ISSN 2729-7640

ALFA ARCHITECTURE PAPERS
OF THE FACULTY OF ARCHITECTURE AND DESIGN STU
www.alfa.stuba.sk

2/2026 (Vol. 31)
DOI: 10.2478/alfa-2026-0007

Research article

Public aquatic facilities as enablers of human-marine active interactions: An affordance-based conceptual approach

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Article information
Sent: Feb 12, 2026
Accepted: May 2, 2026
Published: Jun 12, 2026

Abstract: A key feature of urban regeneration projects along waterfronts is the focus on reconnecting with the wider urban environment. However, the relationship with the aquatic environment is less explored, as are attempts to promote a deeper and more varied connection between urban dwellers and urban blue spaces. This study highlights the potential of public aquatic facilities to assist this reconnection and foster closer, more active relationships with the marine environment, since human–nature interactions are considered to be critical for the environmental conservation agenda. This study examines how active engagement with water differs from passive enjoyment, building a different kind of relationship that deserves more attention. The dual nature of the seascape, which can be both therapeutic and treacherous, is also discussed, and the study sheds light on the lesser-discussed issue of how to promote exposure to nature in challenging environments such as aquatic ones. Theoretically based on the concept of affordances, the study suggests that public aquatic facilities could be understood in terms of their capacity to create positive affordances in order to mitigate negative ones, whether perceived or actual, brought about by the marine ecosystem for different users. This would expand their role as architectural tools to shape the relationship between users and the environment, instead of just being seen as recreational or aesthetic facilities. A conceptual approach is used to consider how facilities such as harbour baths and sea pools could manage affordances related to the physical aspects of the marine environment, environmental conditions and the personal characteristics of users. It is expected that public aquatic facilities would likely enable active human–marine interaction by shaping affordances such as legibility, swimmability, and safety, offering the associated benefits of contact with the marine environment while mitigating constraints.

Keywords: blue spaces, human–nature interactions, embodied experience, urban waterfront, affordance-based design, conservation of experience

1. Introduction

The relationship between cities and water is a recurring theme in the history of urbanism and architecture and Portas (1998) warns that the integration of the urban fabric with the aquatic environment will never be a problem of simple resolution insofar as it forces us to reconcile demands that, although legitimate, are almost always conflicting or antagonistic to each other. He notes that in reconversions on waterfronts, the adoption of criteria of economic opportunity becomes more noticeable than those associated with environmental sustainability (Portas, 1998). Several studies have addressed the process of renovation of waterfronts, detailing their particularities, whether in their physical (Stevens, 2020), social and economic (Casanova and Hernandez, 2015) and territorial (Ribeiro and Beloto, 2020) dimensions. However, a less explored bias is the environmental dimension of the structural intervention on the environment in which it is inserted, the marine one. Therefore, it is necessary to deepen the understanding of how a socioecological focus could represent an opportunity to promote a conciliatory model of relationship between the urban realm, its dwellers and the urban marine environment.

This conceptual paper aims to explore the mediating role of public aquatic facilities—defined as infrastructure constructed wholly or partly within blue spaces—in interactions between people and the marine environment. Given the growing recognition of the salutogenic effects of blue spaces (Georgiou et al., 2021) and the potential contribution of contact with nature and nature connectedness to the conservation agenda (Martin et al., 2020; Liu et al., 2022), this study aligns with the subject area of human-environment interactions research, focusing specifically on the relationship with marine blue spaces involving active engagement with water. This is because it is already known that specific activities in blue spaces, such as swimming, represent an important factor in the benefits derived from interaction (Foley, 2017; Olive and Wheaton, 2021; Arnberger et al., 2024).

However, promoting active interaction with water in urban settings or integrating this type of outdoor activity into urban infrastructure is a topic that has received minimal attention. This is despite the fact that fostering a more active relationship between people and the marine environment is complex and not always straightforward, given the variety of human profiles and the ambiguous characteristics of the marine environment. It is thus proposed that a conceptual approach, founded upon the

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principles of affordance theory, be adopted as a theoretical tool to frame the phenomenon. By choosing this theory, centred in the relations between the environment and a user that enable or constrain behaviour (Widmer and Rérat, 2025), it is raised the hypothesis that public aquatic facilities have the potential to sustain a pivotal role in facilitating a more accessible, convenient and secure experience for different users of the marine environment, in short, they offer positive affordances to invite (Widmer and Rérat, 2025) its active usage.

