UBC Social Ecological Economic Development Studies (SEEDS) Sustainability Program

Student Research Report

Thunderbird Stadium Neighbourhood Integration

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THUNDERBIRD STADIUM NEIGHBOURHOOD INTEGRATION

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EXECUTIVE SUMMARY

The purpose of this project is to identify precedents for integrating sports stadiums into medium- to high-density neighbourhoods and to generate a set of approaches and principles to apply to possible scenarios and locations for a rebuilt stadium on the University of British Columbia Campus. The stadium will be located within the future Stadium Road Neighbourhood that will occupy a 993,000 sq ft site on the south side of campus and which will eventually house between 2,000 and 2,500 people.

PRECDENTS

The first section of the report is an analysis of the following seven precedents, which were selected based on their ability to provide valuable lessons for stadium-neighbourhood integration, whether that be in terms of its physical form or a programming strategy.

FORSYTH BARR STADIUM

COLORADO STATE STADIUM

FENWAY PARK

RICHARDSON STADIUM

TD PLACE

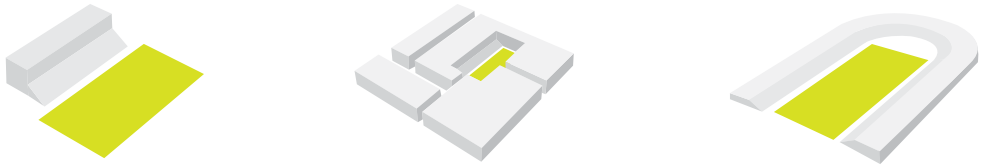
SEATTLE UNIVERSITY PARK

VARSITY STADIUM

APPROACHES & PRINCIPLES

The precedent study revealed different approaches to stadium integration that are categorized into the themes listed below. The second section outlines these approaches and provides a summary of the principles associated with each approach.

FORM & ORIENTATION



CIRCULATION

VISUAL CONNECTIVITY

ACTIVATION

NOISE MITIGATION

THUNDERBIRD STADIUM

The final section takes the approaches and principles learned from the precedents study and applies them to the context of the Stadium Road Neighbourhood and the integration of a rebuilt Thunderbird Stadium. Two scenarios, demonstrating two possible stadium locations, are used to explore the implications that the placement of the stadium has on its form and orientation, the circulation of vehicles and pedestrians, visual connectivity, activation, and noise mitigation.

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INTRODUCTION

This project is part of the UBC SEEDS Sustainability program and was conducted in partnership with UBC Campus + Community Planning as part of the Stadium Road Neighbourhood (SRN) planning process at the University of British Columbia. The Stadium Road Neighbourhood site is approximately 993,000 square feet and is located on the south side of campus where Thunderbird Stadium currently stands. The new plan will consist of a rebuilt stadium and a possible shift in its location within the site. The aim of this project is to identify precedents for integrating sports stadiums into medium- to high-density neighbourhoods and to generate a set of approaches and principles to apply to possible scenarios and locations for a rebuilt stadium. The study explores issues such as pedestrian and vehicle circulation, visual connectivity, parking, noise mitigation, community amenities, and compatible uses. The goal is that the stadium becomes an amenity, not only for the wider campus community, but also for the residents of the Stadium Road Neighbourhood. In other words, the development of a new Thunderbird Stadium is an opportunity to set a new precedent for on-campus stadiums by reconceptualizing their function within the community.

The author would like to thank UBC's Campus + Community Planning staff for the valuable educational opportunity and for their feedback throughout the duration of the project.

METHODOLOGY

This project was divided into three different phases, each with a dedicated section in this report. The first phase was the precedent study. Precedents were chosen through initial exploratory research and recommendations from Campus + Community Planning staff. The precedents were selected based on their ability to provide valuable lessons for stadium-neighbourhood integration, whether that be in terms of its physical form or a programming strategy. Since the available background documents varied significantly between stadiums, each precedent was analyzed based on the documents available and the thematic areas that were most relevant to each stadium.

The second phase of the project is structured by a set of themes that encompasses the findings of the precedent study. These themes are: form and orientation, circulation, visual connectivity, activation, and noise mitigation. This section outlines the different approaches to each of these themes by using examples drawn from the precedents. This allowed for the development of principles for stadium-neighbourhood integration, which are summarized at the end of each section.

The third phase of the project was to identify two possible scenarios for the location of the stadium on the site and to apply the approaches and principles developed in the second phase to the SRN context. The locations were chosen through discussions with planning staff and provide interesting insights into the implications and tradeoffs associated with the stadium's placement within the site.

PRECEDENTS

The precedents in this section were identified through exploratory research and recommendations from UBC Campus + Community Planning staff. The set of precedents consists of both on and off campus stadiums as well as stadiums across various scales. While the research was not able to produce an exemplary precedent that deserves replication, there are particular aspects of each precedent chosen that provide valuable lessons for a new Thunderbird Stadium.

1 FORSYTH BARR STADIUM

University of Otago uses

University Quadrangle

SITE CONTEXT

Forsyth Barr Stadium acts as a "gateway landmark" to the University of Otago.[1] Located just outside Dunedin's city centre, at the eastern edge of campus, the stadium stands at the intersection of the city's recreational, academic, commercial and industrial zones. The site is bounded by a three lane road, the 88 State Highway, and the Leith River.

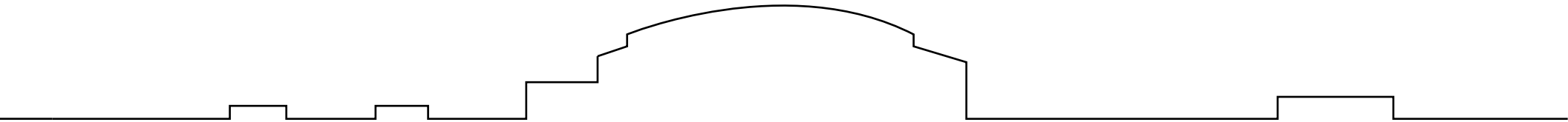
COMPATIBLE USES

In an effort to maximize the integration of the Otago campus and the stadium, the site includes two university facilities directly adjacent to the east and west sides of the stadium. The aim is to "keep the whole precinct alive at all times rather than just during major events" and to "maximize the use of the buildings and surrounding infrastructure".[2]

The spatial needs of the university are addressed in these adjacent facilities by providing approximately 7000m^2 of flexible learning space suitable for tutoring, teaching and administrative uses.[3] In addition to academic space, the University's Unipol Recreation Centre also has a home on the site and includes workout facilities and a gymnasium. This integration of sport and academia broadens the array of users to include university students, faculty, and staff. By increasing the scope of activity within the site and appealing to multiple types of users, the stadium becomes an asset to a wider community.

COMMUNITY AMENITY

Entrances to the stadium and university facilities are located off the University Quadrangle, which acts as an important pedestrian connection to the University of Otago campus. This plaza is intended to be the focal point of the site and a centre of community activity, not only on game day but also during the school week.[4] The design includes "intimate spaces for the everyday use of University students" but can also be adapted for larger scale events that allow the activity of the stadium to engage with the city. [5] Events such as craft fairs, exhibitions, and visiting shows can be held in the plaza, adding to the diversity of activity that is accommodated by the stadium site.[6]




COLORADO
STATE
2
STADIUM

Single family residential neighbourhood

Colorado State University

SITE CONTEXT

The Colorado State University Stadium is an on-campus stadium located in a square block along the southern border of campus. The stadium is at the foot of Meridian Avenue, a primary route running north-south that divides the recreational and academic zones of campus. Despite its southern location, the stadium was designed to be the so-called "heart of campus"[7] and includes a large gathering space acting as the main entryway. This space serves as the main pedestrian connection to the stadium, while the four feeder roads and surface parking that bound the site accommodate vehicle access. There is student housing located to the north of the stadium and a residential neighbourhood to the south.

FORM & ORIENTATION

The form and orientation of the stadium help integrate the site into the university fabric. Its U-shape design opens it up to campus and exposes the stadium's internal activity from the outside. Its centred alignment at the terminus of Meridian Avenue and its orientation towards campus create a strong connection to the rest of the university and provide a clear focal point for pedestrian movement on game day.

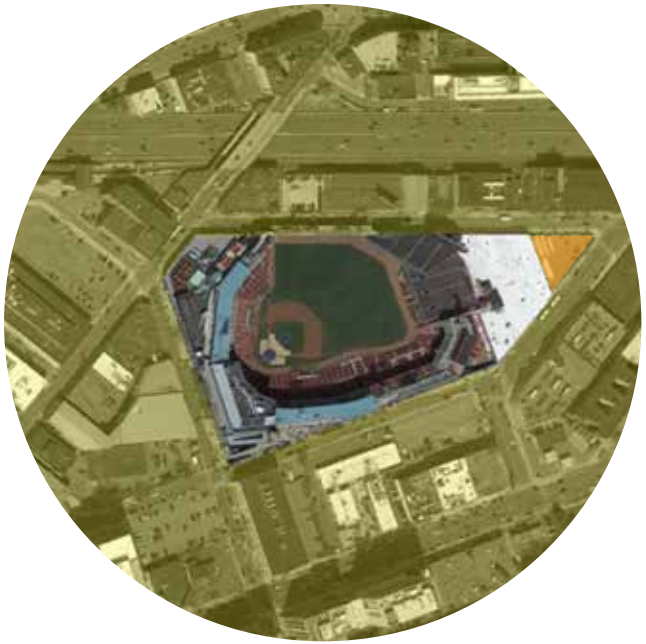
COMPATIBLE USES

The Alumni Centre occupies 20,000 square feet of space on the northeast corner of the stadium. As a place that "plays tribute to all that makes us proud to be Colorado State University Rams"[8], the Centre's programming is a logical fit with the activity of the stadium. Classroom and advising space is also provided within the stadium design, addressing the need for academic space on campus as a result of growing enrollment[9]. The addition of these uses onto the site brings the wider university population into contact with the stadium on a more regular basis.[10]

NOISE & LIGHT MITIGATION

In addition to the installation of beam efficient lighting, certain design aspects of the stadium help to reduce noise and light spillover into adjacent neighbourhoods. The massing on the east and west sides of the stadium is effective in mitigating noise. The scoreboard located at the south end of the stadium also acts as an obstruction and helps to protect the neighbourhood to the south from light spillover and noise.[11]. A report from the City of Fort Collins recommended to increase the massing on south side of the stadium to further reduce and light noise impacts.[12] However it does not appear that this recommendation was implemented in the final design.


3
FENWAY PARK



Mixed-use neighbourhood

Storage/loading lot

SITE CONTEXT

Fenway Park is located in the urban setting of the Kenmore Square/Fenway neighbourhood in Boston. The neighbourhood consists mostly of mid-rise brick buildings and includes a mix of residential and commercial uses. The city's street pattern forms the edges of the site, creating an irregular shaped five-sided block that is responsible for the stadium's unique configuration. Directly to the east is the northern tip of the Back Bay Bens, which is a long and winding piece of parkland that runs through the city.

BUILT FORM

Fenway Park is an example of a stadium that seamlessly fits into the surrounding urban fabric .The height and the building materials used for the façade are consistent with the rest of the neighbourhood and the relatively narrow, two-lane streets create a close relationship between the stadium and the buildings that surround it.

Perspectival cross section showing the relationship between the stadium and the surrounding neighbourhood. Image source: https://archinect.com

TRANSPORTATION

The dense urban setting influences the way fans get to Fenway Park. The lack of parking and heavy congestion on game day make transit the easiest, most convenient and cheapest way to get to the stadium.[13] The stadium is in close proximity to a variety of transit options including light rail, commuter rail, and rapid bus. Nearby transit stops are shown in the figure below. The tight location of the stadium, reinforced by the narrow streets, is an unaccommodating environment for large loading trucks and equipment storage. This situation is remedied by the dedication of a storage lot within the site boundary that is big enough to hold truck trailers and provides a connection to the stadium via the Fenway Garage for the transfer of goods.

