

**Sustainability at the Project Level:
The Case of Willets Point, Queens**

By

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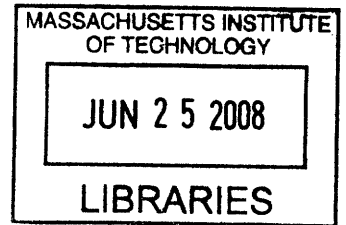
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A handwritten signature in black ink, appearing to be "Siobhan Watson".

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ABSTRACT

Citywide sustainability planning creates a vision of how environmental concerns will shape urban development, but the way these plans are incorporated into individual development projects plays a large role in determining how that vision will be achieved in practice. I propose a system for evaluating the extent to which individual urban development projects contribute to urban environmental sustainability and use it to evaluate the proposed redevelopment of Willets Point, Queens, in New York City. Mayor Michael Bloomberg has made sustainability a major part of his agenda during his administration, and calls the Willets Point project a model of sustainable development. The plans for the redevelopment, however, fail to address several aspects of sustainable development as I define it, and address others only weakly. I argue that in order to achieve strong sustainability, cities must use major projects like Willets Point to rethink how they will develop, and should maximize such projects' contributions to sustainable development.

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Introduction

Willets Point, a 60-acre neighborhood in northeastern Queens, is one of New York City's most heavily contaminated pieces of land. Unpaved roads, stormwater drains that haven't worked in years, and a variety of heavily polluting industries make Willets Point an apparent environmental disaster in every way. The Economic Development Corporation's sweeping plans to remediate the neighborhood and replace it with "a lively, mixed use, sustainable community and regional destination" (New York City Economic Development Corporation 2008) present a vision that is just the opposite of the area's current state. According to the EDC's plans, thousands of new apartments and condos will help to ameliorate the city's growing housing shortage; cleaner businesses will occupy the newly remediated area; and residents and employees alike will contribute to the city's environmental performance by occupying a compact, mixed-use community and using nearby transit to travel in an environmentally benign manner. In the current vogue for all things "green," claims that an urban development will be sustainable are valuable assets in rallying support for projects. Widespread use of the term "sustainability," however, does not translate into agreement about what should be done at a particular site. The Willets Point redevelopment proposal integrates sustainable-design guidelines and provides for extensive environmental remediation. At the same time, many of its features are typical of the kind of urban development that has long been advocated by local governments and business coalitions in the interest of economic development. In the case of Willets Point and other developments that claim to be sustainable, it is difficult to know when a project is contributing to a new, more environmentally and socially responsible development trajectory and when it is simply adding green frills.

This thesis asks: how can we tell the difference between business-as-usual development and genuinely sustainable development at the project scale? I argue that given the myriad interpretations of sustainability, planners need to delineate specific criteria to help determine what constitutes sustainable development at the project level. To that end, I propose a set of questions to ask of development projects along with criteria for determining to what extent the project contributes to sustainable development. I then apply these criteria to the EDC's current plans for the redevelopment of Willets Point. In doing so, I demonstrate that adding elements of sustainable design to a plan does not necessarily represent a fundamental rethinking of either that project or how a city develops more generally. The ambitious environmental and social goals contained in the concept of sustainability require a more thorough revision of the way development is conducted.

The Malleable Definition of Sustainable Development

Despite the popularity of the idea of sustainable development, much debate over the meaning of the term persists. Definitions of sustainable development generally promote a focus on the “triple bottom-line”—that is, development is sustainable if it has economic, environmental, and social benefits. The often-cited UN Brundtland Commission report, *Our Common Future*, states that sustainable development “is development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (World Commission on Environment and Development 1987). To this definition, others have added more explicit consideration of equity. Mathis Wackernagel and William Rees have done this effectively by making the argument since the early 1990's that unchecked development by affluent populations will, in a resource-limited world, deprive less affluent populations of the means to develop (Rees