2. Important rescue of the connection between urbanites and the marine environment

It was seen above that a common element of the current global wave of waterfront requalification initiatives is the intention of correcting a lost link. Carley (2011) points out that the success of a reconnection depends on the regeneration being guided by incorporating a clear program that meets various social, economic, and physical aspects within a framework of urban sustainability. Now, it is argued here that regeneration should incorporate an ecological dimension in addition to the dimensions already mentioned. In this case, requalification could include an aspect rarely registered on the radar of urban planners, the rescue of the urban-social-ecological connection with water that may have been compromised during the urbanisation process and, later, by the monofunctional use of the waterfront. Inadvertently, these factors may have promoted a distance and a decrease in the experience of local society in its relationship with urban waters, which is also deserving of correction. Therefore, the reconnection through a site intervention should also take into consideration on how to enrich the human-marine nature interactions, reminding that human appreciation of nature may depend on finding and implementing solutions to the dissociation of urban humans from nature (Turner et al., 2004).

This connection must be restored because a widespread sense of personal alienation from nature is considered one of the main causes of the current ecological crisis (Pyle, 2016). A decrease in human–nature interactions poses a threat to the biodiversity conservation agenda in the form of what has been labelled by Pyle (2016) 'the extinction of experience syndrome'. It is worth noting that this decrease in firsthand experiences is not limited to a loss of engagement with pristine areas or wilderness environments; it also involves changes to a wide variety of activities and experiences, such as spending time in urban green spaces and observing urban wildlife (Soga and Gaston, 2016). Some authors (Shanahan et al., 2015) note that, in general, urban nature areas are useful to address the problem of extinction of experience and cities may offer opportunities to reinforce and restore connections and co-evolution between humans and the more-than-human world (Dobson et al., 2021).

3. From passive views to sensory immersion: Reimagining public spaces for active experience with water

Stokes (2006) remarks that, even among biologists, the human experience of biodiversity is a critically important element of the conservation agenda that has received insufficient attention. For the author, there should be an effort towards the conservation of experience, that is, the promotion of ways capable of promoting a direct and closer experience with the biodiversity, as for him, "the public's increasing isolation from biodiversity should be viewed with as much alarm as the loss of biodiversity itself" (Stokes, 2006, p. 6). This understanding paves the way to contributions coming from the field of architecture to the environment conservation agenda as far as the design serves to create an opportunity to facilitate human–nature interactions on the urban–marine border, enabling the site to provide a closer and more direct experience of marine biodiversity.

The use of public aquatic facilities is an under-explored and not fully understood resource for direct engagement with water. As Bozkurt and Woolley (2020) have already observed, playing with water can involve either active or passive activities, resulting in a wide range of different experiences. It is hypothesised that when they are designed to encourage active engagement with the aquatic environment, they could articulate a more direct and differentiated form of interaction than the one offered by public esplanades (Fig. 1), which are the most common type of infrastructure conceived for public use in this border area. These, in turn, merely provide indirect engagement with water, in that not all human senses are addressed by the water, with a preponderance of visual experience, with other senses playing a secondary role (Völker and Kistemann, 2013).



Fig. 1. Seaside esplanade, Split, Croatia. (Source: PxHere, 2017a, CC0 1.0)

Establishing a connection with water was already regarded as one of the pivotal components in effective urban transitions. This is due to the unique conditions offered by the water's edge, with its open horizons, long range views and cooler microclimate, which are rarely found together in other parts of the city (Gordon, 1996). Despite its recognition as a fundamental aspect of placemaking, the idea of connecting the city (and its inhabitants) with water is still dominated by a 'horizontal logic'. This logic prioritises the enjoyment of water only at a superficial level, in the form of observing the seascape—in other words, it presupposes a passive interaction with the water. Connections that can be established on the vertical axis, including with what is above and below the waterline (Fig. 2 and 3) are much less explored.