Nearby transit stops

Stadium entry gates

4 RICHARDSON STADIUM

Single family residential neighbourhood

SITE CONTEXT

Richardson Stadium is an on-campus stadium located on the West Campus of Queen's University. Residential neighbourhoods surround the West Campus, the closest being a single-family neighbourhood bordering the east side of the stadium. Student housing is located to the south, practice fields to the north and a large surface parking lot directly to the west.

TOPOGRAPHY

The natural bowl shape of the topography had a significant impact on the design of the stadium. It allowed the concourse to be set at grade level and the seating to descend down the sides of the bowl.

NOISE MITIGATION

Due to the close proximity to residential areas, noise mitigation is a significant challenge. This issue was taken into consideration during the design phase of the stadium's recent redevelopment. The massing on the east side of the stadium acts as an obstruction, reducing the noise levels experienced by the neighbourhood directly to the east.[14] The Noise Impact Assessment also reported that the continuous u-shape of the aluminium bleachers acts as an acoustical barrier.[15]

CIRCULATION

Visitors enter the stadium through two gates located on the east side. The gates lead directly on to the u-shaped concourse which visitors can walk the entire length of while maintaining view of the field.[16] The concourse is meant to be social space where visitors can buy food and mingle, all while enjoying the game.

5 TD PLACE

SITE CONTEXT

Lansdowne Park is located at the intersection of Bank Street and the Rideau Canal in the Glebe neighbourhood of Ottawa. It was redeveloped in 2015, introducing a new urban park, mixed-use development and the TD Place sports complex, which includes a stadium and arena. Exhibition Way serves as the main entrance from Bank Street and extends through the site, terminating at the historical Aberdeen Pavilion. TD Place is located on the south side of the site with its retail frontage lining Exhibition Way. A public park is located to the east of TD Place and wraps around the south side of the stadium, providing a green buffer between the site and Queen Elizabeth Drive.

COMPATIBLE USES AND ADJECENCIES

Lansdowne Park includes 280 residential units, 100,000 sq. ft. of office space, and 360,000 sq. ft. of commercial space[17]. The site planners took a mixed-use approach in an effort to create an "urban village" that would attract a wide range of people to take part in year-round programming and activities.[18] The mixed-use approach was also applied to specific developments within the site. For example, retail uses were integrated into the redevelopment of TD Place in order to provide an active frontage along Exhibition Way that also includes access points into the stadium. The retail uses along Exhibition Way create a consistent pedestrian experience between Bank Street and Lansdowne Park, better integrating the neighbourhood's commercial corridor into the site.

Lansdowne Park's residential development and the stadium site have a weak spatial relationship. The residences are located on the northern edge of the site and the stadium to the south with retail development in between. Although these uses are separated within the Lansdowne Park site, an off-site residential tower stands directly adjacent to the west side of the stadium. The upper units of the tower offer views directly into the stadium, which is used as a selling point in the marketing of the units.[19]

CIRCULATION

The primary pedestrian entrance is via Exhibition Way off Bank Street, which aligns with the entrance to the historical Aberdeen Pavilion, an iconic heritage building in Ottawa. The Pavilion stands at the terminus of Exhibition Way, guiding pedestrian movement eastward while the retail spaces that line the street frame the view of the building. To access the stadium, pedestrians can enter the two gates along this route or continue eastwards through the park, which wraps around the stadium and connects to three other entry gates. The connecting pathways and permeable design of the stadium allow the public to flow through the stadium structure while still in the park. The landscaped berms on the east side of the stadium also enhance the connectivity between the park and the stadium by allowing the public to view the internal activity of the stadium from the park. [20]

6 SEATTLE UNIVERSITY PARK

University of Seattle Capitol Hill Neighbourhood University Residences

SITE CONTEXT

Seattle University Park is located on the southern edge of campus in the Capitol Hill Neighbourhood of Seattle and consists of a turf field, a softball diamond, and a running track. The site borders 12th Avenue, an important connection between Capitol Hill and the Pike/Pine commercial corridor. A mixed-used student housing development is located across 12th Avenue to the east, and an above-ground parking garage with student housing on the upper floors is located to the west. Across Cherry St. to the north is a primary pedestrian access point to the university, serving users of the parking facility and residents of the nearby student housing.

COMMUNITY AMENITY

While the Park was primarily designed to meet the needs of the University, it is open to the public and has therefore become an amenity to the neighbourhood. Capitol Hill residents were consulted during the planning process and were therefore able to voice their concerns about the project such as the height of the retaining wall along 12th Ave, for example, which was minimized as a result. [21]

COMMUNITY CONNECTION

Involving the broader community in the design process, rather than solely university users, meant more attention was paid to the relationship of the Park with the surrounding neighbourhood. Entrances to the park are located on the southwest corner of the site, connecting the Park with the residential area to the south, and the northeast corner, connecting the park to 12th Ave, a vital pedestrian corridor in the neighbourhood. [22] This northeast entrance is set back from the sidewalk in order to create a small landscaped public plaza with seating and wayfinding signage. These features enhance the pedestrian connection between the park and 12th Ave. and support the goal to make the intersection a District Gateway, as outlined in the Seattle University Major Institution Master Plan. The District Gateway designation emphasizes the site's important role in enhancing connectivity and strengthening the identity of the district .[23]

COMPATIBLE USES

Seattle University Park demonstrates how compatible uses can be integrated into smaller scale sports facilities. For example, underground parking was constructed underneath the field in order to meet university demand for parking without using up limited university land.[24] The University's Major Institutional Master Plan also proposes retail development along the north-west corner of the site as part of the strategy to activate 12th Ave.[25] Sports facilities can therefore contribute to the vitality of the surrounding urban environment through the integration of activating uses.

7 VARSITY STADIUM

SITE CONTEXT

The University of Toronto's Varsity Stadium is an urban, on-campus stadium located on the north side of the St. George campus. The site's northern edge is formed by Bloor street, a vibrant commercial street in the South Annex neighbourhood. The stadium's surrounding buildings make up Varsity Centre, a sports complex that includes the Varsity Arena and the Goldring Centre for High Performance Sport.

COMPATIBLE USES

The Goldring Centre for High Performance Sport adjacent to the stadium was "designed to welcome everyone from the university and the community who is interested in physical activity and sport."[26] The Centre is used for academic programs, children's programs and camps, and provides rental space for community and student groups.[27] The Centre's primary relationship is with the football field. The windowed façade allows users of the facility clear views of the field and puts the facility's internal activity on display for passersby.

COMMUNITY CONNECTION

The 2007 Bloor Street Community Vision expressed the community's desire for a better connection between the stadium and Bloor Street. Before the redevelopment of the stadium, a brick wall obstructed views from Bloor Street into the stadium and distanced the activity of the stadium from the bordering neighbourhood. The Vision recommended that Bloor Street be designed as a more walkable street and identified opportunities for stadium entrances and viewing platforms along Bloor.[28] These recommendations are addressed to some degree in the site design. While the brick wall remains, it has been shortened in order to open the space at each end allowing for a viewing platform on the north-west corner and an entry gate on the northeast corner. Placing the main entry gate off Bloor Street enhances the connectivity between the Stadium and the South Annex neighbourhood. In addition, the viewing platform opens up the stadium to the residents, generating interest from passersby and allowing locals to participate as spectators.[29]

APPROACHES & PRINCIPLES

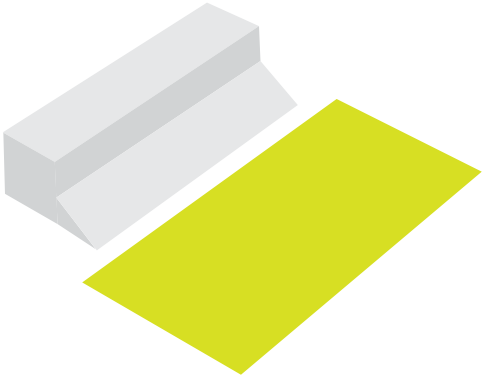
The precedent study revealed different approaches to stadium integration that can be categorized thematically. Using examples from the precedents, this section outlines possible approaches related to each theme and generates principles which are summarized at the end of each thematic section.

FORM & ORIENTATION

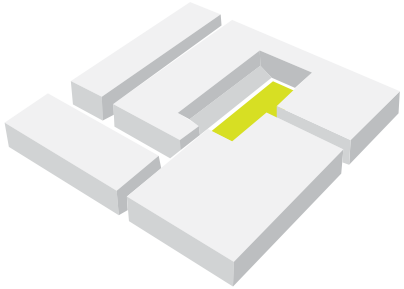
FORM

The form of a stadium is highly influenced by its surrounding context. Stadiums that are inserted into an already established built fabric must conform to the existing built conditions and are therefore likely to be better integrated into the built environment from a design perspective. On the other hand, undeveloped sites that lack an established street grid provide fewer limitations on the design of the stadium and offer more leeway in terms of the desired relationship between the stadium and the surrounding neighbourhood. Stadium design is also influenced by existing topography. Changes in grade can create natural amphitheatres that provide an opportunity for the stadium to be embedded within the landscape. These variables translate into three approaches to stadium form: (1) 'clip-on', (2) carved out, and (3) landscaped.

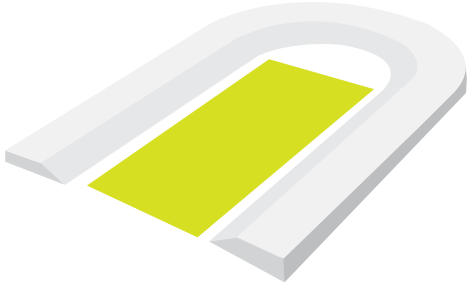
1. The first approach is the 'clip-on' concept in which the stadium services are built as a part of the stadium development and 'clipped-on' as an attachment. Forsyth Barr Stadium is an example of this approach. The University of Otago's development that contains compatible uses is 'clipped-on' to the west side of the stadium and serves as the main entrance, forcing visitors to pass through it before entering the stadium. This approach offers flexibility in terms of the form and configuration of the attached services, especially in an un-built environment, which provides few limitations.



2. A 'carved-out' approach places the stadium into a densely developed site. The surrounding development provides the dimensions for the construction of the stadium and thereby constricts its scale. This creates the effect of the stadium being carved out of the built fabric, as opposed to the surrounding development being built around the stadium. The services associated with the stadium are then integrated into the development that surrounds it, rather than being tacked on as a separate development.

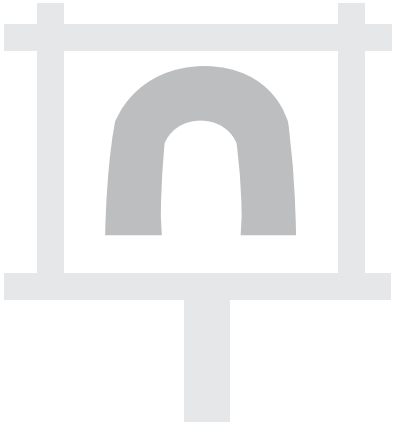


3. The landscaped approach uses topography to form the shape of the stadium. Topographical features like slopes and berms can serve a seating function while creating a unique and natural spectator experience. Richardson Stadium at Queen's University is an example of the landscaped approach because it takes advantage of topography. The natural bowl shape allows the stadium to be placed below grade, while the slope provides a natural base for seating.