1992; Wackernagel and Rees 1996). In a book that explores the ability of sustainable development to address social concerns, Julian Agyeman, Robert Bullard, and Bob Evans (2003) propose that sustainable development be defined as “the need to ensure a better quality of life for all, now, and into the future, in a just and equitable manner, while living within the limits of supporting ecosystems”. Wackernagel and his colleagues (2007) add further complexity by distinguishing between “strong” and “weak” sustainability. Strong sustainability, they say, involves a reduction of human consumption below the limits of the earth’s biological capacity, acknowledging that healthy natural systems are vital to healthy human society. Weak sustainability, on the other hand, entails taking steps to reduce consumption but also assumes that technology and innovation will produce substitutes for the natural resources we consume—thereby denying that a fundamental alteration in the way we live is necessary.

Some authors take issue with the popularity of the concept of sustainable development. Writing about the possible pitfalls of sustainable development as a guiding principle for planners, Michael Gunder (2006) argues that in reality economic development is almost always a higher priority than either equity or environmental preservation. In fact, claims Gunder, the very agreement on the importance of sustainable development shows the term’s malleability. Although entities as diverse as large corporations, environmental groups, and multiple levels of government embrace the idea of sustainable development, in practice they define it very differently. In Deborah Stone’s (2003) terminology, sustainable development has become a powerful political symbol that can be used in countless ways to push forward a great variety of agendas. Planning scholar Scott Campbell (1996) questions the idea that planners can successfully represent all three of these sides of sustainability. He claims that the inherent trade-offs between the three, along with the necessary professional loyalties of planners, mean that

planners must usually represent one facet of sustainability over the others. Cheryl Margoluis (2005), whose research has focused on sustainable development in Latin America, describes situations in which equity and environmental goals oppose each other directly, calling the Brundtland report optimistic in its hope that harmony can always be found among the three elements of the triple bottom line.

The triple-bottom-line solution is nevertheless one worth aiming for, albeit with these cautions in mind. Campbell (1996) calls for advocates of urban sustainability to combine their ambitious, substance-based vision of sustainable development with the sensitivity to local conditions and the need for public involvement that planners have developed in recent decades. Instead of wishing conflicts among equity, efficiency, and environment away, planners should acknowledge, clarify, and attempt to resolve them. Writing about the need for urban sustainability reporting and indicators, Virginia MacLaren (1996) comments that sustainability is an ideal state, whereas sustainable development is the process by which we attempt to achieve that state, bringing environmental considerations more fully into policy debates. Drawing on all these perspectives, I define sustainable development as development that elevates the consideration of environmental and social concerns to the level of priority that economic development normally occupies alone, doing so in a transparent manner that allows for informed debate about policy options. This definition demands that we acknowledge ecological limits to human consumption and attempt to achieve “strong” sustainability, and it requires a thorough rethinking of how we develop cities. Accepting that economic and social concerns must be addressed within the limits of natural systems, I therefore examine environmental considerations first, looking afterwards at the interaction of environmental sustainability with the other elements of sustainability.

The Role of Cities in Sustainable Development

The question of how to realize the lofty goals of sustainable development requires thought about where to focus sustainability efforts. Although environmentalists have traditionally worked to preserve natural areas, the urbanization of most of the world's population means that most resource use now takes place in cities (Brand and Thomas 2005). Because of cities' large role in determining global production and consumption patterns, advocates of sustainable development have focused on cities since the late 1980s. Wackernagel and Rees (Rees 1992; Wackernagel and Rees 1996) have been influential in promoting the idea that cities should take greater responsibility for the massive quantities of land and resources they require. Cities' ecological footprints reach far beyond their geographical boundaries, especially those in Western industrialized cities; Wackernagel and Rees show that several planets would be required for the world to consume the way the West does, and they encourage cities and individuals to take a variety of actions to reduce their footprints¹. Some scholars of urban sustainability have criticized the "linear metabolism" of cities (Girardet 1999), pointing to opportunities for cities to reduce global waste production through reduction and reuse of waste products. Others have accused proponents of environmental conservation of focusing too heavily on natural areas, pointing out that cities are major drivers of ecological change and that real conservation must address the demand created by urban populations first and foremost (Solecki et al. 2004).

