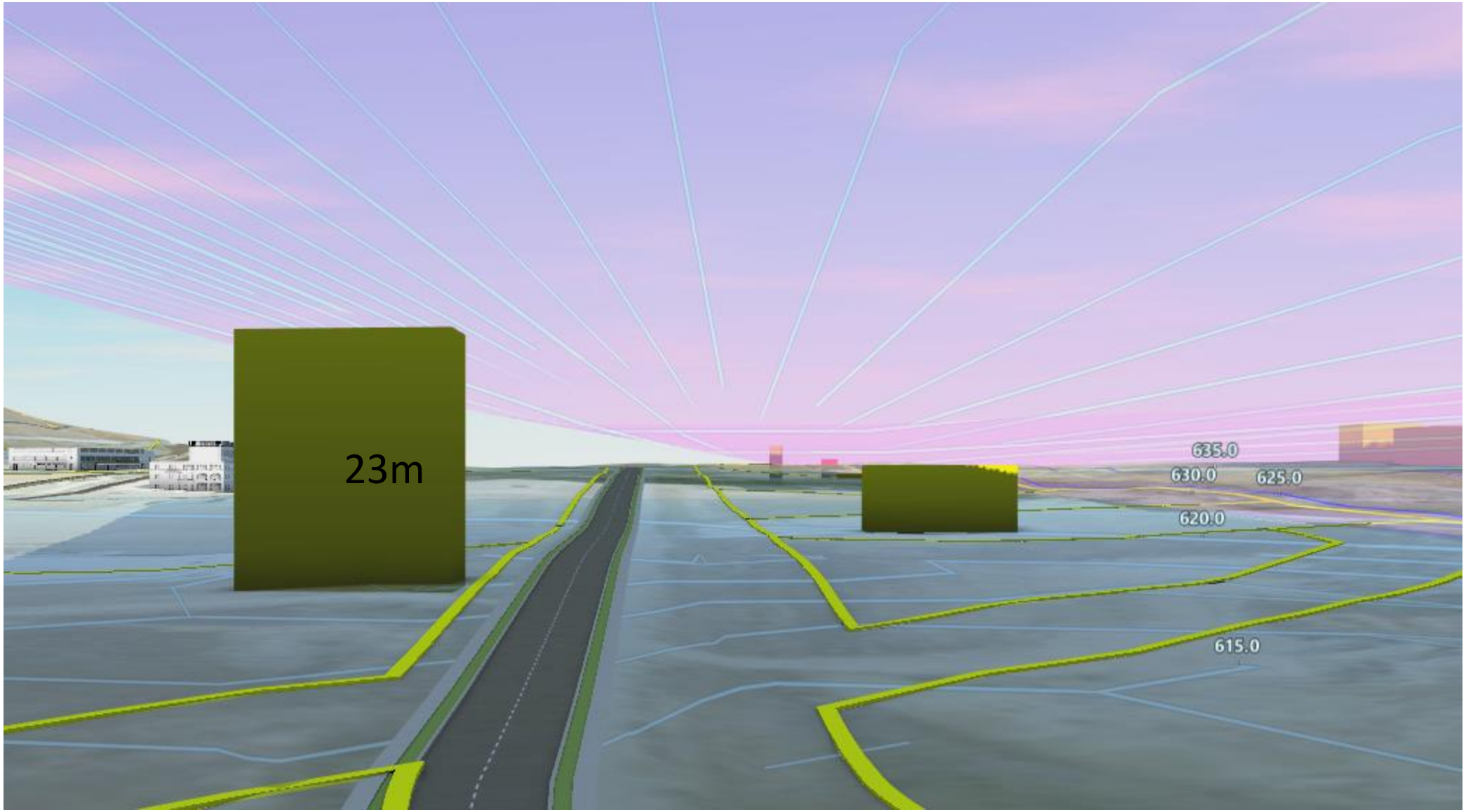

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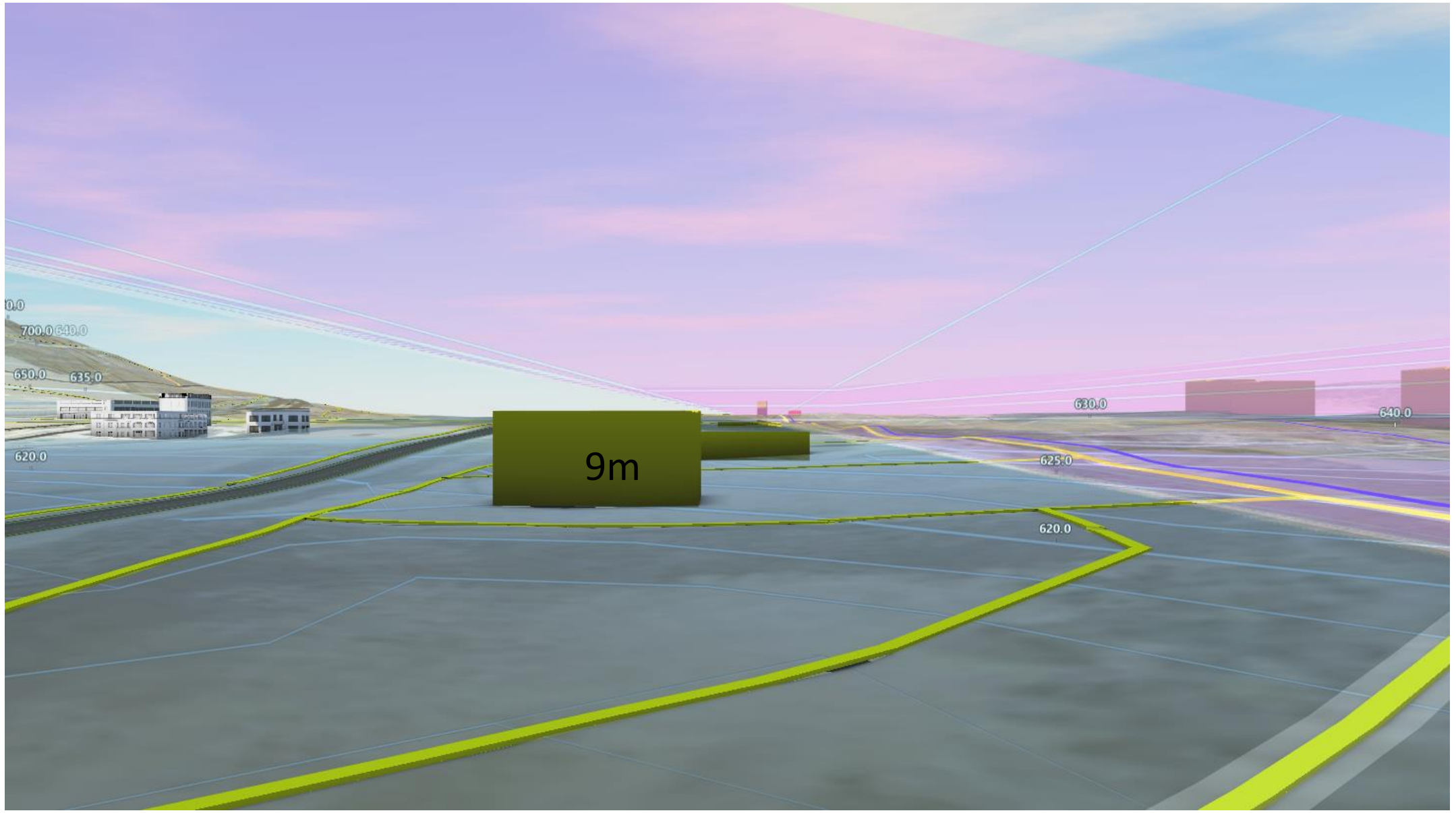