Fig. 2. Hasle Sea Bath, Bornholm, Denmark. (Source: Tine, 2014, CC BY-SA 4.0)

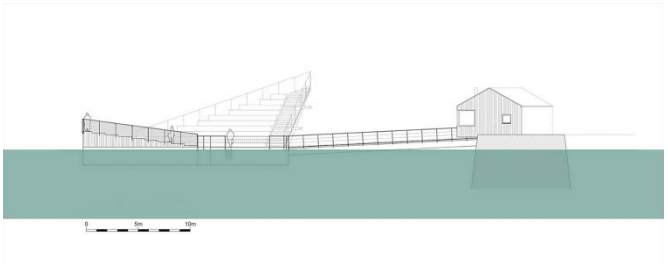


Fig. 3. West side elevation. (Source: White Arkitekter, 2013)

It is possible to notice that the intervention that opts for a model that privileges a passive interaction, in fact, perpetuates a paradigm of physical segregation where the separation between the two realms, terrestrial and marine is easily perceptible. However, it is also possible to blur this boundary by designing a public space that offers a more diverse experience and captures a wider range of features of the aquatic environment, such as its marine life, as well as the dynamic natural processes that occur within it. In designing active public aquatic facilities, this boundary is deliberately breached. Here, the architecture is thought to intertwine with the aquatic environment and facilitate active interaction (Fig. 4 and 5). The connection is made more directly, allowing users to safely access and establish sensory and physical connections with the water, whether the space is cyclically (due to tidal influence) or permanently submerged.



Fig. 4. Carpa Oliveira Seapool, Mazatlán, Mexico. © Onnis Luque (Source: Luque, ArchDaily, 2015)

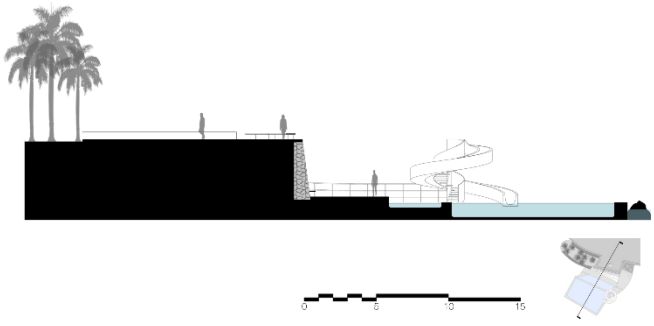


Fig. 5. Carpa Oliveira Section "B". (Source: Colectivo Urbano, 2015)

It has been noted that water is a highly prized element of the landscape, and its fascination endures whether or not a person plans to interact with it directly, since waterscapes are often enjoyable in their own right (Kaplan and Kaplan, 1989). While it is known that passive engagement with water suffices to create a bond between a person and the aquatic environment (Bell et al., 2015), and that active engagement is not necessarily a prerequisite for establishing a connection or experiencing its effects, such as salutogenic benefits (Völker and Kistemann, 2013), the choice between a passive or active interaction matters, since it is likely that the quality of the experience may differ between the two. This is because both engagements are capable of establishing a link, but one may be less complete than the other. A visual passive engagement allows capturing a range of cultural ecosystem services provided by blue spaces such as the sense of escapism and well-being that have therapeutic (Wright et al., 2024) and health (Dempsey et al., 2018) effects on the observer.

However, this form of interaction can be limited when it comes to understand the environmental quality of the medium, the elements of its constitution and the natural processes that occur in the habitat below the waterline such as hydrodynamics (currents), temperature and salinity, depth, turbidity, occurrence, and species variability. These, to be perceived, depend on an active engagement with the environment or what Russell et al. (2013, p. 477) call a 'channel of human experience', that is, a means by which a person interacts with the world around him. In addition, physical contact with, and sometimes immersion in, water is necessary to experience the haptic connection of the body with the sea and trigger bodily sensations such as buoyancy, as well as physiologic responses in the user, including changes in blood pressure, heart rate, and body temperature (Becker, 2009).

These phenomena are recognised as pivotal to promoting salutogenic outcomes (Pearn and Franklin, 2013; Harper et al., 2025), and the special calming qualities of physical contact with water have already been reported, considered to promote relaxation and a feeling of mental renewal (Wright et al., 2024). Moreover, being physically immersed in the marine environment has similarly been observed to promote changes in the user-environment relationship, serving as a key component in developing an emotional connection with the place (Caddick et al., 2015; Foley, 2017). This connection has already been described as a notion of connectedness (Foley, 2017) or oneness with nature (Humberstone, 2011) and has been found to promote ecological sensibilities and care for the environment (Wheaton et al., 2017).