ORIENTATION

A stadium's orientation refers to how it is positioned in relation to the street grid and surrounding development. Design decisions about a stadium's orientation are influenced by matters of visual and physical connectivity as well as noise spill over. Entrances can be oriented strategically in order to direct pedestrian and vehicle circulation away from adjacent residential neighbourhoods. For example, Colorado State Stadium's strategic alignment with a primary campus route and its inward facing orientation help to integrate it into the campus context and reduce noise spillover to the residential neighbourhood behind it.



Fenway Park's orientation reflects its close relationship with the surrounding street grid. Gate access to the stadium is provided off of three of the surroundings streets that bound the site, orienting the stadium towards more than one direction.

PRINCIPLES

1. The form of a stadium can be categorized into three different approaches: 'clip on', carved out, and landscaped. Topography, existing development, and the surrounding street grid are conditions that will determine which approach best suits the site.

2. How a stadium is oriented in relation to the surrounding street grid influences the level of integration with its surroundings and affects matters of visual connectivity, noise mitigation and circulation.

CIRCULATION

PEDESTRIAN

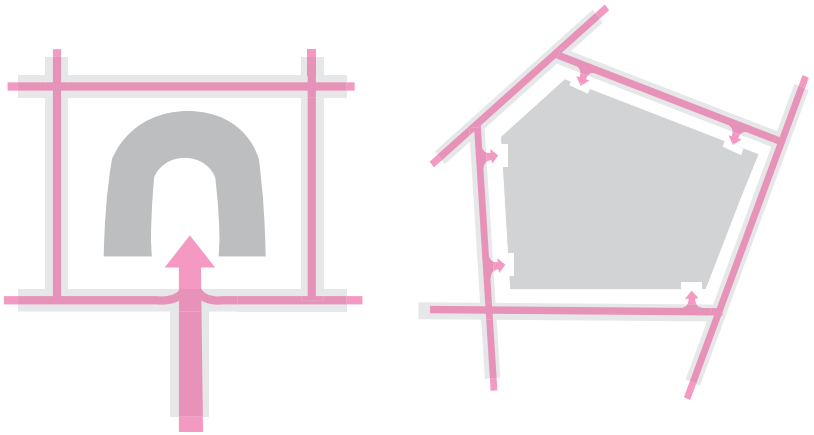
Connectivity between the stadium and its surrounding neighbourhood can be strengthened or weakened through circulation design. The precedents show that there are two features of circulation design that determine the degree of perceived and physical connectivity between a stadium and its surroundings: (1) the number of stadium entrances and (2) the configuration of pathways that lead to the stadium entrances.

These circulatory features are highly interrelated. The number of primary entrances will determine the number of pathways and the configuration of these pathways will affect the degree of visual continuity in the approach to the stadium.

1. Stadiums that have one main point of entry concentrate the flow of bodies into a single entry area. While this concentration of people may put pressure on existing infrastructure to accommodate an influx of users on game day, it makes managerial concerns like staffing and security easier to organize.[30] In addition, when visitors to the stadium are gathered in a large mass, it heightens the awareness of the activity taking place and may generate increased curiosity and desire to participate in this shared experience. This is particularly relevant on a university campus, where sports events can be used as a community-building tool and a way to generate pride and school spirit.

The University of Colorado Stadium has three entrances; however, only one entrance is designed to stand out as the main entry point due to its prominent size and location. This primary entryway is aligned with a straight axial path (Meridian Ave.) that directs movement from the rest of campus towards the stadium. The linear configuration of the path creates a clear view of the entrance during the approach. The other entrances are hidden from view on the other sides of the stadium and therefore play less of a role in connecting the stadium to campus. This example shows that a stadium's alignment with a primary pathway will help to enhance the stadium's presence in the area--those who use the route will have their gaze directed to the stadium as it serves as a guiding landmark and view terminus along the route.

2. Stadium circulation can also be designed to disperse instead of concentrate visitors. Fenway Park is an example of how multiple entrances along with multiple pathways can create a highly connected relationship between the stadium and the surrounding neighbourhood. Because the pathways align with the entrances, they provide efficient connections from various directions, as opposed to one large pathway that can accommodate many people but from only a single direction. Experts in stadium design recommend this approach in order to mitigate congestion and to hasten the egress of visitors.[31]



VEHICULAR

Although efficient pedestrian circulation is often at the centre of good stadium design, vehicular accessibility is a logistical necessity. The delivery of goods and equipment requires truck access and space for a loading area adjacent to the stadium. Enough parking to accommodate large crowds on game day must also be considered—although the necessary amount will depend highly on the reliability and convenience of public transit to the stadium. While these requirements can disrupt a safe and pleasant pedestrian experience, there are certain design strategies that can reduce the negative impact of vehicle circulation on a stadium site.

In many cases, the unsightly aspects of a stadium's operation like truck loading and storage lots are placed behind the stadium, away from public view. However, depending on the design of a stadium site, this is not always possible. An open and accessible stadium site design that allows for free circulation of pedestrians around the site limits the opportunity for specified loading areas without disrupting the pedestrian experience. Dedicating a section of the site for loading and/or storage can reduce the amount of space provided for pedestrian gathering and can degrade the overall aesthetic of the site. A solution to this problem is creating a paved multi-use area, as in the Lansdowne Park case, that can be used as a loading and/or storage area, and when not used, is a gathering space for stadium attendees and the public. The location can be strategically landscaped in a way that adds greenery to the space, while not obstructing trucks and storage containers when used for this purpose.

Directing vehicle circulation underground can also help reduce the visual presence of vehicles on site and free up more space above ground for other uses. As shown with Seattle Park, the large dimension of a sports field provides the opportunity for the insertion of uses beneath it. In this case, the construction of a 825-stall parking facility beneath the field allowed for the removal of the surface parking that existed on the site before redevelopment.

Strategically locating the entrances to underground parking is another important consideration when seeking to control the circulation of vehicles in or around a stadium site. For example, by locating parking entrances around the periphery, this will reduce the amount of vehicle circulation through a site. This strategy is applicable to any context in which there is a desire to restrict vehicle circulation in a pedestrian priority area, but is particularly relevant in a context in which the stadium is located within the bounds a larger development, as in the case of Lansdowne Park.

PRINCIPLES

1. The number of entrances and their location can impact the level of pedestrian congestion. A higher number of entrances that are spread around the perimeter of the stadium will disperse visitors, while a single main entrance will have a concentrating effect.

2. The configuration of pathways will influence the degree of visual continuity between the stadium and the surrounding area. Straight, axial pathways that define the approach to the stadium increase its prominence in the landscape by strengthening its visual presence.

3. Pedestrian plazas can be closed off and used as temporary loading and storage areas when required. Mountable curbs and removable gates can allow for the accommodation of vehicles, while still maintaining the pedestrian priority nature of the stadium site.

4. The large dimensions of a sports field creates an opportunity for the insertion of uses below it—for example, parking.

6. Vehicle entrances to underground parking can be located strategically— for example, around the periphery or the site—in order to mitigate vehicle traffic crossing through the site and interfering with pedestrian priority areas.

VISUAL CONNECTIVITY

Strengthening visual connections can enhance the integration of a stadium into the surrounding community. Visual connectivity can be achieved by increasing the transparency of the threshold between the interior and exterior of the stadium—or between public and private space. The precedents show that this transparency can be applied at both (1) physical access points and (2) purely visual access points. Physical access points that have a high degree of transparency are stadium entrances that also serve as visual connections into the stadium and give the perception of low-barrier access. Purely visual access points do not serve as entrances but instead provide the public views of the stadium's internal activity. As discussed previously, it is important to note that the form and orientation of the stadium have a significant impact on views into the stadium.

1. The way in which the entrances are defined has a significant impact on the degree of integration and connectivity between the stadium and the neighbourhood. For example, increased transparency creates stronger visual continuity between the exterior and interior of the stadium and reduces the perceived barrier between public and private space. The entrances of Colorado State Stadium and Richardson Stadium at Queen's University have very transparent thresholds and therefore allow those outside the stadium to have clear views of the inside. This allows the public to feel connected to the activity of the stadium without having to attend a game.

The entrance to the Colorado Stadium is located in a gap between the stadium's massing where only the turnstiles serve as the threshold between public and private space. The threshold can therefore be described as transparent because it allows the visual connection between the inside and outside of the stadium to be maintained.

Richardson stadium also provides strong visual connectivity between the stadium and the surrounding area due to the natural bowl-shaped topography. Because the field and seating are located below grade and the massing around the entry gate is kept to a minimum, there is little to block sightlines during the approach from the parking lot into the stadium.

2. Transparency can be used to provide purely visual rather than physical access to the stadium. While this application does not provide physical connectivity, it allows outsiders to visually participate in the activity of the stadium. Transparency is also an opportunity to reduce the negative impact of a stadium's inactive edges on a surrounding neighbourhood. For example, the wall along the north side of Uof T's Varsity stadium is trimmed at the ends in order to shorten the inactive edge it creates along Bloor Street. The north-west end of the wall is designed as a pedestrian viewing platform, visually connecting the Annex community to the stadium.

TD Place in Lansdowne Park shows how visual connectivity can also be achieved at higher altitudes. High-rise development around a stadium provides the opportunity for unique views of a stadium that can both improve the visual connection between the stadium and the neighbourhood while enhancing the experience of high-rise living.

PRINCIPLES

1. Increasing visual connectivity can help integrate a stadium into the surrounding neighbourhood by providing outsiders the opportunity to participate in the activity of the stadium.

2. Visual connections can be created by designing gaps in the massing, which can offer views from adjacent uses and activities, including views from above, as well as from the approach to the entrance of the stadium.

ACTIVATION

Stadiums are generally regional amenities that attract visitors from a wide metropolitan area. Because they do not often serve a local purpose, stadiums risk being disruptions rather than positive additions to a neighbourhood. Therefore, in order to successfully integrate a stadium into its surrounding context, it needs to provide value for the surrounding community. "Activation" refers to the ability of a stadium to attract people to the site on days other that game day, and for reasons other than attending a game. The precedents show that a stadium site can be activated in two ways: by integrating compatible uses within the site and by serving as a community amenity through the provision of public gathering spaces.

COMPATIBLE USES

Integrating compatible uses into a stadium site diversifies the variety of activities available and thereby increases the diversity of visitors to the stadium. When aiming to integrate a stadium into the surrounding neighbourhood, a diversity of uses is important because it means that more people will have a reason to interact with the stadium in some way. The stadium then becomes a part of daily life, rather than a destination only visited on rare occasions for the specific purpose of attending a game.

The precedents demonstrate that additional uses can be added to a stadium site as a way to (1) activate the stadium's edges and (2) to fulfil the spatial needs of a surrounding institution.

1. The retail space in Lansdowne Park's TD Place not only activates the street frontage of the stadium, but it also plays a role in achieving a mixed-use community. Higher density developments that are limited by their land area require multi-functional buildings in order to maximize the ability of the development to provide for the needs of residents. In this case, the stadium development provides sports entertainment, but also food services, retail, and a fitness centre. These uses give Lansdowne Park residents more reasons to visit the stadium outside of game day.

The plan for Seattle University Park demonstrates how adding additional uses to a recreational park can contribute to specific planning strategies like increasing the activity along a particular neighbourhood street. By adding retail to the site in an effort to activate the street edge, the park now serves a higher purpose beyond providing recreational space due to its role in achieving a broader vision. The community may therefore consider it a greater asset due to its importance for the future of the neighbourhood and because it provides more value.