AGN 2 – NON-INSTRUMENTAL

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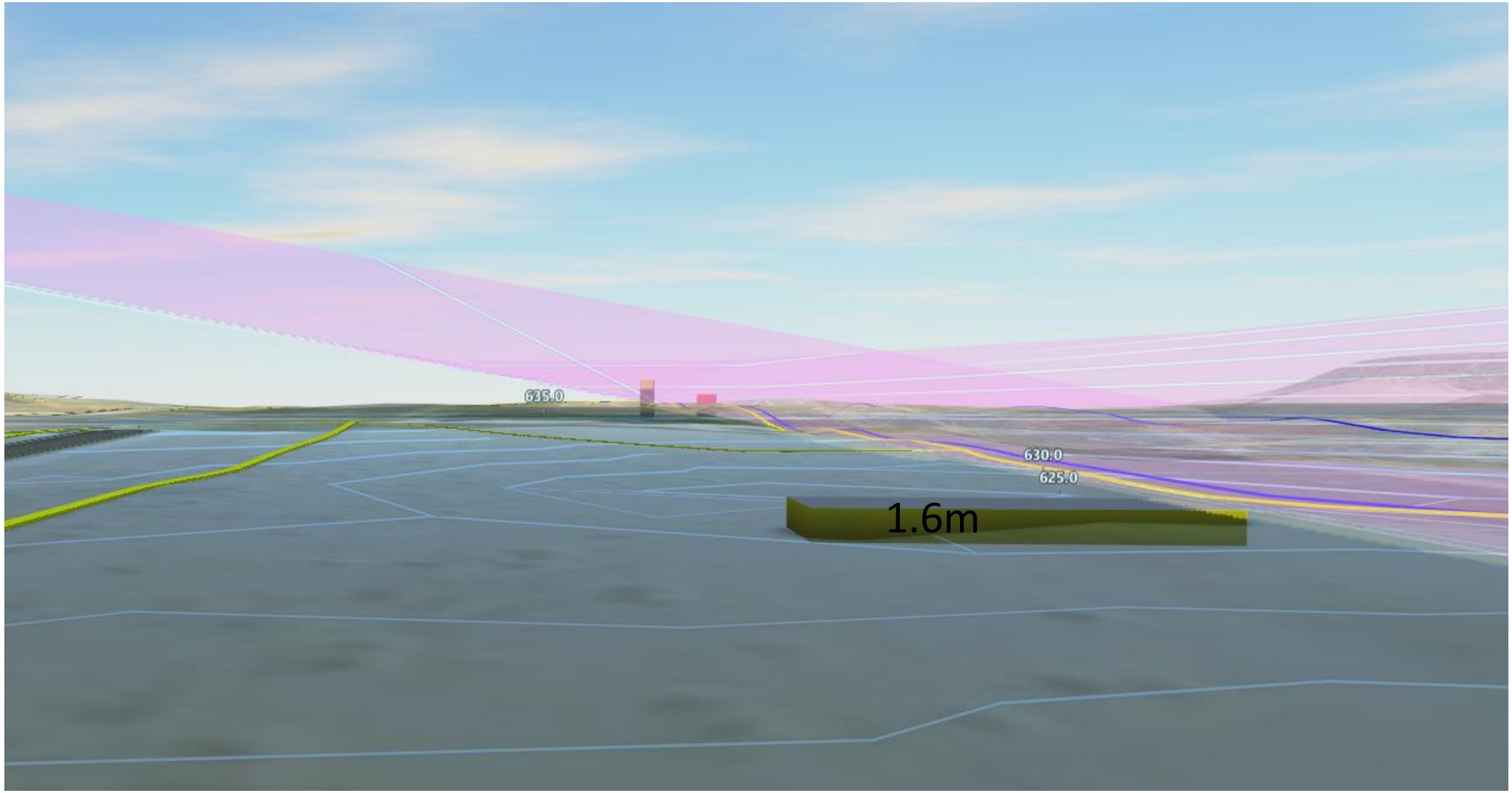