4. Seascape's dual nature and its stigma as a 'landscape of fear'

Even though the literature has already identified some of the positive effects of active interaction with the aquatic environment on participants' physical and mental health, as well on their relationship with their milieu of practice (Rocher et al., 2020), Stevens (2009) observes that most projects do not encourage active engagement with water, instead relegating people to the role of passive spectators. The author credits the predilection for passive usufruct due to the concern (of the programs) in "ensuring that users have a safe, predictable and often distant encounter with the water's edge" (Stevens, 2009, p. 5). Excessive zeal regarding waterscapes may be partially related to the phenomenon that Tuan (1979) calls the 'landscape of fear', whereby man deliberately imposes limits to contain chaos. Therefore, as noticed by Stevens (2009), in typical urban waterfront developments the typology privileges a design with people's safety in mind, allowing to be next to the water's edge but preventing contact with the perils of water. As a result, often, contemporary urban waterfront uses have no direct relation to adjacent water bodies, offering little else besides the possibility to overlook them (Stevens, 2009, p. 20).

In fact, given the characteristics of the seascape, promoting aquatic activities is not something that can be done without taking some degree of precaution. We must not ignore the fact

that, although there are benefits associated with direct contact with aquatic environments, the same environment is inevitably associated with the risk of drowning, which is considered a global public health problem (WHO, 2014). In addition to the ever-present risk of drowning, other threats associated with swimming or bathing in coastal waters have been identified, such as gastrointestinal diseases resulting from contaminated recreational bathing waters (Shuval, 2003), and accidents involving hazardous marine species (Auerbach, 1984).

Overall, these risks may influence someone's perception, and given the stakes involved, the decision to immerse oneself in water may depend on one's individual anticipation of the experience being positive or negative (Strang, 2004). It is also known that people do not all experience aquatic environments in the same way. How active experiences are conditioned depends not only on the characteristics of the chosen location, such as site accessibility (de Medeiros Raposo, 2025), water depth (Foley, 2017) rip currents (Pitman et al., 2021), and water quality (Hintaran et al., 2018), but also on personal factors such as swimming ability (Denton and Aranda, 2020), disability constraints (Moore et al., 2018), age (Glickman et al., 2002), gender (Bozkurt and Woolley, 2020), and cultural traits that may affect the willingness to bathe in seawater (Costa-Pinto, 2024).

In summary, the pros and cons of direct maritime interaction reflect the dual nature of the seascape, which is simultaneously therapeutic and salutogenic but also potentially hazardous. Now, it is well known that a personal perception of the physical environment in which an activity takes place can influence one's preference for it. If the environment is perceived negatively, activities taking place within it may also be avoided (Bixler and Floyd, 1997). For instance, previous research has shown that children may prefer man-made water features for playing in the water, as they find them more fun and exciting than natural ones. This is due to their perception of the latter to be cold, polluted and dirty, even though they are not (Bozkurt and Woolley, 2020).

As a result, the literature suggests that people are more likely to engage with an environment if they perceive it to be safe, and the physical structure of the environment is a key factor in building this perception (Andrews and Gatersleben, 2010). In this regard, Zhao et al. (2024) point out that fear reduces the restorative functionality of waterscapes, and they suggest that design tools, such as buffer zones between people and water bodies, or safety installations, such as protective fences, can increase the sense of safety. However, while these mechanisms may be legitimate for ensuring water safety, an unacknowledged disadvantage of these segregation-based solutions is that they restrict and could possibly stigmatise active interaction with water. Therefore, while they are useful to an extent, they can also compromise the enjoyment of the benefits derived from multisensory stimulation.

5. Affordance-based conceptual approach for understanding public aquatic facilities as enablers for enjoying blue space actively

It has been observed above that an active interaction with water can foster a myriad of positive outcomes for both the user and the user's relationship with the aquatic environment, nonetheless, it has been also remarked that the seascape is not only a health-enabling but also a health-limiting type of landscape encompassing different possible meanings ranging from therapeutic to risky ones (Collins and Kearns, 2007). Thus, people's perceptions of direct participation in the natural environment may range from restorative or therapeutic relationships to those characterised by fear or risk (Milligan, 2007). This results in a management problem: how to promote direct contact with marine blue spaces while mitigating any disadvantages of this activity.

This study suggests that public aquatic facilities could be conceptually understood as architectural tools for managing affordances for the active enjoyment of blue spaces. In this sense they would serve as a designed environment with motivating qualities (Heft, 2010, p. 25) to facilitate interaction and mitigate the perceived or actual negative impacts brought about the marine ecosystem to the different users. The concept of affordance is an interactionist view of perception and action (Greeno, 1994) founded on the relationship between the environment (or the artifact) and the user, as well as the possibilities for action that may result from this relationship and is grounded on the user's perception on the perceived and actual properties that determine how something could possibly be used (Young and Cleveland, 2022).