2. In addition to activating a stadium's frontages, compatible uses can be integrated into the stadium site in order to meet the needs of a nearby institution or to address a gap in existing uses. For example, Forsyth Barr Stadium was designed to provide much needed classroom space for the University of Otago. By aligning the programming needs of the University with the programming of the Stadium, the stadium now plays a role in the daily functioning of the university and is therefore better integrated into the surrounding context.

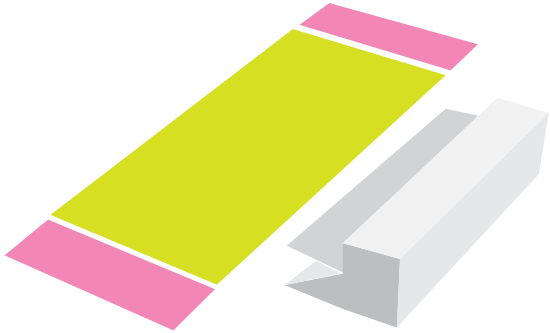
Compatible/Activating use

COMMUNITY AMENITY

Stadiums can have significantly negative impacts on a surrounding community due externalities such as noise spillover and high traffic volumes and often don't provide many benefits in return. It is therefore important that neighbourhood interests are considered in the design in order for the stadium to become an amenity for the community rather than a disruption.

By simply opening the park to the public, Seattle University has fulfilled the recreational needs of their institution while at the same time providing an amenity to the broader community. Allowing public access is a simple way to enhance the relationship between the stadium site at the neighbourhood. In the Seattle case, the public was also consulted during the planning stages of the park.[38] Involving the public in the planning process gives the community a greater stake in the outcome and is more likely to produce a result that aligns with their needs and interests. This is an example of how even the development of a smaller scale recreational site is an opportunity to provide a benefit to the community.

The precedents also show that the development of a new stadium is also an opportunity to provide new gathering space for the community. The public gathering spaces also serve as connections between the stadium and the neighbourhood and at the same time provide a buffer between the massiveness of the stadium and the smaller scale development that surrounds it. Forsyth Barr stadium, for example, includes a public plaza outside its entrance, which is meant to be adaptable to different community events and also provides an intimate space for students to gather.[39] The plaza provides the opportunity for people who are not paying to attend a game to still benefit from the stadium.



Public gathering spaces

PRINCIPLES

1. Compatible uses can be integrated in to a stadium in order activate otherwise in-active edges.

2. The development of a stadium is an opportunity to provide space for uses that are needed in the community

3. Adding compatible uses to a stadium will increase the diversity of users that interact with the stadium.

4. Allowing public use of the stadium's recreational facilities like the field is a basic strategy to make the stadium a public amenity.

5. Including public space within a stadium's development site can provide gathering places for the community and allows the community to benefit form the stadium without having to buy a ticket to a game.

NOISE MITIGATION

In order to successfully integrate a stadium into a residential context, the disruptive sensory aspects of stadiums like high noise levels should be mitigated. Acoustics technology is central to mitigating these effects but the built form of the stadium and its massing also play a role and are the focus of this study.

Closed roofed stadia can mitigate the travel of sound into adjacent neighbourhoods more effectively than open roofed stadia; however, particular attention needs to be paid to the internal acoustics of closed roof stadia in order to prevent sound reflection and noise build up insid.[32] Absorbent materials used in the construction of the roof and irregular shaped plans, as opposed to curved or rectangular, will help to prevent negative acoustical effects within the stadium. [33]

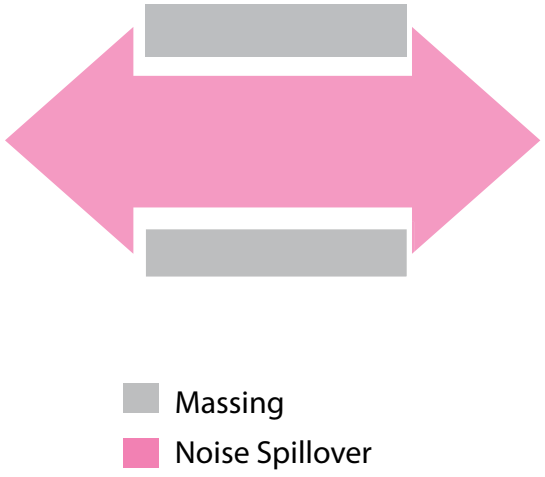
Necessary stadium features like seating and the scoreboard can also serve a sound mitigation function. In open roofed stadia, the noise mitigation function of these features is even more effective when the speakers of the stadium are placed at lower elevations. [34] According to a noise impact assessment, the continuous u-shape of the Richardson Stadium bleacher system helps to reduce noise spill over.[35] In the case of the Colorado State Stadium, the massing of the stadium is also in a u-shape and helps to mitigate sound travel.[36] At the south end of the stadium, where the massing is reduced, the scoreboard acts as an obstruction and help to reduced noise spill over to the south. Because the Richardson Stadium's bleachers and the Colorado Stadium's massing are in a u-shape, and not completely closed, noise spill over is higher at the open end of the stadium where there is a gap.[37] In both cases, this part of the stadium is oriented away from the adjacent neighbourhoods.

PRINCIPLES

1. The massing of a stadium can be used to mitigate noise spillover. Gaps in massing should be oriented away from adjacent neighbourhoods where high noise levels are undesirable.

2. Certain stadium features like bleachers and the scoreboard can help mitigate noise spillover.

3. The above features are more effective in mitigating noise when the speakers are located at a low elevation.



THUNDERBIRD STADIUM

This section takes the approaches and principles learned from the precedents study and applies them to the context of the Stadium Road Neighbourhood and the integration of a rebuilt Thunderbird Stadium. Two scenarios, demonstrating two possible stadium locations, are used to explore the implications that the placement of the stadium has on its form and orientation, the circulation of vehicles and pedestrians, visual connectivity, noise mitigation, and activation.

SCENARIO A

Scenario A places the new stadium in the middle of the site, fronting Stadium Road and aligned with UBC's main pedestrian pathway, Main Mall. The stadium seating is located on the west side of the field and faces east in order to reduce the solar exposure on spectators during evening games.

The central location of the field on the site has implications on the design and layout of the rest of the neighbourhood. Development will occur on the east and west portion of the site with the stadium bisecting the neighbourhood into two residential areas. The stadium will therefore have a central role in the identity of the neighbourhood and the everyday life of its residents.

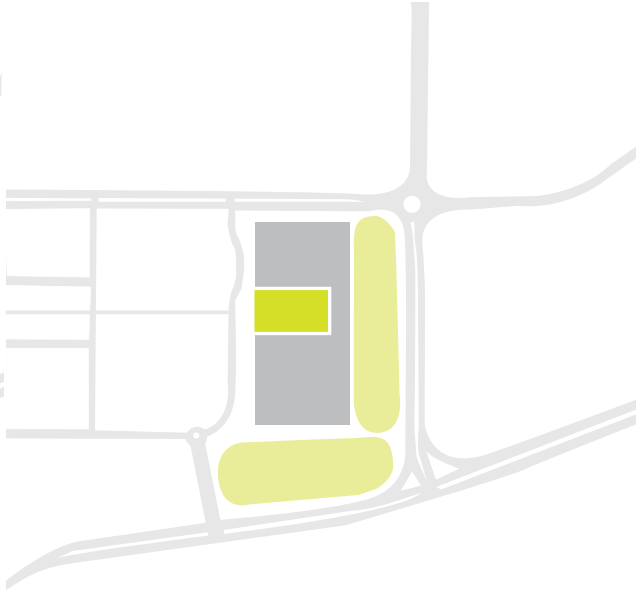
Further implications of this location for the stadium are explored in the following pages.

SCENARIO A | FORM & ORIENTATION

In Scenario A, the form and orientation of the stadium will have a significant impact on its relationship with the surrounding neighbourhood development to the east and west as well as the visual connectivity between the stadium and Main Mall. In the concepts below, the three approaches are explored, while the north-south orientation remains as a constant variable.

CLIP- ON

In this case, stadium services are 'clipped-on' to the east and west sides of the stadium providing opportunities to insert compatible uses that interface with the adjacent neighbourhood. The ends of the stadium are kept open in order to maintain visual connectivity between Main Mall and the forested area behind the south end of the stadium.



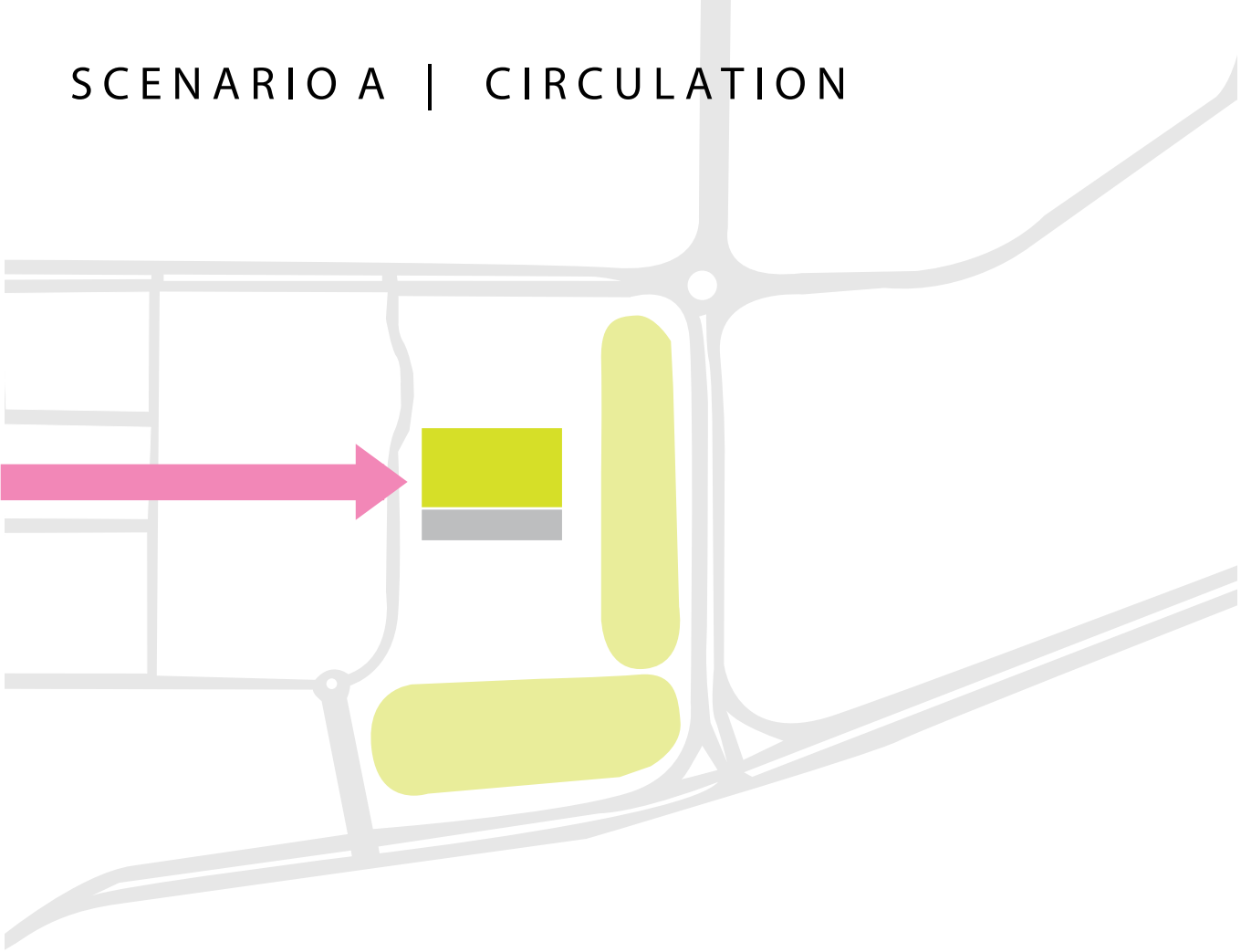
CARVED OUT

In the carved out approach, the stadium is inserted in to the surrounding development with the north end of the stadium remaining exposed in order to maintain visual connectivity from Main Mall. Any stadium services would be integrated into the surrounding development and therefore be consistent with the built form of the neighbourhood.