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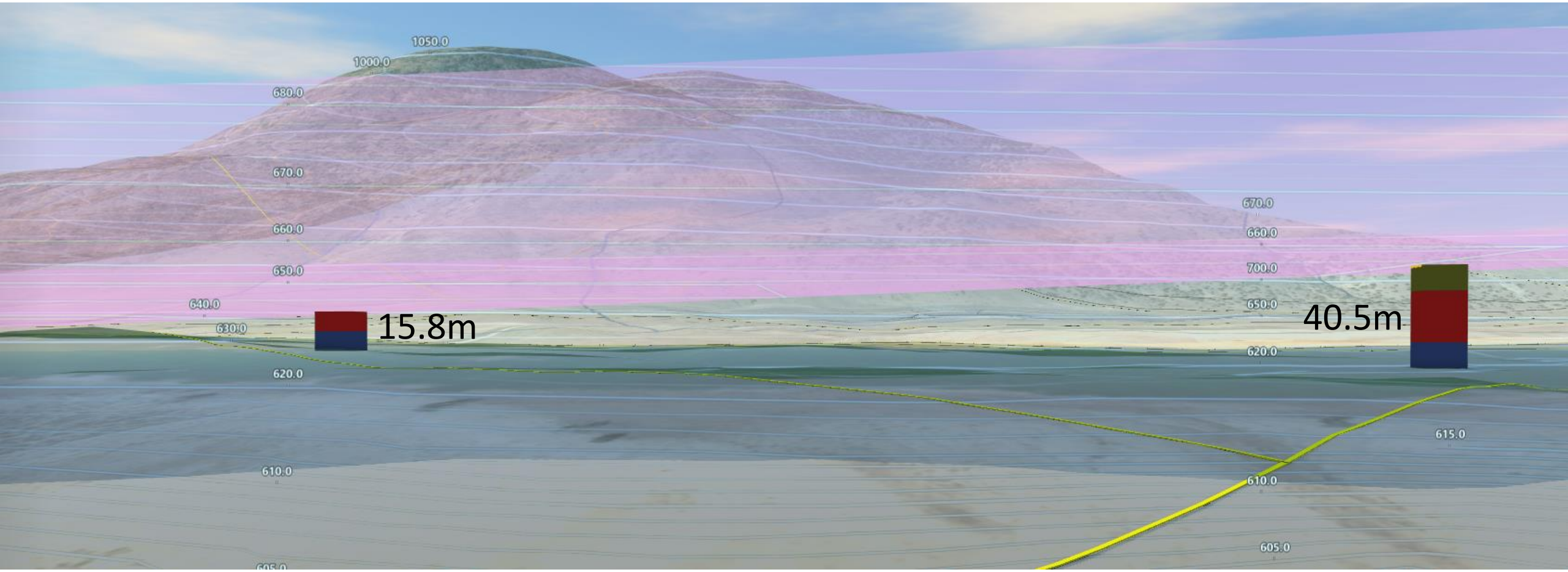

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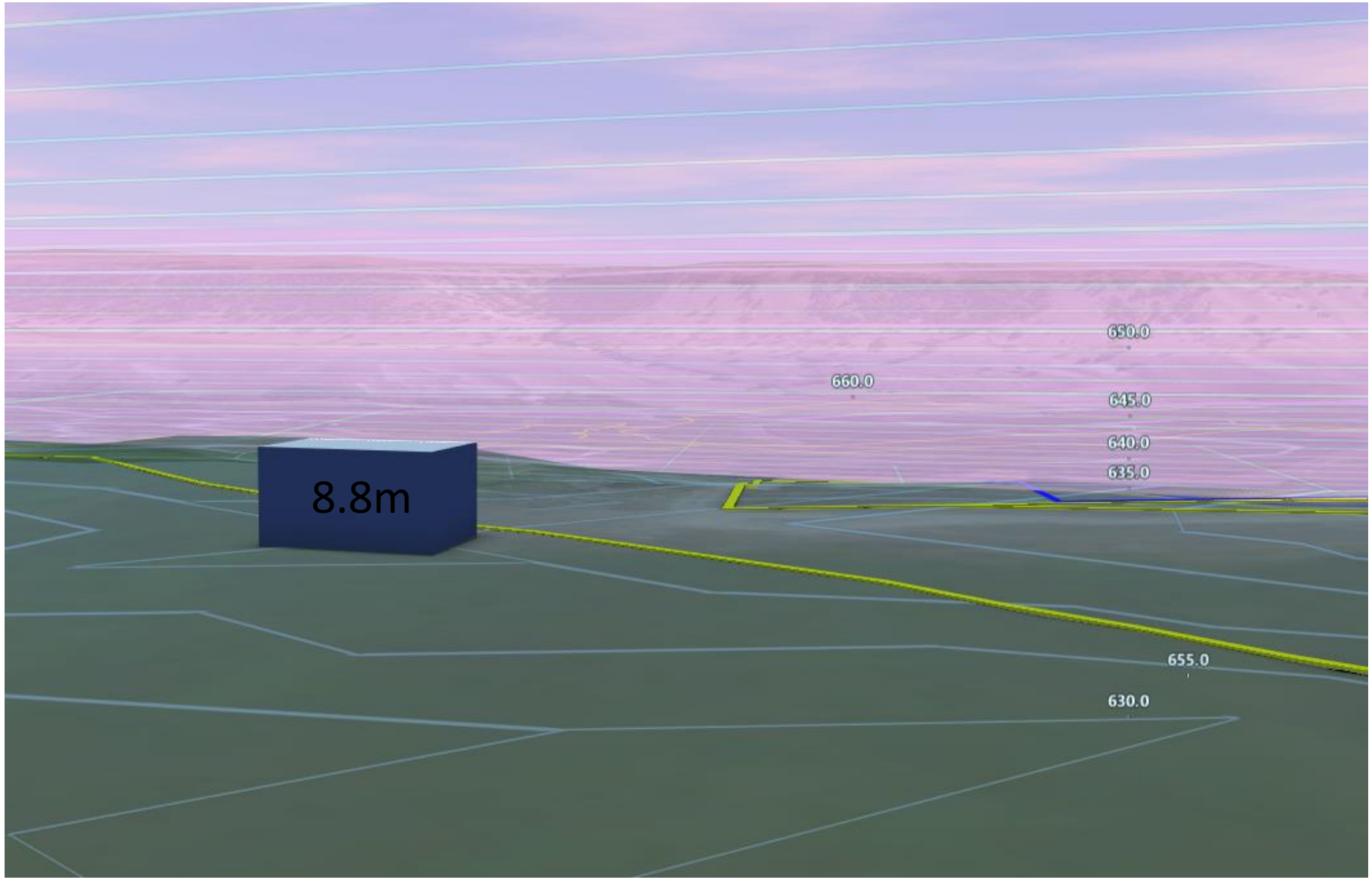