Large ecological footprints notwithstanding, cities also hold the potential to reduce human environmental impacts through more efficient resource use. The release of the UN's Brundtland Commission report in 1987, defining sustainable development as allowing for

¹ Wackernagel and Rees (1996) developed the concept of the ecological footprint as a way to calculate human resource use and compare it with the ecological carrying capacity of the earth. Using information about consumption patterns, an ecological footprint calculation yields an estimate of the amount of land that is needed to support an individual, a city, or a country.

economic growth as well as environmental conservation, reframed the global debate about the environmental conservation, shifting many environmentalists' focus from limits to global population growth towards rethinking the goals and methods of development (Brand and Thomas 2005). The Commission of European Communities published a *Green Paper on the Urban Environment* in 1990, translating the Brundtland Commission's findings into a strategy of funneling growth that would normally occur at low densities into compact cities, thereby conserving land and resources through concentrated growth. Local Agenda 21, adopted at the 1992 UN Conference on the Environment and Development in Rio de Janeiro, encouraged local governments to take action towards achieving sustainable development, and many municipalities, particularly in Europe, created Local Agenda 21 plans to help them do so.

Though initially much more common in European cities, many cities in the United States have now made local sustainability plans (Portney 2003). Attempting to take on environmental concerns that go beyond local pollution control, municipalities in the industrialized world have put forth ambitious goals to curb their carbon emissions and reduce their use of energy and other natural resources. Whereas "brown" urban environmental health agendas and "gray" pollution control agendas were once at the forefront of cities' environmental initiatives (and still are in developing countries), "green" agendas that focus on cities' contribution to global resource consumption, waste production, and climate change now dominate (Marcotullio and McGranahan 2007). Pollution control and environmental health movements have been quite successful, particularly in affluent cities, but critics of urban environmental initiatives see them as "but a thin veneer covering the deeply unsustainable dynamics of production and consumption" that "pale into insignificance in the face of continued devastation of global ecological systems" (Brand and Thomas 2005, xii). The addition of the sustainability concept to

urban environmental agendas responds to the need for farther-reaching environmental actions that do more than simply export cities' environmental impacts.

A number of recent urban planning movements have a shared interest in creating more environmentally, socially, and economically stable communities, and all have influenced the form that sustainability planning has taken in the United States (Wheeler 2004). Proponents of New Urbanism, a movement with roots in an effort to create better-designed communities with a strong sense of place, claim that its methods result in reduced sprawl and greater environmental protection. The Smart Growth movement is more expressly geared towards reducing the environmental impacts of urban sprawl, but overlaps to a great degree with New Urbanism in its implementation strategies as well as in its advocates. The Environmental Justice movement aims to create a greater social equity through a fair distribution of environmental burdens. In many cases environmental-justice groups have moved towards a greater focus on sustainability, often because activism against toxic facilities in disadvantaged neighborhoods has led environmental justice groups to aim to reduce the number of toxic facilities necessary in any community (Sze 2007). Green Urbanism comes from a concern with the natural systems within urban environments. Wheeler claims that these movements have to a large degree converged in promoting sustainable cities, an idea that can be seen as encompassing many of the ideals of the various movements (Wheeler 2004).