It is proposed here that it is likely that the design of public aquatic facilities has the potential to address environmental factors that could compromise person–environment interaction, while promoting active engagement with water. As an example, we could take the lack of visual landmarks that is a marked characteristic of seascapes. Herzog and Kropscott (2004) have already demonstrated that a lack of visual landmarks represents a significant independent negative predictor of legibility, making scenes with low legibility quite disorientating, which in turn corresponds to a significant negative predictor of perceived danger. In this case, the enclosure provided by a sea bath (Fig. 6) could afford legibility, which is normally lacking in a marine setting. The sea bath architecture would function as a boundary, framing the bathing area and providing cues about the suitability for water immersion, mitigating the ocean boundlessness that has been proven to be discomforting for some (Wheaton and Liu, 2024). This architectural solution thus allows for the creation of a controlled and comfortable interior space. A space that the user controls and in which they can also be controlled and supported.



Fig. 6. Kastrup Sea Bath, Copenhagen, Denmark. (Source: RhinoMind, 2012, CC BY-SA 3.0; modified by the author, 2026)

Whilst the physical characteristics of the environment exert an influence on human-nature interactions, corresponding, in accordance with the affordance theory, to the aspects of the environment that enable or constrain the kinds of interactions that subsequently occur (Greeno, 1994), Storli and Hagen (2010) point out that when assessing potential affordances in environments for outdoor physical activity, we should consider not only the physical world, but also the conditions that temporarily or permanently alter environmental features. The same authors also state that conditions such as the changing seasons and weather should be considered as variables that encourage or

inhibit physically active outdoor play, so they represent affordances in their own right, as they are capable of influencing interaction themselves (Storli and Hagen, 2010). This remark is particularly important in a marine environment, as it is inherently highly dynamic. In this sense, public aquatic facilities could offer more stable conditions by domesticating the water and providing an environment that is less affected by changes in water conditions, such as crashing waves and rip currents. This would increase, for example, the swimmability affordance of the facilities during adverse conditions, when the same interaction in natural spaces would be less advisable (Fig. 7).



Fig. 7. Bondi Icebergs Ocean Pool, Sydney, Australia. (Source: Ugarte, 2018)

Finally, it is important to reiterate that active enjoyment of blue spaces depends on the characteristics of the site and the personal traits of the individual. Thus, another potential contribution of aquatic facilities would be to manage the affordances offered by the environment to different types of audiences. This is because the ability of individuals to perceive and, consequently, utilise the different affordances can vary according to the physical capabilities and body size of the person (Young and Cleveland, 2022). For instance, it has previously been established that parental perceptions of water bodies as hazardous environments for children could potentially influence their evaluation of these spaces as health-related settings (Tillmann et al., 2018).



Fig. 8. Bronte Bath Ocean Pool, Sydney, Australia. (Source: Montgomery, 2006, CC BY 2.0)

In other words, the perceived danger, which is defined as the degree of control individuals feel they have over the situation (Andrews and Gatersleben, 2010), can be greater for particular groups of users, such as children, disabled and the elderly, influencing their motivation for engagement. Thus, as the affordances of the marine environment depend on site-specific characteristics and conditions, as well as the user profile, proper management may be required for certain groups to achieve congruence for a given action. In this sense, designing tools such as entry points to make it easier to get into the water (Fig. 8), and forms to adjust the water depth for people with limited swimming or locomotion skills (Fig. 9), could make the designed environment more usable for a wider range of users, especially those with special needs.



Fig. 9. Alberto Romano Ocean Pool, Cascais, Portugal. (Source: Franganillo, 2024, CC BY 2.0)

6. Discussion

This study focuses on the role of public aquatic facilities in encouraging interaction between people and urban blue spaces, with the aim of promoting a connection with nature. It is based on the premise that the cultural ecosystem services provided by seascapes relate not only to the enjoyment of their outstanding natural beauty, but also to the opportunities they offer for physical interaction and experience (Pikner et al., 2022). The study has reviewed that active engagement with water can trigger distinct responses in individuals and promote changes in their relationship with the environment at different levels. Thus, by linking active engagement with water to changes in human–environment interaction, this work broadens the existing debate centred on the health-related outcomes of interactions with blue spaces, encompassing longer-term social and ecological implications, such as the conservation of experience.