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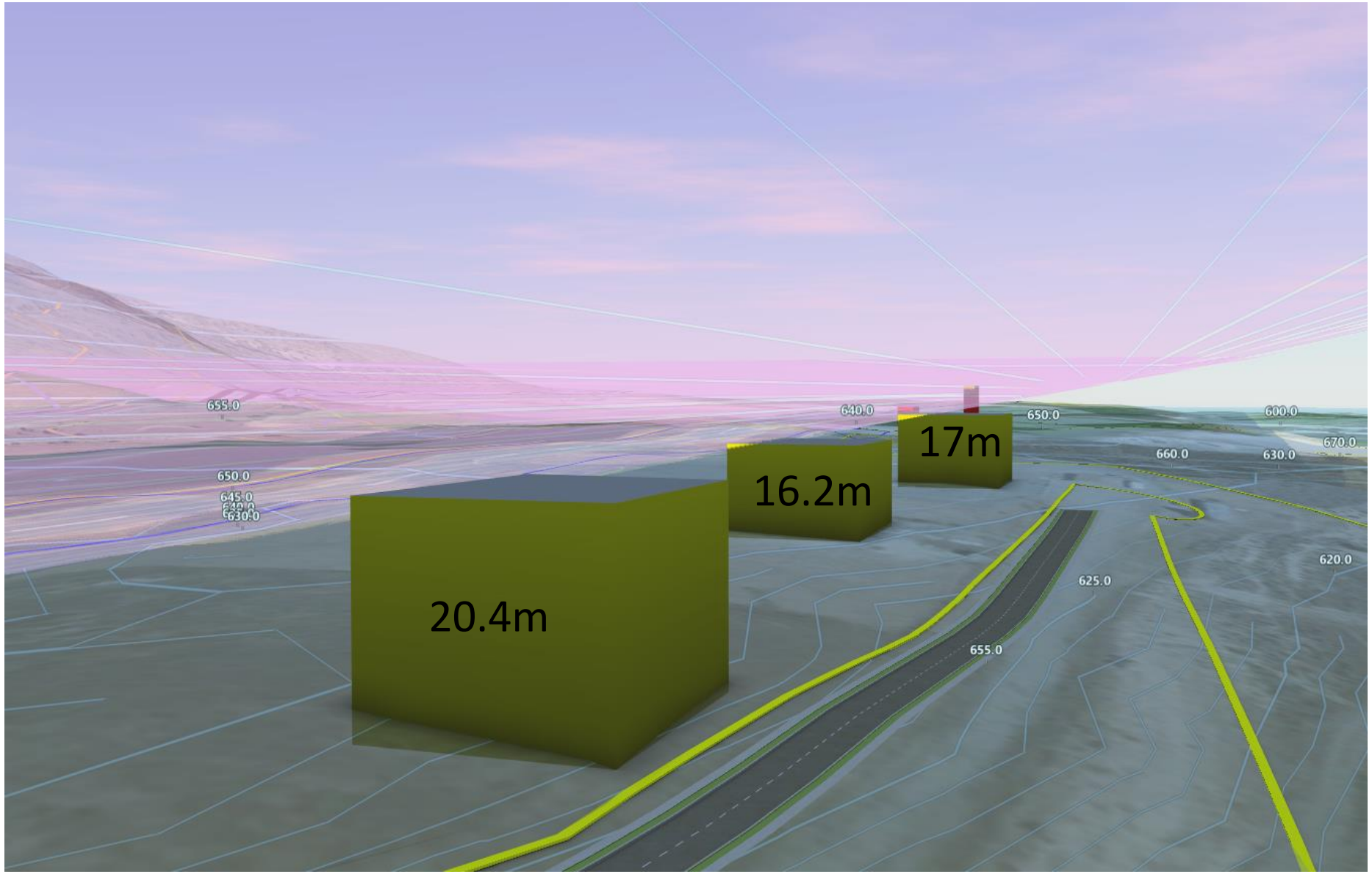
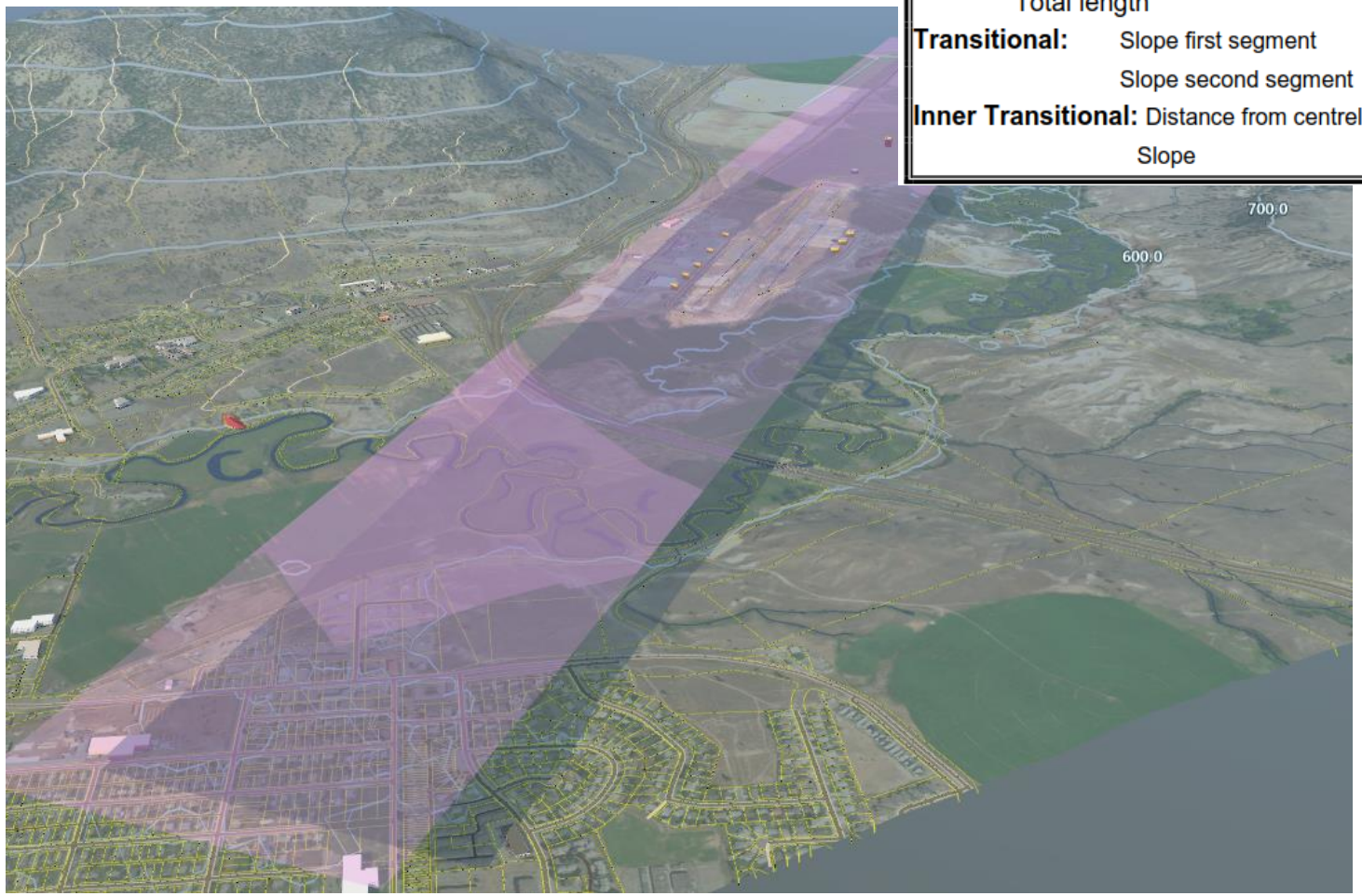