LANDSCAPED

This approach requires some shifting of the topography in order to create a bowl-like shape in the landscape for the stadium. This approach would emphasize the natural beauty of the site by maximizing the utility of the landscape in the design of the stadium structure. The location of the stadium below grade would prevent stadium development from obstructing the forested area to the south, therefore maintaining the natural backdrop to the site.

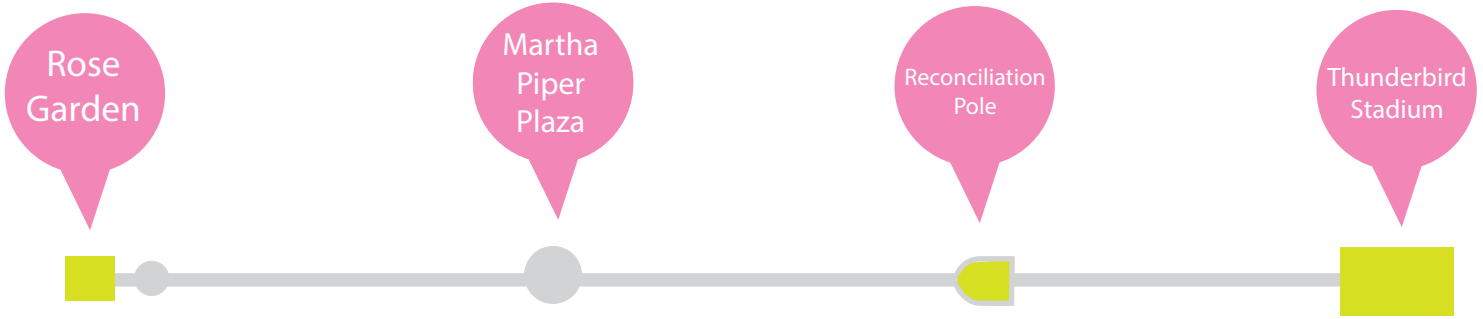
SCENARIO A | CIRCULATION

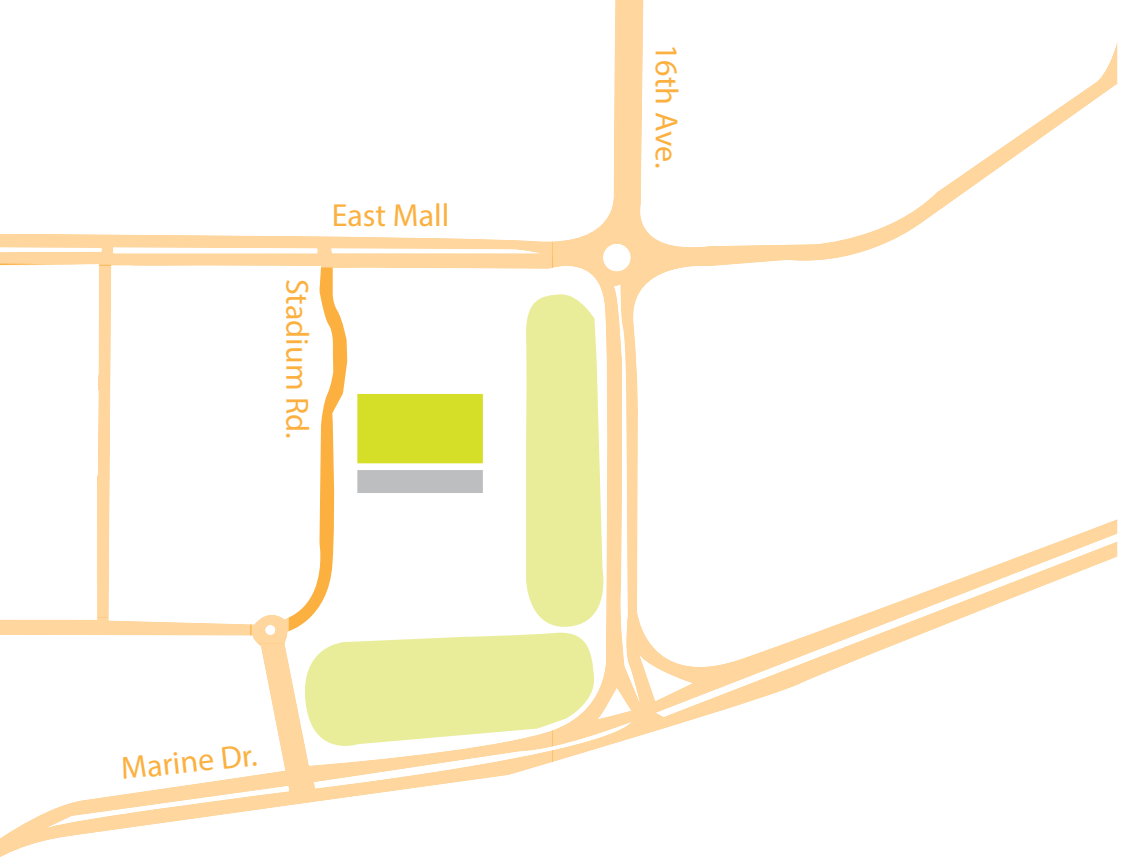


PEDESTRIAN

The alignment of the stadium field with Main Mall provides significant benefits for pedestrian connectivity between campus and the stadium. Using Main Mall as the main route of access will concentrate pedestrian movement and add to the ceremonial aspect of game day. Attendees will converge en route, forming a procession towards the stadium.

This scenario also places the stadium in line with other important sites on campus and extends the linear relationship between these sites of interest. This connection heightens the presence of the stadium on campus and provides a clear route of access to the stadium.



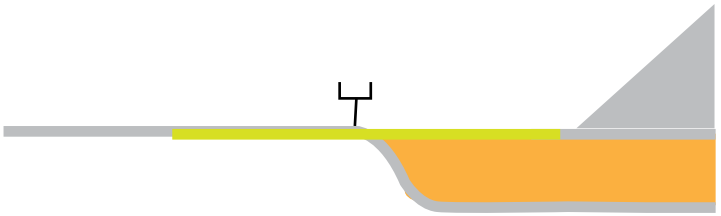


VEHICULAR

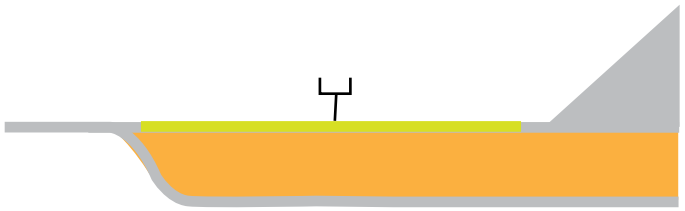
In this scenario, Stadium Road provides the only street frontage to the stadium. This means all loading and vehicle staging would have to occur on Stadium Road.

Increased vehicle circulation along Stadium Road upon completion of the Stadium Road Neighbourhood may have a negative impact on the ease of pedestrian circulation from Main Mall into the site. This would weaken the relationship between campus and the stadium and decrease the level of walkability between the new neighbourhood and campus.

The construction of additional road infrastructure adjacent to the stadium would help divert circulation off Stadium Road; however, this would direct circulation to within the neighbourhood itself, which may negatively impact the pedestrian experience.



Existing topography

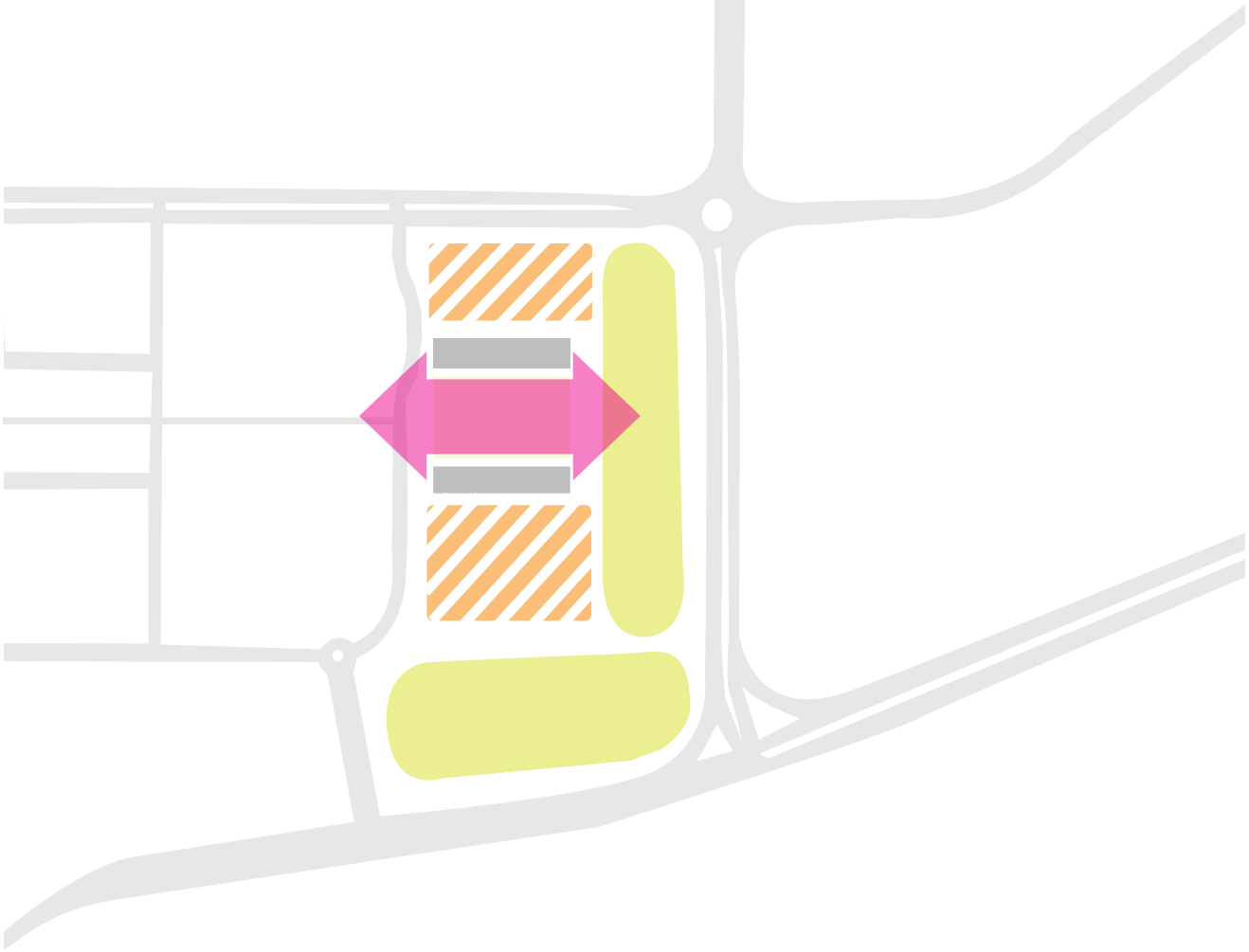


Expanded

PARKING

The existing topography provides the opportunity to insert a parking structure beneath half the stadium if the field is located at grade. This parking structure could be expanded to fill the dimension of the field if additional space is needed. Logically, the underground parking entrances would be located close to the field itself, off Stadium Road, in order to reduce the need for tunnelling. However, this would direct a significant amount of traffic on to Stadium Road, which may impede pedestrian connectivity between Main Mall and the stadium.