The study also sheds light on a research gap concerning the lesser-discussed issue of how to promote beneficial exposure to nature in challenging environments, such as aquatic ones. Such environments can impose limitations on how users perceive and engage with them. It has been observed that direct contact with water may be restricted by the characteristics and conditions of the marine environment, as well as the requirements of different users. To address this, the study presents a conceptual approach to exploring the role of public aquatic facilities in fostering this relationship under different circumstances. In this sense, the designed environment is likely to offer benefits associated with contact with the marine environment (such as ecological services) while mitigating drawbacks (such as safety risks commonly associated with aquatic settings). Therefore, this work's contribution lies in its conception of public aquatic facilities as spatial mechanisms capable of actively shaping the relationship between users and their environment, rather than their more common interpretation as merely recreational or aesthetic facilities.

The hypothesis raised in this study is theoretically founded on the affordance concept, whereby “action possibilities exist by virtue of a relation between the properties of the environment and the actor” (Withagen et al., 2012, p. 251). Specifically, it

builds on Withagen et al.'s (2012) observation that the environment can influence the users' emotions, thereby making certain behaviours more likely to occur, and on their suggestion that beyond the possibilities for action, affordances may also invite (or repel) behaviour. It has therefore been suggested that the design of a public facility could be interpreted as the design of affordances, as proposed by Warren (1995), with a view to increasing the likelihood of active interaction with the marine environment. Three domains have been identified where an affordance-based design approach would be valuable: those related to the physical aspects of the marine environment, its dynamic environmental conditions and the personal characteristics of users. These areas have one thing in common, the fact that the public aquatic facility could be designed to manage the negative affordances (repelling) presented by the natural environment and shape more positive ones (inviting) (Widmer and Rérat, 2025) (Fig. 10).

It was noted that features commonly found in the marine environment may require management intervention to create or reinforce inviting characteristics, such as safer and easier access on rocky or uneven surfaces. Similarly, management intervention may be required to mitigate off-putting characteristics, such as the sense of danger or discomfort caused by the vastness of the sea. However, we must bear in mind that affordances depend on the user and the context and Immonen et al. (2018) recall that different features of the environment can afford different possibilities for different people, in relation to their individual constraints. Thus, a single marine feature, such as water depth, can generate multiple affordances and require appropriate management within one facility (Fig. 11).

For example, deep water can be intimidating for those who lack the necessary swimming skills or physical fitness, whilst at the same time being necessary for those who wish to play in the water by jumping in, when the associated risk would be exactly the opposite, i.e., shallow water. Hence, a designated area would be useful to provide a spot with shallower water, where the risks associated with deep water would be mitigated; likewise, a diving platform would be useful for jumping off, clearly indicating where the water is deep enough for this kind of water play.

Tab. 1 shows some examples of these multiple affordances and how they might relate to the design of facilities.