AGN 2 – NON-INSTRUMENTAL

NON-PRECISION								
Approach: Length of inner edge each side of centreline			75	75	75	122	122	122	122
Distance from threshold			60	60	60	61	61	61	61
Divergence			10 %	10 %	10 %	15 %	15 %	15 %	15 %
First section		Length	2 500	2 500	2 500	720	720	720	720
		Slope	3.33 %	3.33 %	3.33 %	2.5 %	2.5 %	2.5 %	2.5 %
Second section		Length	-	-	-	4 280	4 280	4 280	4 280
		Slope	-	-	-	2.9 %	2.9 %	2.9 %	2.9 %
Total length			2 500	2 500	2 500	5 000	5 000	5 000	5 000
Transitional:	Slope first segment		25 %	25 %	25 %	25 %	25 %	25 %	25 %
	Slope second segment		14.3 %	14.3 %	14.3 %	14.3 %	14.3 %	14.3 %	14.3 %
Inner Transitional:	Distance from centreline		40	40	61	61	61	61	61
	Slope		vertical	vertical	vertical	vertical	vertical	vertical	vertical



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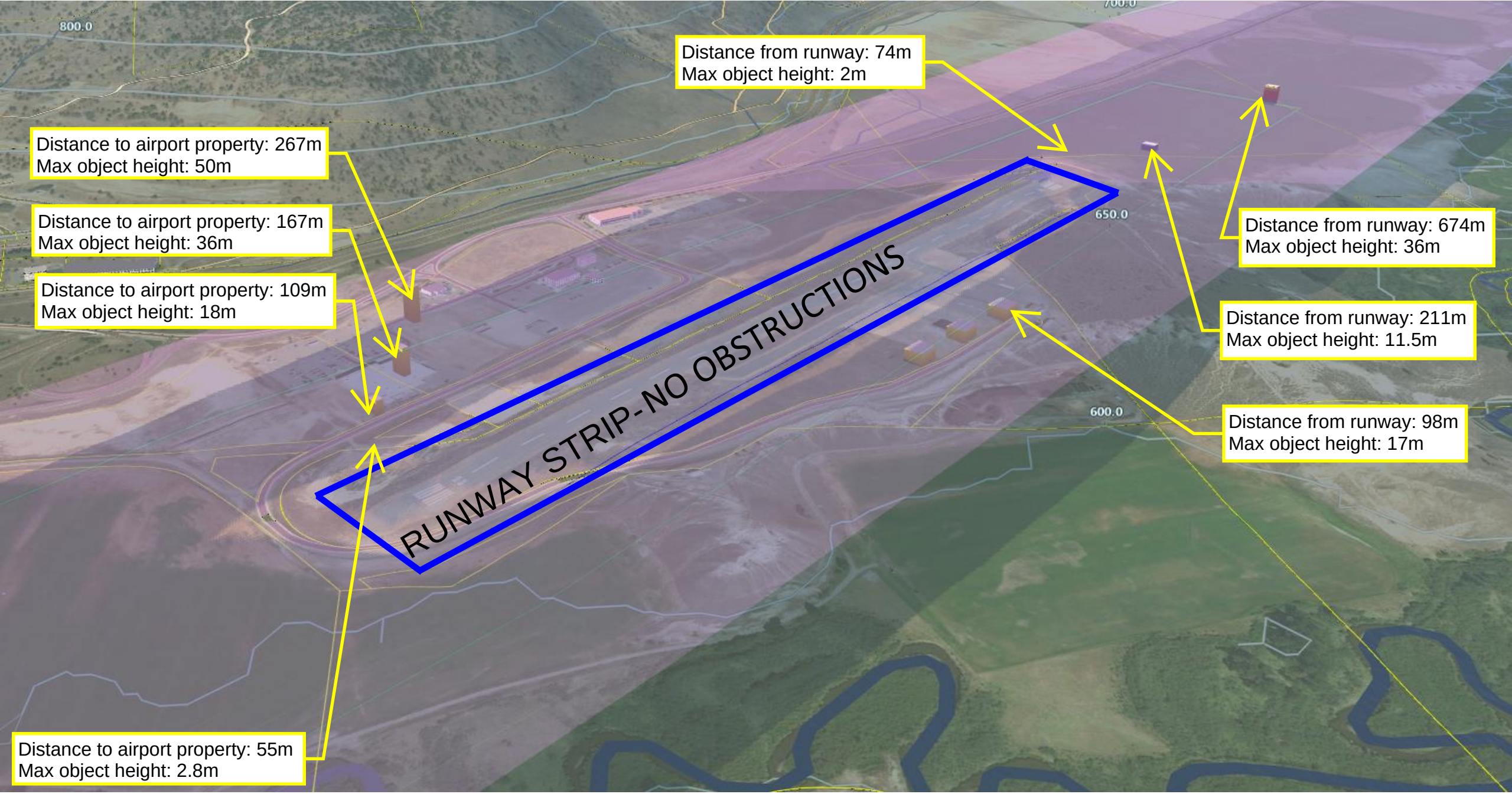