Urban sustainability planning captures several themes that recur in all these movements. Amongst these themes are the importance of thoughtful urban design, attention to natural systems in cities, and placing priority on pedestrians in designing cities and towns. A call for increased densities within urban centers is a particularly important commonality, and cities' sustainability efforts have involved aiming for greater urban densities in order to conserve

resources and land through compact living (Brand and Thomas 2005). The idea of the “compact city” was developed in European cities, and is currently a dominant paradigm in planning for sustainability worldwide. Timothy Beatley (2000), a pioneering urban sustainability scholar, advocates that U.S. cities emulate European models of dense development contrasting with natural areas around them, and ecological designer Richard Register (2006) paints a compelling portrait of sustainable cities as islands of dense urban settlement on a backdrop of natural landscapes. New Urbanist and Smart Growth planners point out that denser development saves fuel, building materials, and open space. The Urban Land Institute recently published *Growing Cooler* (Ewing et al. 2007), a report that establishes overwhelmingly the relationship between compact development and both vehicle ownership and vehicle miles traveled. Ewing and his coauthors estimate that encouraging compact development could reduce the United States’ transportation-related carbon emissions by 7-10 percent by 2050. They encourage planners and policy-makers to respond to the results of this study by changing policies to allow for and encourage compact development rather than continued urban sprawl.

Although there is no doubt that compact living and working environments use resources more efficiently than sprawling, low-density units, some researchers suggest that this broad observation does not necessarily mean that intensification of urban land use will result in lower environmental impacts in specific instances (Gunder 2006). Mark Deakin (2007), a planning scholar whose work focuses on assessment of sustainability strategies, examines compact master-planned communities in Scotland and finds their ecological benefits lacking; he worries that the popularity of compact development may without fuller analysis of their ecological impact be “little more than an aesthetic” (436). One study of urban condominiums shows that a significant proportion of these units, which are generally a prominent feature of urban

intensification projects, are purchased as second homes (DeLaney and Pizzuti 2005), indicating that the owners of such units are unlikely to be reducing their ecological footprints by purchasing a condo. Advocates of compact development do enumerate qualities beyond density, such as a balance of uses and access to transit, as essential to the environmental performance of dense development (Beatley 2000). In light of accumulating research that casts doubt on the inherent link between compact urban form and environmental improvement (Neuman 2005), however, it is important to enumerate specific connections between the features of individual projects and environmental benefits that are expected to result.

Implementing Sustainable Development Project-by-Project

Sustainability plans provide broad visions as to how cities will incorporate sustainability goals into their development, but the physical manifestation of such a vision is largely carried out project-by project as politicians, planning agencies, and developers determine how to interpret and implement it. An extensive literature on what sustainable cities are and how our existing cities can become sustainable describes and debates recommendations for citywide approaches and methods of evaluating them. Writing on green technologies and ways for buildings to incorporate sustainable practices also abounds. Less frequently discussed is how an individual urban development project should take sustainability principles into practice, which of the many aspects of urban sustainability should take priority given a limited budget, and how one should evaluate the extent to which such a project has contributed to a city's sustainability. The complex set of values combined in the concept of sustainability, along with the vastly differing conditions at any particular development or redevelopment site, make the task of setting forth criteria for the sustainability of redevelopments difficult. Nevertheless, because projects are advanced

individually, it is important to set forth a method for evaluating the extent to which the project is likely to contribute to urban sustainability.

Criteria for evaluating the sustainability of urban development projects should help to predict the environmental benefits a project will deliver, but they should equally serve to enhance public debate about how greater levels of sustainability will be achieved. Fischer (2000) eschews technocratic environmental policy-making and makes the case for meaningful public participation even in very science-intensive environmental policy debates, arguing that the role of environmental experts should be to clarify the value conflicts that underlie these debates. Although sustainability planning focuses on regional, national, and global impacts, local debates over the methods used to reduce these impacts are still needed. Brand and Thomas (2005) assert that compact urban development as a sustainability strategy can easily be used to rationalize urban redevelopments whose outcomes have little to do with environmental performance. Gunder echoes their concern, warning that sustainability can become a convenient way of defusing objections to developments on the grounds that opponents of urban intensification are preventing environmental improvement (Gunder 2006).