SCENARIO A | NOISE MITIGATION

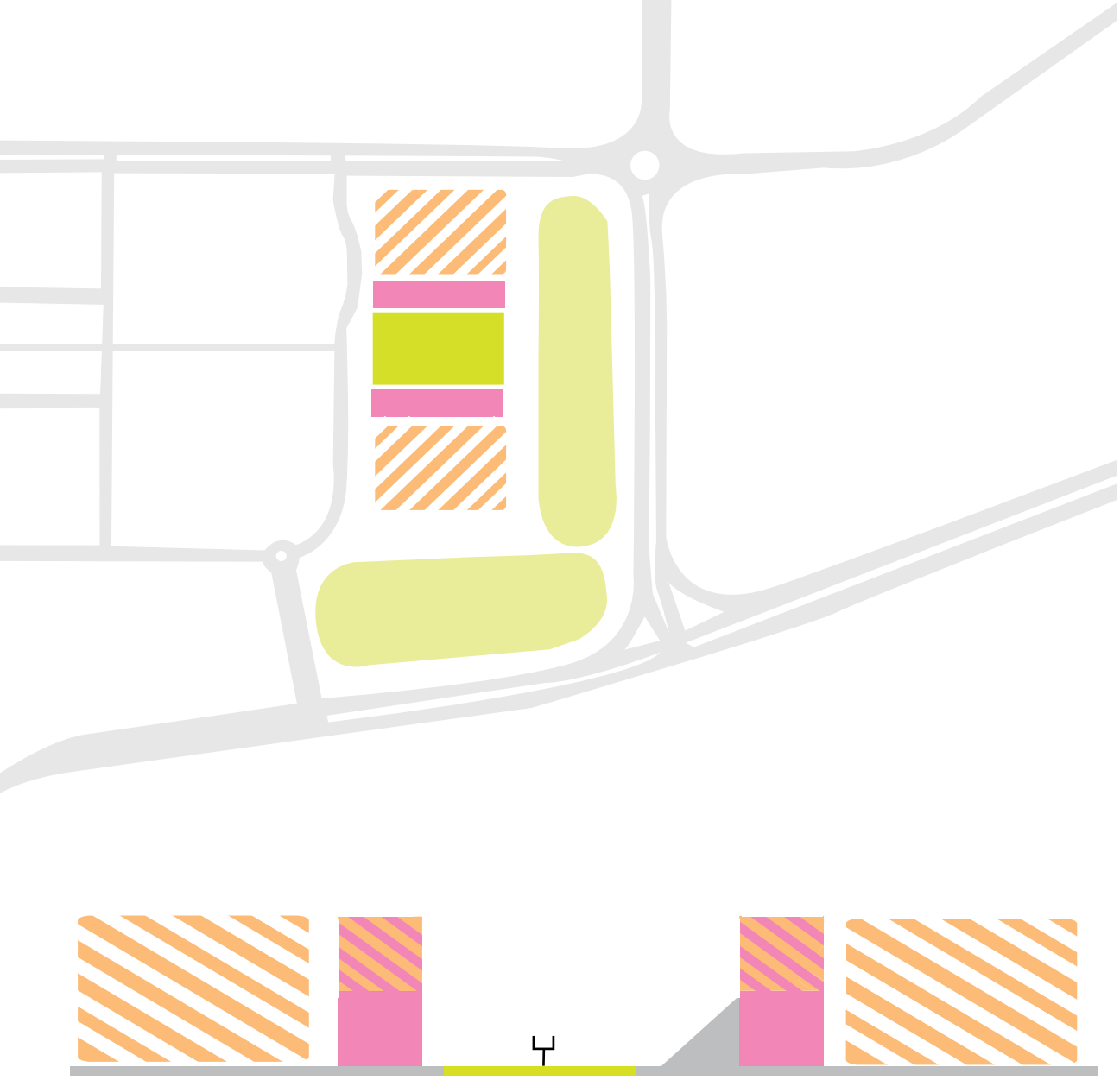


The stadium's spatial relationship with the rest of the neighbourhood will determine where there should be an emphasis on noise mitigation. In this case, the central location of the stadium within the neighbourhood makes noise mitigation a significant concern.

Massing is an effective tool for mitigating noise spillover. The general idea is that massing should be used as a buffer between the stadium and the residential neighbourhood. Anywhere there is a gap in the massing, is where the noise will be directed. In this case, the massing should therefore be located along the east and west edges of the stadium. This massing can be a part of the stadium structure, as with the stadium seating to the west, or an adjacent use that is not sensitive to noise.

Residential use can be inserted into the upper floors of adjacent developments where noise spillover is less severe. This further brings the stadium into the lives of neighbourhood residents by providing unique views of the stadium's activity.

SCENARIO A | ACTIVATION



Activating use

SRN residential development

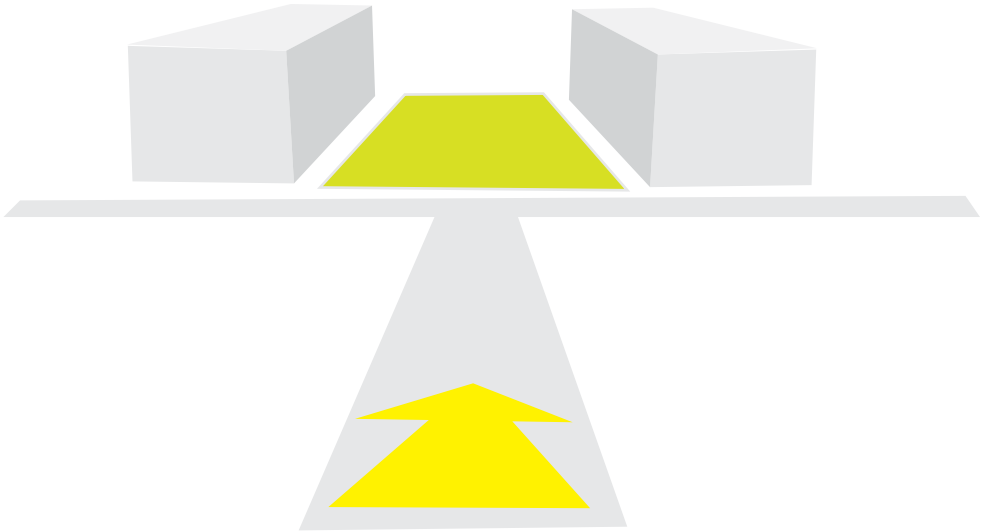
Due to the central location of the stadium within the site, the way in which it interfaces with the surrounding neighbourhood is significantly important. In order for it to be truly 'multi-use' and to be a relevant part of the community outside of game day, compatible uses can be integrated into the stadium's structure. These uses should activate the stadium's edges in order to avoid blank inactive walls and to make use of space in an already compact land area.

In this context, activating uses means uses that are relevant in an 'everyday' context, rather than those that rely on the activity generated by the stadium. For example, classroom space is considered to be an activating use because it brings people to the stadium for reasons other than to watch a game. There are certain fields of study, Kinesiology for example, that are particularly compatible with the activity of the stadium and would benefit from classroom space that is in close proximity to this athletic facility. Classrooms are also an efficient use of space because they can be easily adapted to different uses, such as office space, if the University requires it.

SCENARIO A | VISUAL CONNECTIVITY

STADIUM AND CAMPUS

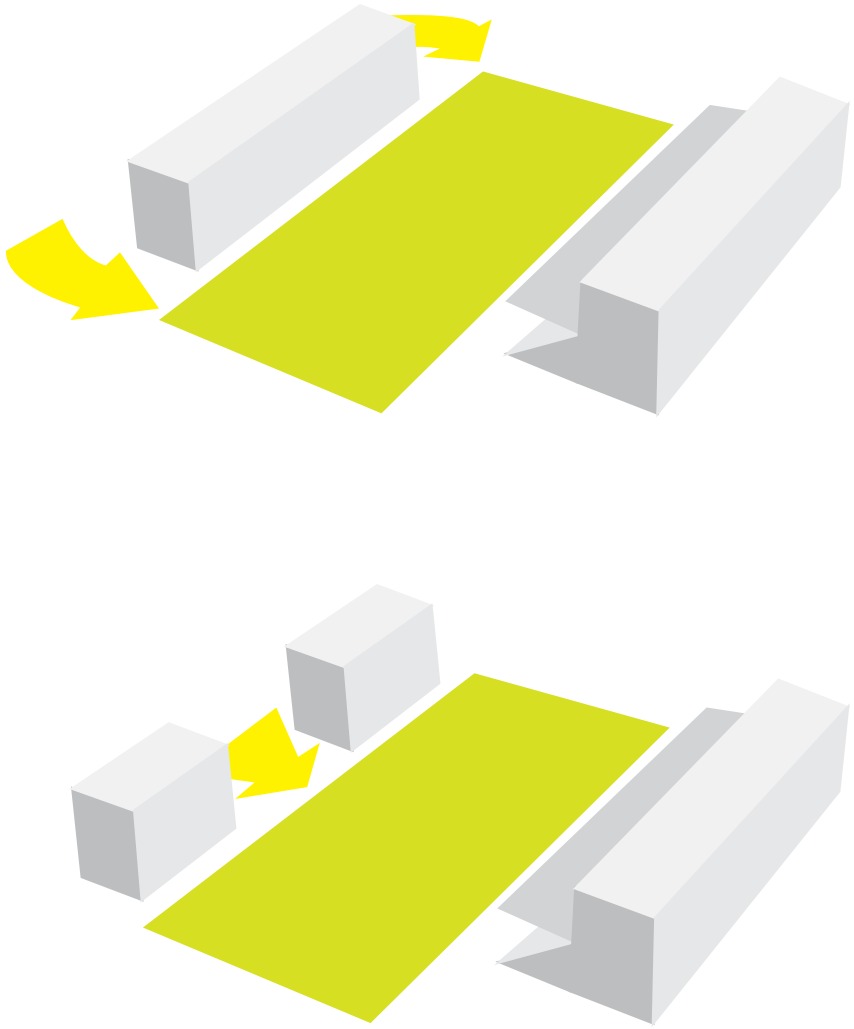
The alignment of the new Thunderbird Stadium with Main Mall creates a strong visual connection between the stadium and campus. The field serves as the focal point for pedestrian movement and visually connects Main Mall with the stadium. In addition, the strong presence of the stadium emphasizes the importance of sports and athletics at UBC.



STADIUM AND NEIGHBOURHOOD

Because the stadium is located in the middle of the site, any massing on either side of the stadium will have significant implications on the visual connectivity between the neighbourhood and the stadium. Massing that is directly adjacent to the field can be pinched in at the ends in order to expose the corners of the field. Alternatively, this massing can be split in half in order to expose the centre of the field to the neighbourhood.

The stadium seating does not have as much flexibility in its design; however, the insertion of activating uses, as explored in a later section, can still help the stadium connect to the neighbourhood.