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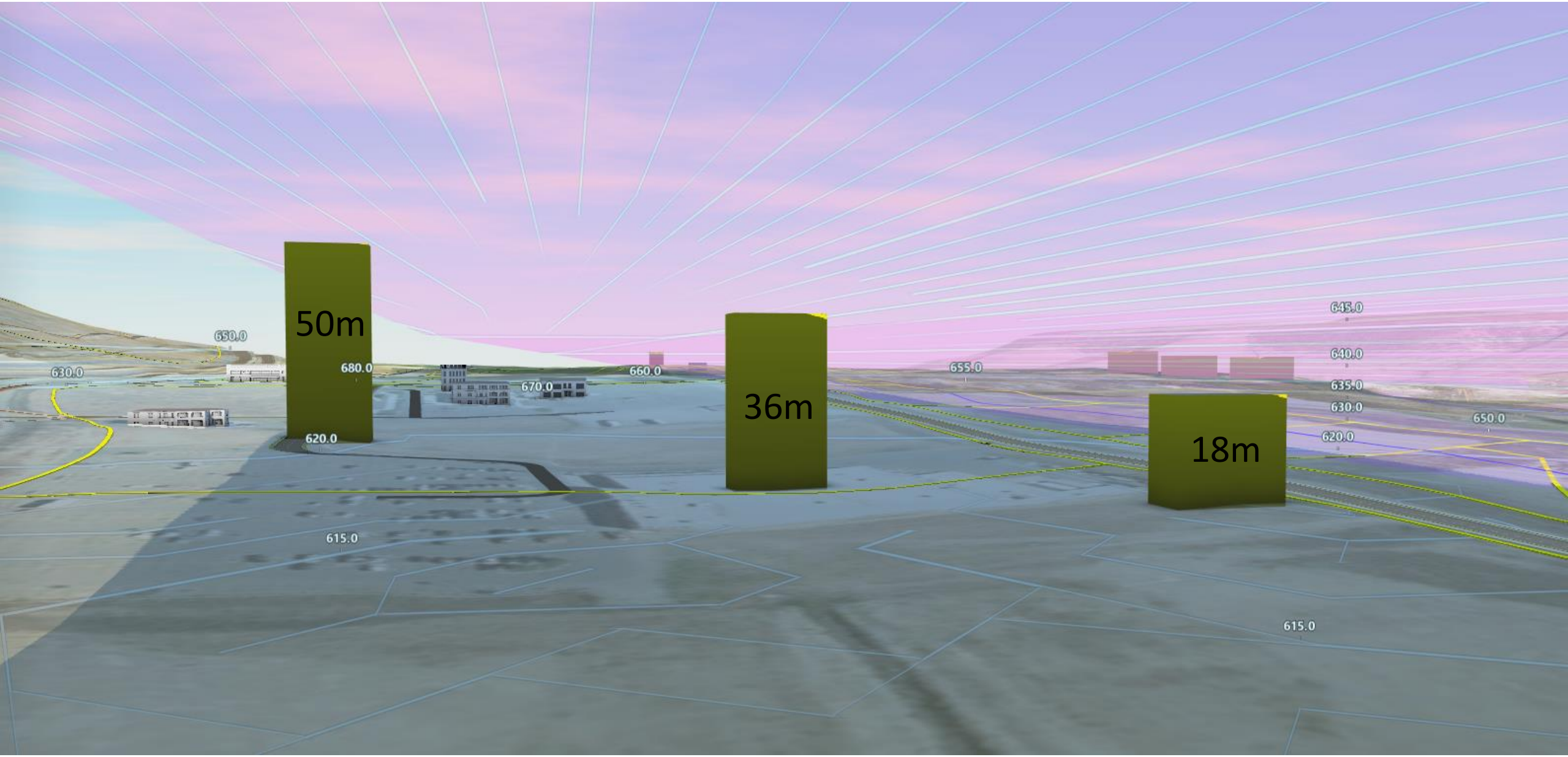

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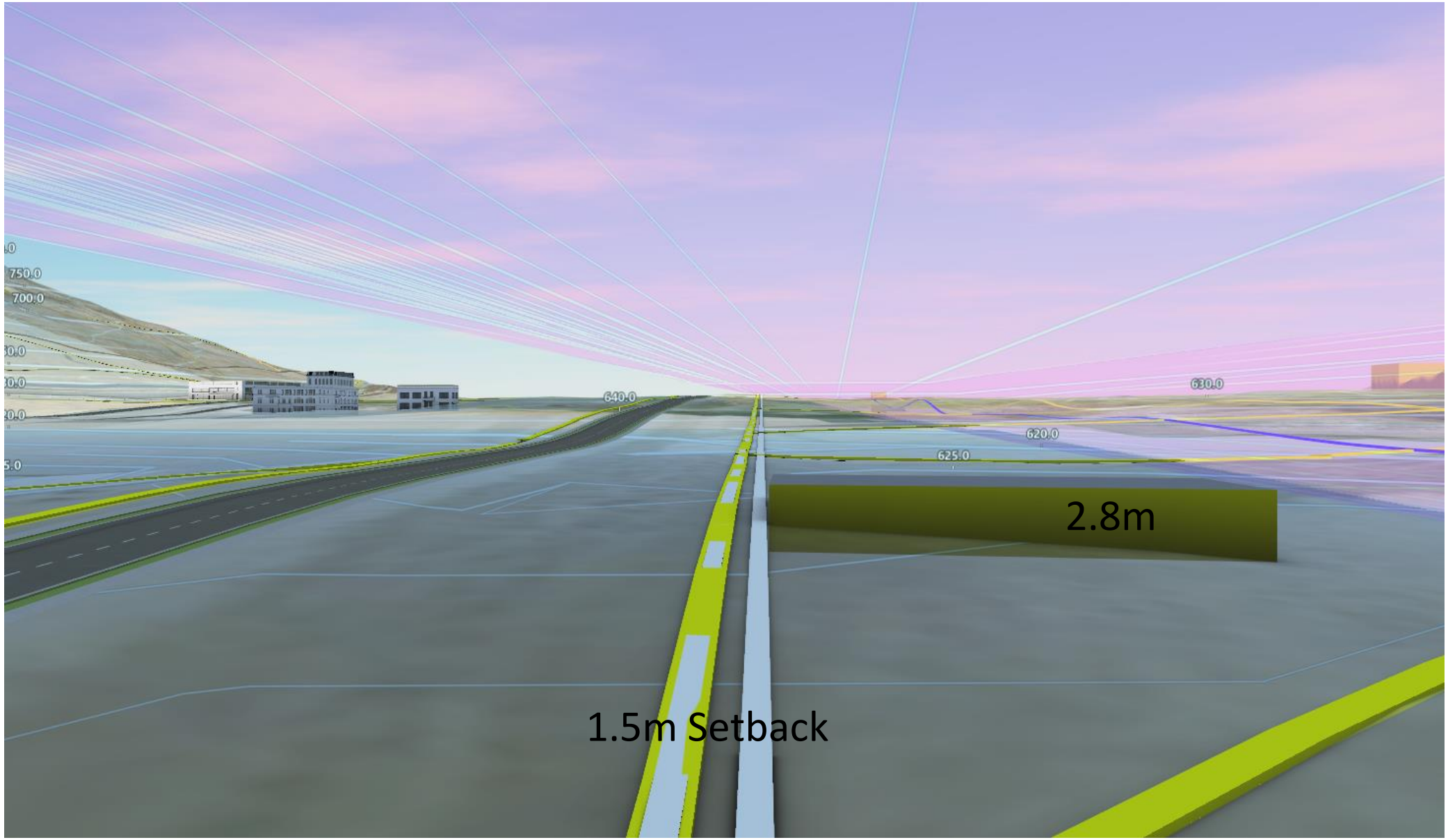