Urban political scientist Paul Peterson (1981) made the argument that cities, in intense competition with each other for private investment, are limited in the extent to which they can provide social services. Cities rely on local taxes to fund such services, says Peterson, and they must raise taxes cautiously in order to avoid driving businesses to relocate elsewhere. The same argument could be made with respect to sustainability –that cities are limited in the extent to which they can incorporate the principles of sustainable development into their plans. Some scholars of urban politics, though, have argued that within cities’ undeniable limits there is room to deviate significantly from the pure pursuit of private investment. Peter Dreier (1996) describes

Boston Mayor Ray Flynn's progressive housing agenda in the 1980's, showing that Boston went far beyond what was considered feasible within city limits in its policies promoting affordable housing. Dreier makes the claim that cities rarely test their limits and that when they do, investment does not necessarily flee as expected. Attempts to push social and environmental agendas confront what sociologists John Logan and Harvey Molotch (1987) call the "growth machine"—strong coalitions of business interests and local government officials that favor short-term economic growth, even if it comes at a high long-term cost. The compact city ideology could well feed into "growth machine" politics; the economic benefits of high-density development projects have the potential to inhibit real debate over the environmental benefits of such projects. Setting out evaluation methods for development projects should help address Gunder's (2006) concern that advocates of high-density development projects can make an unquestioned claim that these projects will benefit the environment.

Evaluation Methods for Projects

A full evaluation of how a particular project contributes to urban sustainability should start by considering the optimal use of a site. In a book that argues that better planning of cities and towns has the potential to save most of what's left of the earth's biodiversity, Register (2006) criticizes most attempts at sustainability for assuming that tweaks on business as usual will be enough to ensure a sustained healthy and productive planet. Anne Spirn's *The Granite Garden* (1984) encourages planners to look carefully at how urban systems interact with natural systems, and to allow natural systems to help determine what is built there, not simply how damage to the

natural systems will be mitigated². In addition to offering suggestions for what cities should do on a city-wide level, the book sets out plans for what individual projects should accomplish. Spirn's first recommendation as to what a project should do regarding each of the natural systems she describes is to address the relationship of the site to the environmental issues of the city as a whole. In her recommendations for water planning, for example, Spirn asks first that a project address the "relationship between the project's site and the city's critical flooding, water pollution, and water supply problems, as well as specific hazards and resources that exist on the site and in its immediate neighborhood" (167). This approach recognizes the importance not only of designing buildings and landscape features within the site to retain stormwater and prevent flood risks—steps she does recommend taking—but also of taking into consideration how the project affects water problems at the city scale. In doing this for each system she discusses, Spirn leaves flexibility necessary for projects to consider what should be done at the particular site in question, while creating a demanding standard of evaluation that requires each project to do its part in tackling city-wide environmental concerns.

Such a starting point is far from the current methods of conducting environmental assessments, which focus on a project's impacts in the immediate area of development, and which are normally conducted after most of the planning for a project has happened. Since the passage of the National Environmental Policy Act in 1970, all federal actions in the US have been required to go through a process of public comment. Environmental impact statements typically report on impacts in the area immediately surrounding the site, including air, noise, traffic congestion, water use, and other local concerns. State and city environmental review processes have mandated similar processes for state- and city-supported actions, making

² Spirn suggests plans for every city regarding what should be done to improve the quality of urban air, water, earth, life, and ecosystems.

development projects in cities subject to extensive examination. For decades critics have charged that the environmental review process has failed to accomplish real environmental improvement. In New York, for example, the most popular mitigation measure that comes out of Environmental Impact Statement comment processes is a change in the timing of traffic signals, a response to concerns over increased traffic that does little to actually decrease driving or fuel use (Manhattan Institute 2007).