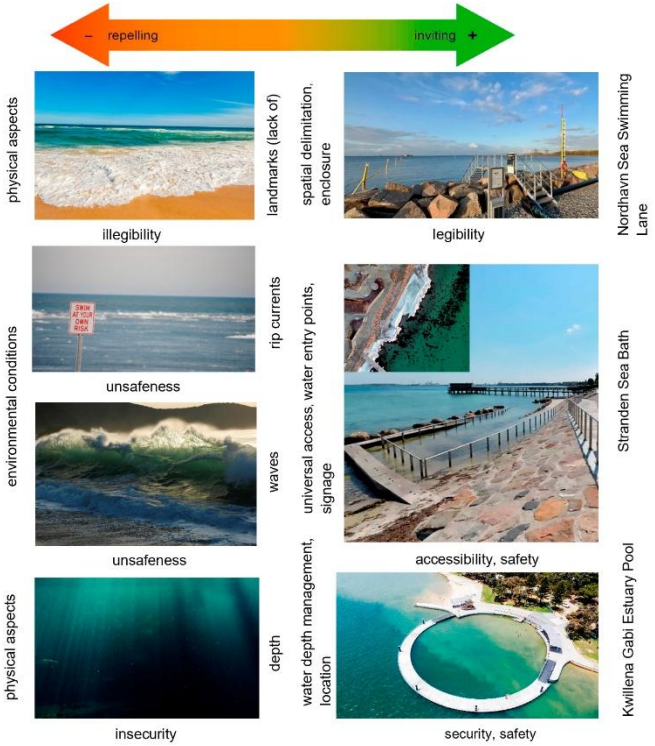


Fig. 10. Affordances found in the marine environment and shaped positive affordances offered by public aquatic facilities (right column): Nordhavn Sea Swimming Lane, Copenhagen, Denmark; Stranden Sea Bath, Gentofte, Denmark; Kwillena Gabi Estuary Pool, Mandurah, Australia. (Source: Avagliano, N., 2021; SvømKBH 2025; PxHere, 2017b, CC0 1.0; Media Loopers, 2012; Kragh Berglund, 2022; Blaque X, 2018; Mandurah Tourism, 2026; modified by the author, 2026)

Tab. 1. Affordances found in marine features and forms to manage them via an affordance-based design of public aquatic facilities. (Source: de Medeiros Raposo, 2025)

Marine feature	Negative affordance	Spatial mediator	Architectural tools	Shaped affordance	Public aquatic facility
lack of landmarks	illegibility	area delimitation	lane enclosure	legibility security swimmability	Kastrup Sea Bath Nordhaven Swiming Lane
hydrodynamics (currents/waves)	illegibility unsafeness	area delimitation entry points	lane pools signage	safety swimmability	Bondi Icebergs Ocean Pool
depth (deep water)	illegibility insecurity	depth management area delimitation (of safe water)	pools with varied depths enclosure signage	safety playfulness	Hasle Harbour Bath Sørenga Sea Bath North Bondi Childrens Pool
depth (shallow water)	illegibility insecurity	area delimitation access points (into deep water)	jumping platforms slide platforms (into deep water)	playfulness safety	Sørenga Sea Bath Kastrup Sea Bath Carpa Oliveira Seapool
rocks and sharp or uneven edges	inaccessibility instability	access points	ramps stairs piers	accessibility	South Curl Curl Rockpool Bronte Bath Ocean Pool
hazardous wild species	unsafeness	area protection enclosure	signage netted swimming area enclosure	safety	Silver Beach Tidal Baths Little Manly Seapool