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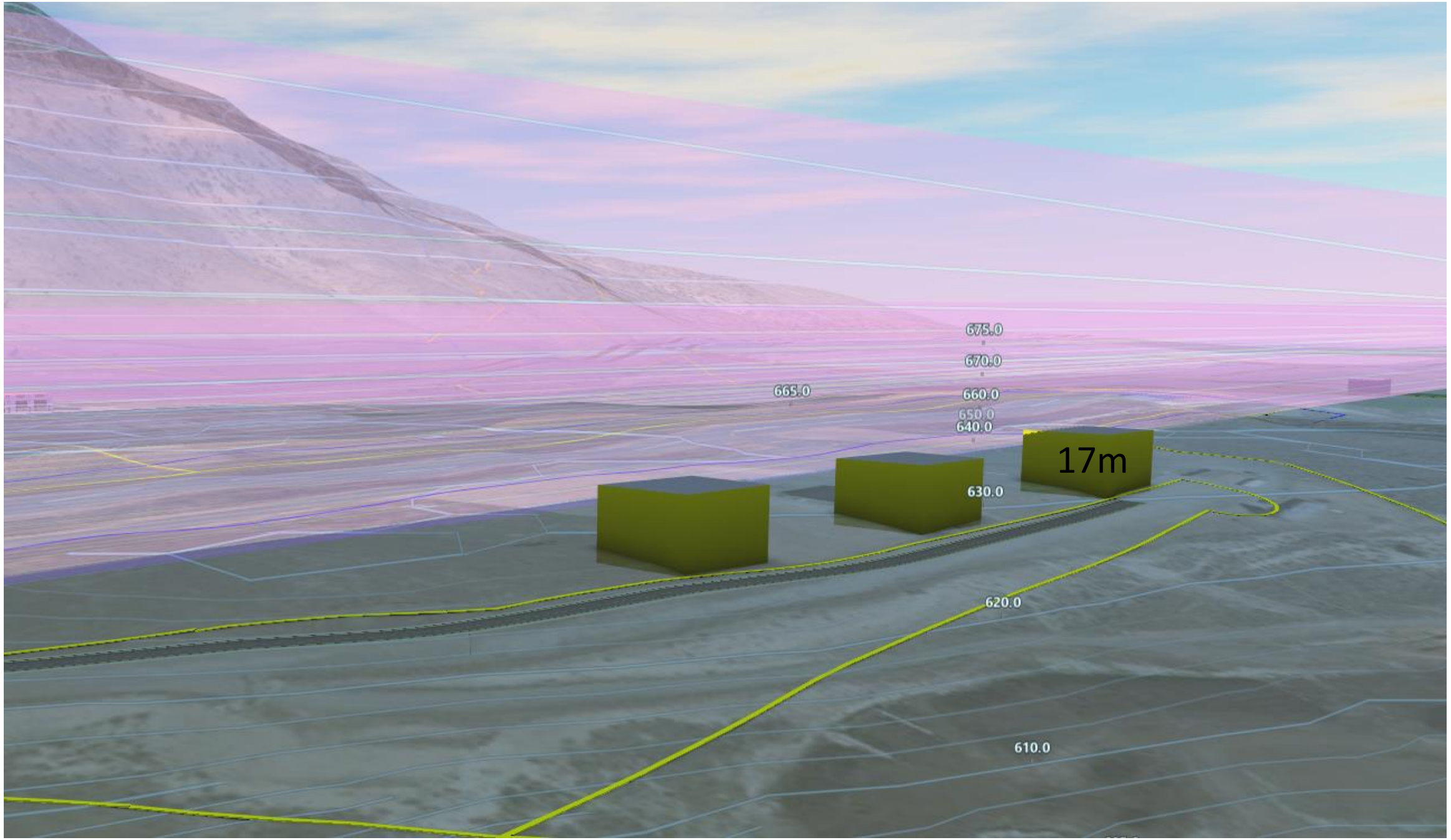