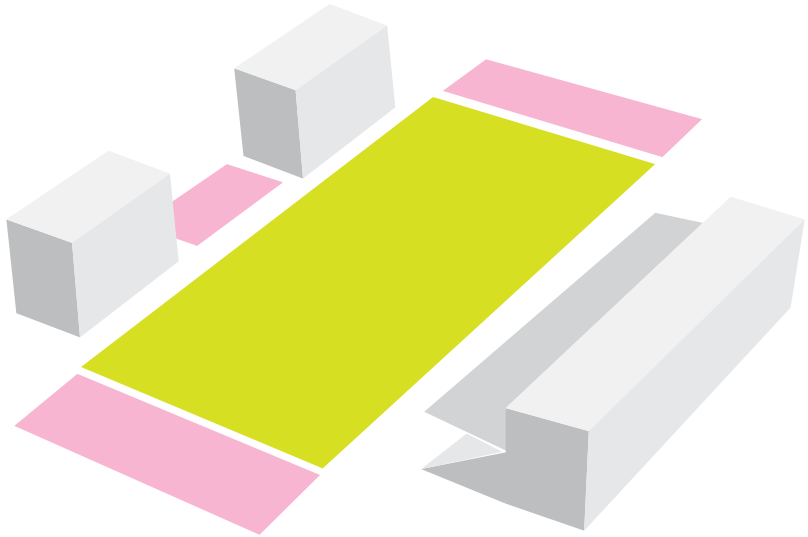


SCENARIO A | COMMUNITY AMENTITY

Designing public gathering spaces around a stadium helps to connect the surrounding community with the activity of the stadium. These spaces can be used to celebrate the stadium rather than attempting to disguise or minimize its presence. The principle of community amenity is closely tied to the principle of visual connectivity. In this case, the same design elements that allow visual connectivity, can provide the space for social gathering against the backdrop of the stadium.

These open spaces can also be multi-use. Because this location is somewhat challenging for truck loading due to minimal street frontage, the open spaces can double as temporary loading or storage areas instead of blocking a lane on Stadium Road.

Another simple tactic to increase the stadium's benefit to the community is to open it to the public when not in use. This de-privatizes the stadium and increases its perceived value amongst community members.



Potential multi-use open spaces

SCENARIO B

Scenario B places the stadium on the southeast corner of the site, adjacent to 16th Avenue and East Mall. This location benefits vehicle access to the stadium and provides a better connection between the stadium and the Spectator Hub directly across East Mall to the east.

A significant amount of trees that line the south side of the site would need to be removed to make way for the stadium in this location. The benefit is that more site area would be available for the development of the Stadium Road Neighbourhood and that the stadium would have ample street frontage. Street frontage is important for efficient loading and, in this case, reduces the need for vehicle circulation within the Neighbourhood to access the stadium.

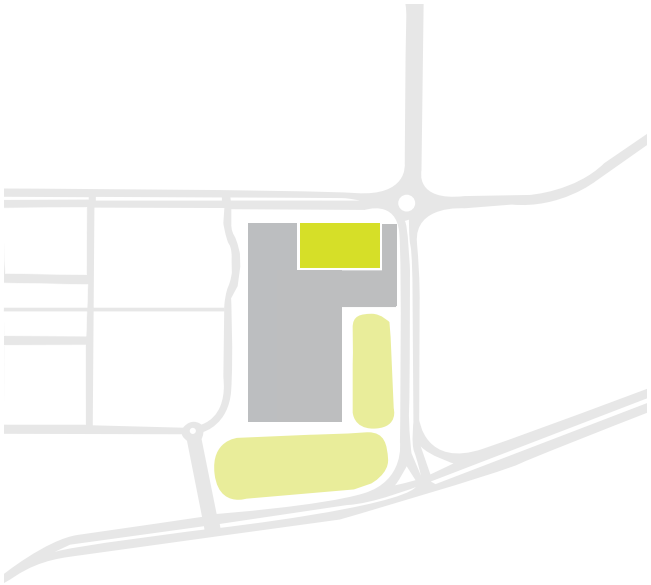
This location for the stadium also has implications for the layout of the Stadium Road Neighbourhood. The stadium would not have a central presence in the neighbourhood as in Scenario A. Instead, Scenario B is more conducive to an approach that attempts to play down or conceal the presence of the stadium as opposed to celebrating and amplifying its presence within the Neighbourhood and on campus.

SCENARIO B | FORM & ORIENTATION

In Scenario B, the form and orientation of the stadium will have a significant impact on its relationship with the spectator hub to the east as well as the visual connectivity between the stadium and its street frontage on East Mall and 16th Ave. In the concepts below, the three approaches are explored, while the north-south orientation remains as a constant variable.

CLIP-ON

In this case, stadium services are 'clipped-on' to the west side of the field, opening up the edges of the stadium to campus and to potential neighbourhood development to the north.



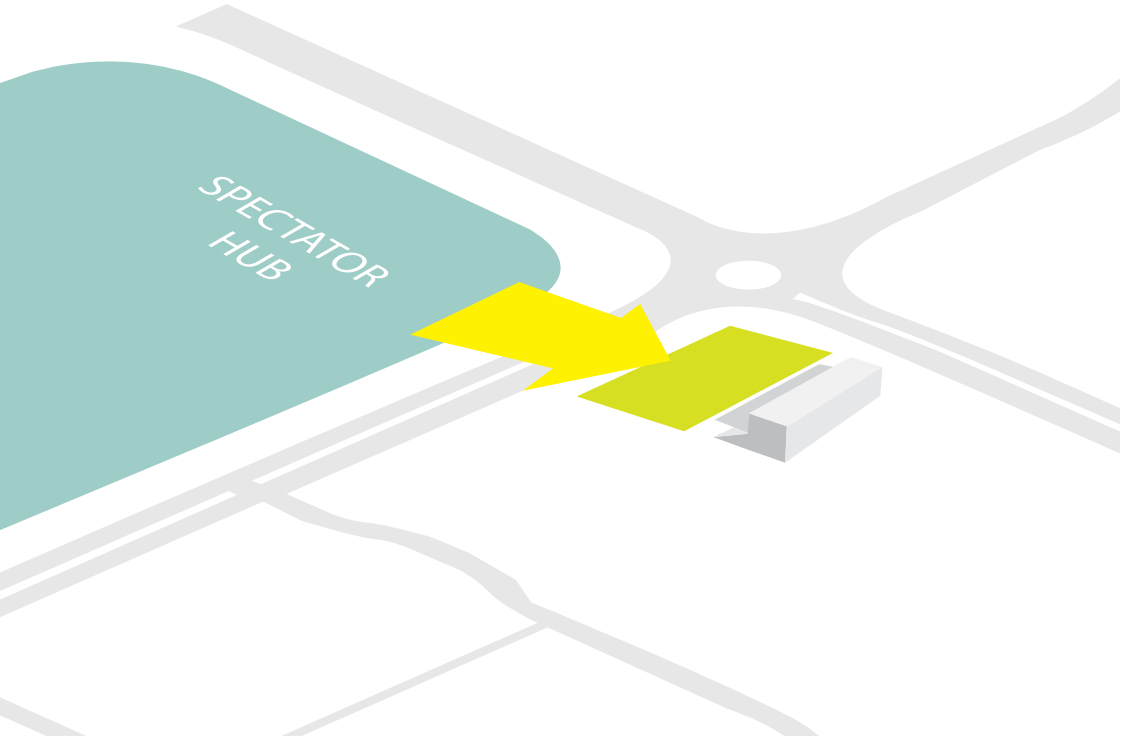
CARVED OUT

The carved out approach would insert the stadium within the surrounding neighbourhood development, potentially leaving an exposed edge on the east side. The open edge would maintain a degree of visual connectivity between the stadium and campus and would reinforce the relationship between the stadium and the spectator hub to the east. Stadium services would be integrated into the development that flanks the other three edges of the field.

LANDSCAPED

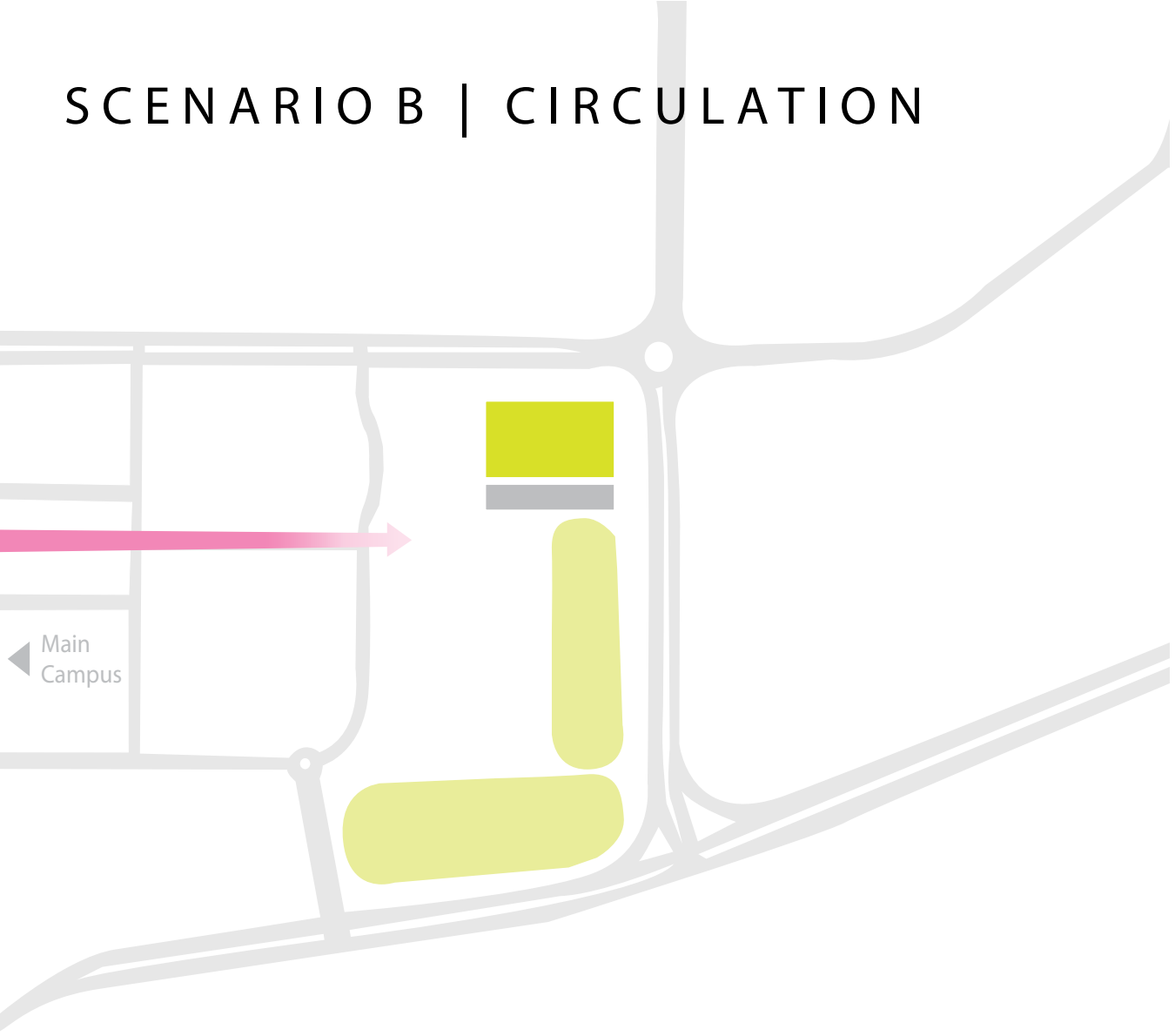
This scenario would require reconfiguring the topography of the site to create a landscaped stadium form. Seating would be located on the western slope with the possibility to continue on to the northern side. This option tucks the stadium away from the surrounding neighbourhood and due to its location below grade, reduces the visibility of the stadium from the Neighbourhood at ground level.

SCENARIO B | VISUAL CONNECTIVITY



This scenario places the stadium in close proximity to the spectator hub on the other side of East Mall, which contains Thunderbird Park, the baseball field and the National Soccer Development Centre. The placement of the stadium within close reach of these recreational facilities will create a sports precinct on campus, which visually connects the activity of the stadium with other sport related activities on campus. This visual connectivity would be especially beneficial during large tournaments where the presence of the stadium can communicate UBC's brand and add to the energy and perception of athletic excellence within the spectator hub.