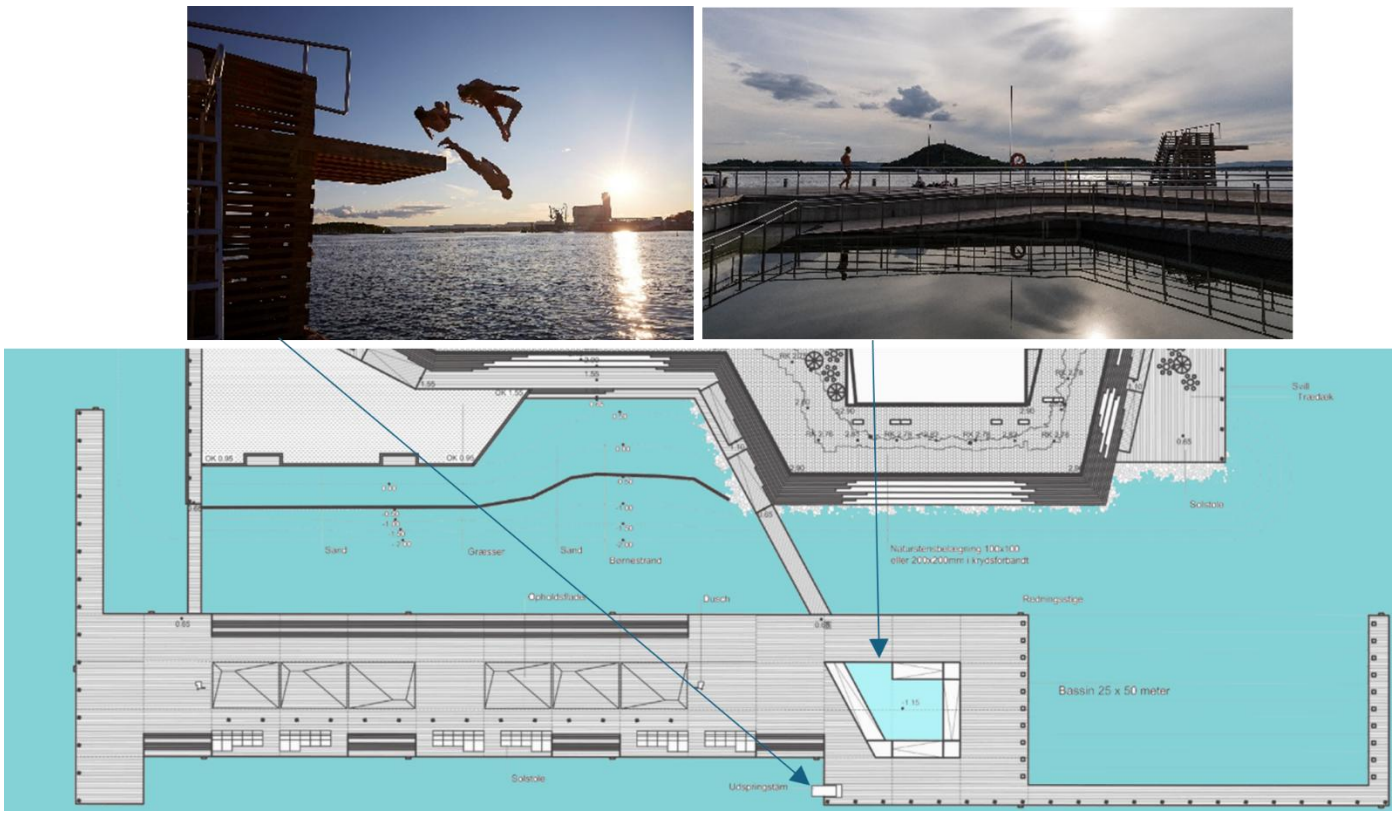


Fig. 11. Affordances related to water depth at the Sørenga Sea Bath (swimmability and playability), and architectural tools that facilitate them (children's pool and jumping platform). (Source: LPO Arkitekter, 2015, modified by author, 2026)

7. Conclusion

This paper explores the under-researched topic of the role of public aquatic facilities in enabling human interaction with marine environment within the field of urban blue space research. While recognising that active interactions are complicated by the risks associated with water-related activities, the paper reviews the advantages of direct contact with water at different levels. It thus offers an alternative conceptual basis for understanding these facilities, considering not only the role they play for recreational purposes, but also the social and ecological connections they can facilitate. As such, it offers a differing perspective to the widely preferred segregation solutions that prioritise concerns about water safety over the potential benefits of active engagement with water.

In adopting an affordance-based design approach, the paper suggests that public aquatic facilities are likely to provide positive affordances, such as legibility, accessibility, safety, and swimmability, which could impact how different users perceive and relate to the marine environment. Mohammadi and Koutamanis (2025) argue that affordance theory enables architects to predict how spatial conditions may encourage, restrict or facilitate different types of interaction, by focusing on the dynamic interplay between users and their surroundings. Here, it is suggested that this rationale is likely to apply to human–nature interactions in particular and the novelty of this study lies in the application of affordance theory to designed blue spaces.

As has already been noted, compared to other types of land-based facilities that also offer immersive contact with water, ocean pools and similar facilities are considered to offer unmatched affordances arising from their intimate relationship with the broader marine environment, the embodied knowledge that is facilitated, and the relationships with non-human nature that are encouraged (McDermott, 2012). Nevertheless, the fact that they facilitate interaction with marine blue spaces does not mean that they can entirely replace the experience of the wild marine environment, given that not all facilities built at the interface between land and sea are the same. The level of more-than-human connection that such facilities provide, and the benefits of this interaction, may therefore vary. Consequently, more research is needed to determine which environmental features should inform the design of man-made marine blue spaces intended to provide a surrogate for the wild experience.

This is particularly important given that the literature suggests that the degree of naturalness is important for both the site choice and the level of nature connectedness (Arnberger et al., 2024), so the level of artificialisation of the marine environment needed to shape affordances should be approached with caution. Conversely, the fact that these facilities are man-made, often presenting spatial boundaries that distinguish the built environment from the natural one, does not mean that they cannot contribute to the experience of nature. In fact, the existing boundaries between the two environments often become blurred in a blended seascape, despite the spatial limitations found on designed blue spaces. Additionally, as the literature has already shown that man-made urban green spaces are useful in addressing the extinction of experience (Shanahan et al., 2015), it is suggested here that the same rationale applies to the use of designed urban blue spaces where water is somehow domesticated. However, studies that confirm this assumption are still scarce, which suggest that empirical research on designed aquatic environments is still an emerging field requiring further longitudinal and comparative investigation.

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