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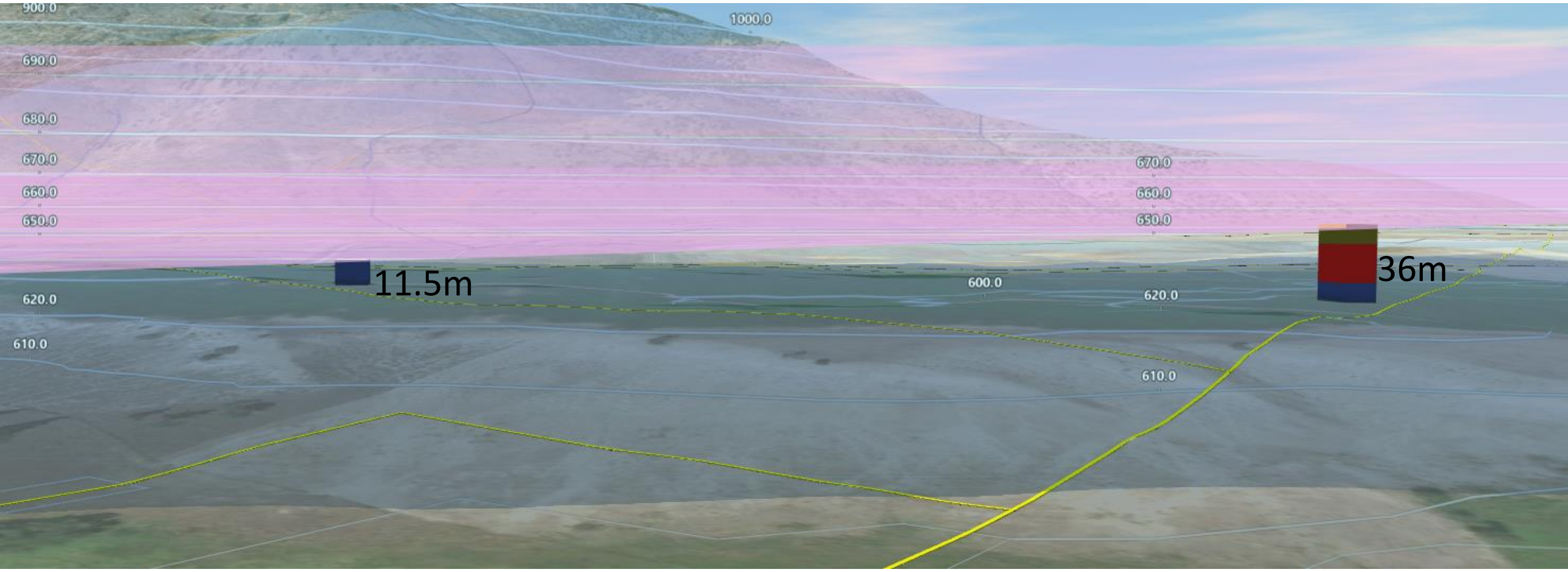

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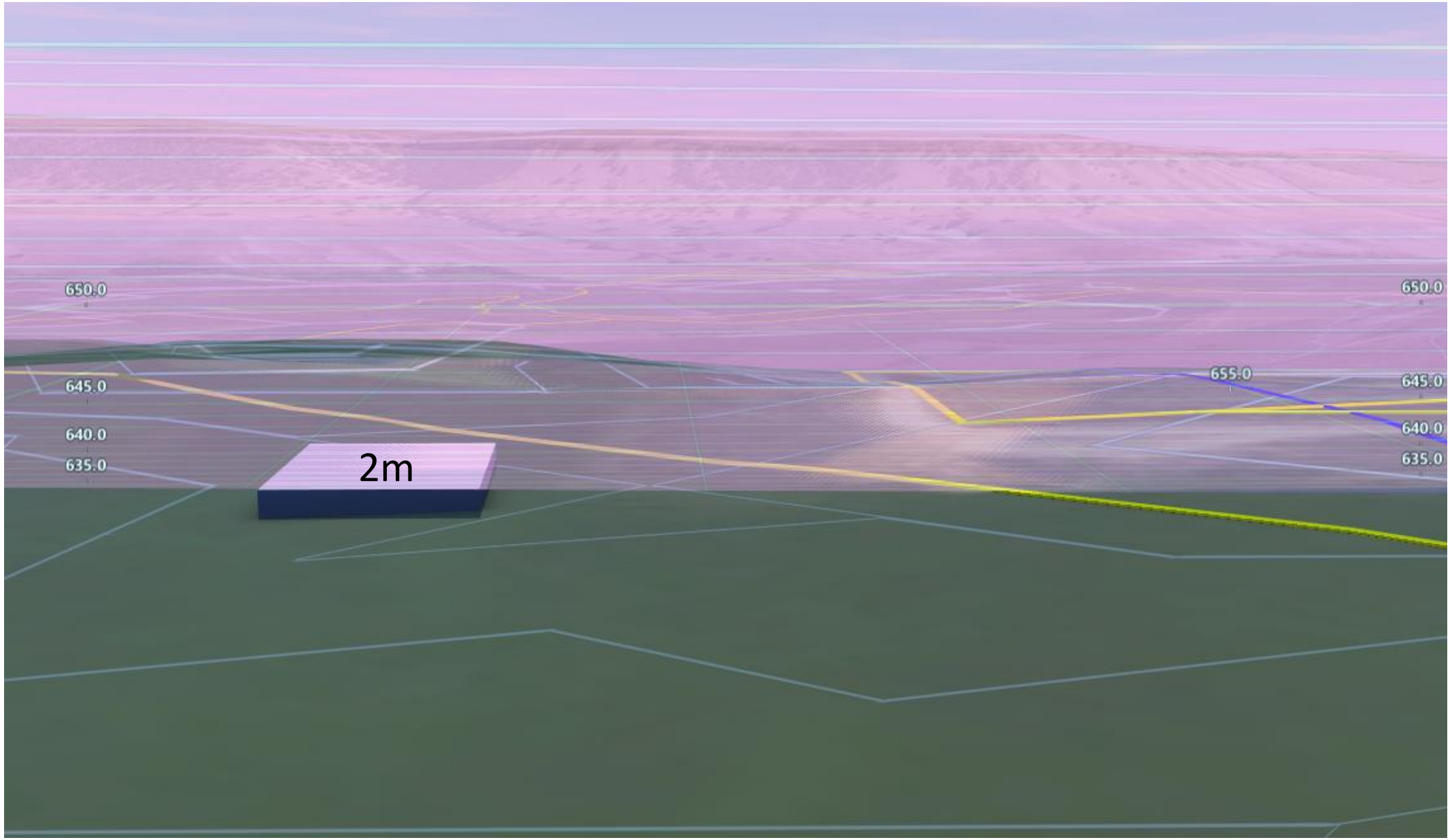

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