SCENARIO B | CIRCULATION



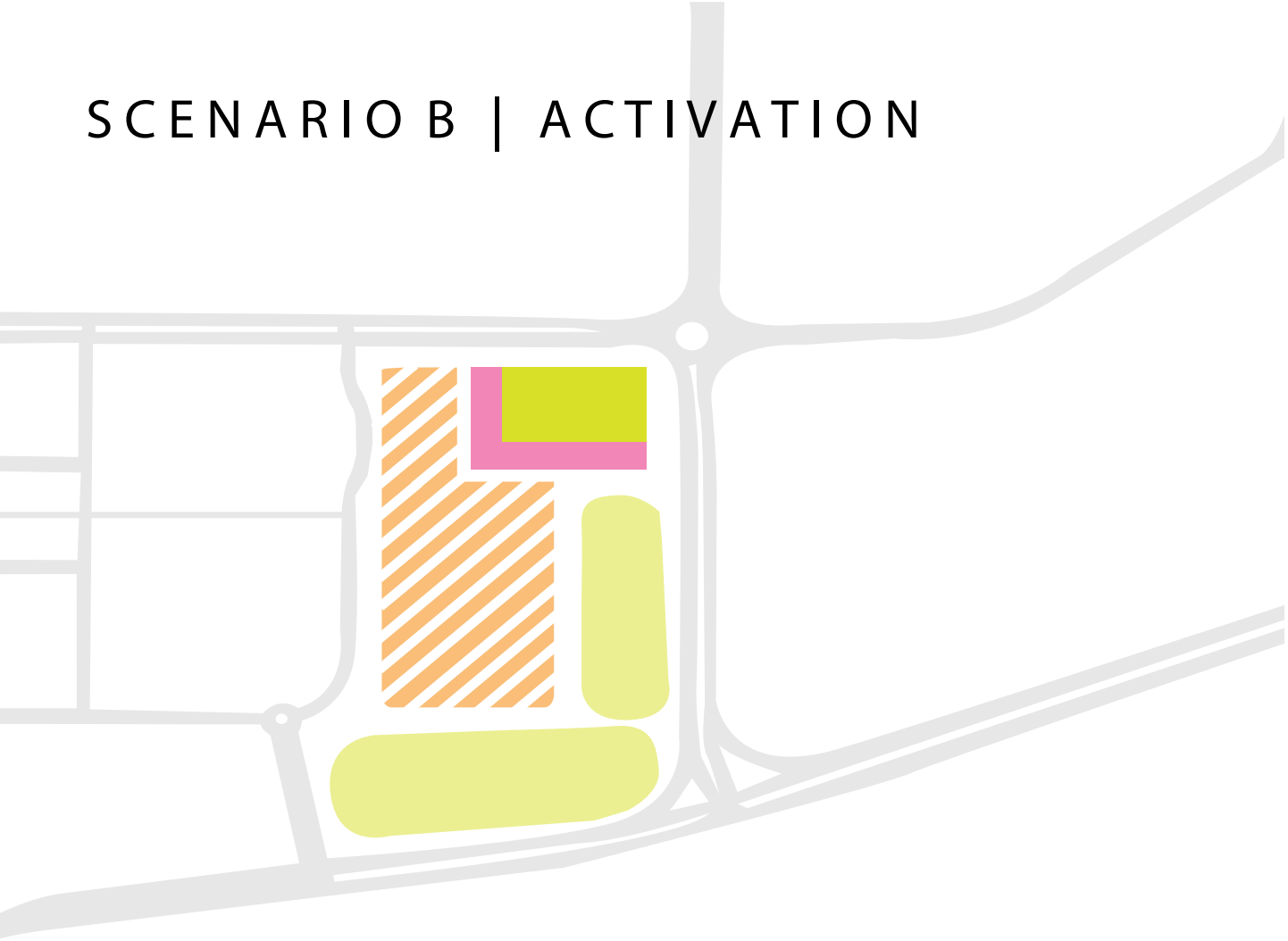
PEDESTRIAN

In this scenario, the stadium is not connected to any of the University's primary pedestrian pathways. However, Main Mall would most likely still serve as the main pedestrian connection from the rest of campus to the Stadium Road Neighbourhood, and could be extended through the site to connect to the west side of the stadium. In the absence of a Main Mall extension, pedestrian circulation would disperse upon entry to the Stadium Road Neighbourhood, resulting in a weaker connection between campus and the stadium.

VEHICLE

In this scenario, the stadium has street frontage on two sides- 16th Ave. and East Mall. 16th Ave. serves as one of the primary routes to campus from the rest of the city and would therefore provide direct access to the stadium by vehicle, provided that parking is located on site. This scenario is also beneficial for vehicle loading, especially if there is a desire to reduce circulation on Stadium Road. Loading trucks would potentially be able to load goods directly into the stadium from 16th Ave or East Mall without needing to enter the Stadium Road Neighbourhood. This is desirable when attempting to reduce vehicle circulation through the site. If underground parking is inserted below the field, parking lot entrances could be located off of 16th Ave or East Mall, also reducing the need for vehicle circulation through the site.

SCENARIO B | ACTIVATION



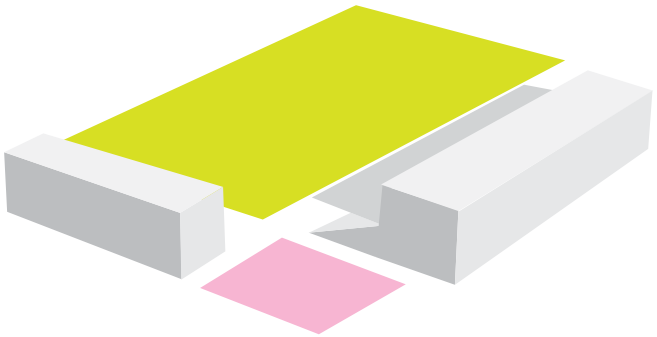
Activating use

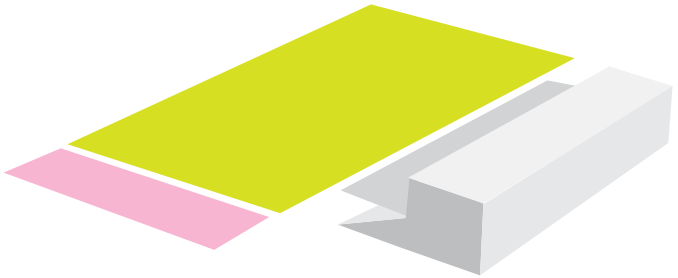
SRN residential development

In this scenario, activation is most important along the north and west edges where the stadium development interfaces with the neighbourhood.

COMPATIBLE USES

Activation strategies can downplay the presence of the stadium by using massing to integrate compatible and activating uses. The diagrams show that the massing is an opportunity to create an active buffer between the stadium and the neighbourhood. In this case, neighbourhood residents and visitors do not interact with the stadium directly, but instead benefit from the uses that surround it.





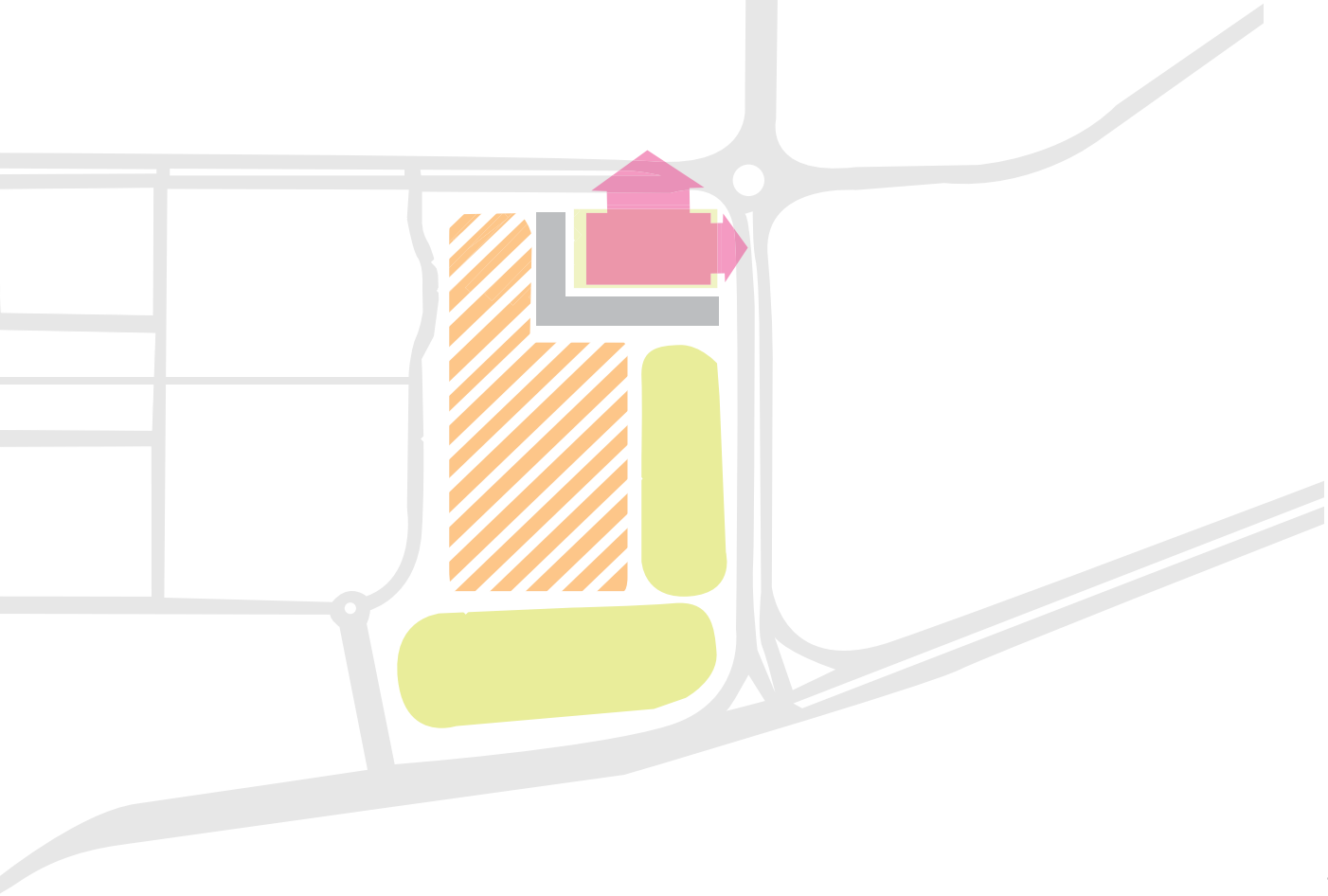
Potential multi-use open spaces

COMMUNITY AMENITY

Strategies can also amplify the presence of the field by creating public spaces that take advantage of the ability of the unique stadium environment to bring people together.

In this case, creating gaps in the massing that surrounds the stadium on the north and west edges provides the opportunity to design public spaces that offer views of the stadium. Alternatively, massing on the north side of the stadium can be forgone altogether in order to fully open up the stadium to the north side of the neighbourhood. This provides ample space for public gathering and the marshalling of spectators when necessary.

SCENARIO B | NOISE MITIGATION



In this scenario, massing can be used strategically to protect all sides of the stadium that interface with the neighbourhood from noise spillover. This arrangement would direct noise to the east, towards the spectator hub, and to the south. Neither of these directions are particularly sensitive to noise.

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