In spite of the criticism that mitigation measures such as these largely ignore the real environmental impacts of projects, environmental impact statements have been an important component of public involvement in development projects; by generating enormous amounts of information they enable local residents and community groups to get a glimpse of what a project will do and how it will affect the surrounding area. Even extensive local involvement can ignore the larger-scale impacts of development, however. New Urbanist proponents of higher-density development both in cities and outside of them blame strict local environmental standards for making dense development costly, thereby encouraging low-density development that consumes more land and resources (Duany and Brain 2005). Projects whose predicted environmental benefits go beyond the area with which an EIS concerns itself may increase a city's overall environmental burdens. One of the goals of sustainability planning is to overcome the usual limitations of evaluating environmental impacts at the project level, considering the farther-reaching impacts of development rather in order to tackle climate change and other concerns that do not necessarily emerge in a traditional EIS. Adding regional and global concerns to deliberation over a project, though, should not mean that its environmental costs and benefits are less fully evaluated. Because these concerns do not fit well into a normal EIS, a project that

attempts to address them risks neutralizing objections based on local concerns without fully articulating and evaluating the broader environmental benefits it purports to bring.

Strategic environmental assessments have been introduced in Europe and elsewhere to address this – a 2001 EU directive required that all countries in the EU ratify an SEA process by 2004 (Mondini and Valle 2007). An SEA is intended to come into the planning process during decision-making rather than as a later-stage evaluation of actions that have already been planned. It uses broader, more qualitative measures than an EIS does of whether a project meets sustainability goals; in the EU, this means meeting the ten criteria for sustainable development laid out in the EU’s Environmental Resources Management manual. Methods for carrying out SEAs are still under debate, but Mondini and Valle describe the SEA process for urban development in preparation for the 2006 Olympics in Turin, Italy. They divide sustainability into systems, evaluating whether the development contributes to the sustainability of hydrogeological systems, agriculture and forest systems, cultural systems, and others. The systems are further divided into components – flooding areas is one component of the hydrogeological system, for example; historical centers is one component of the cultural system. Each of these components is then rated – a minus symbol (-) indicates that the plan does not address a particular component, a plus (+) indicates that the component is indirectly addressed, a (++) rating indicates that it is addressed directly, and a (+++) indicates that it is both indirectly and directly addressed.

Though Strategic Environmental Assessment has not come to U.S., a recent development in evaluating sustainability on the project level is the release of a draft set of standards for neighborhood development by the US Green Building Council (USGBC 2007). The LEED-ND (Leadership in Energy and Environmental Design – Neighborhood Design) standards are an expansion of the LEED standards that have become increasingly popular in certifying green

buildings. The voluntary standards have some requirements that must be met in order to qualify for LEED-ND certification and a number of standards that give a project points, which can add up to increasing levels of certification. The extensive rating system provides a clear set of criteria for neighborhood developments, awarding points to projects for measures such as incorporating green building and landscaping practices, discouraging extensive automobile use by locating near transit, and including a diversity of uses that allows more of residents' and workers' needs to be met by foot. Achieving high levels of LEED-ND certification, though, could leave a project short of being considered sustainable development by many definitions of the term. The standards set out explicitly to evaluate the extent to which New Urbanist, Smart Growth, and green building practices are incorporated into projects, not to ensure that a project meets a particular definition of sustainable development. The standards do not require extensive, outcomes-based analysis of whether the methods it requires will lead to changes in consumption and its impacts. Rather, it requires the use of principles that are assumed to have environmental benefits.

Assumptions that neighborhood design will influence behavior may be valid, but questions about the inherent connection between neighborhood design and environmental performance (Gunder 2006; Deakin, 2007; Neuman 2005) suggest the need for detailed analysis of those assumptions. Craig Simmons (2007) offers a method of doing this in his exploration of the connection between neighborhood design and its residents' ecological footprints. He establishes an ideal footprint as the LOW – Living on One World – Footprint. The LOW footprint is built on Wackernagel and Rees' assertion that we would need several planets' worth of resources for the whole world to consume at the levels of citizens of developed countries (Wackernagel and Rees 1996); a LOW footprint is one that is low enough that one planet could

support each person in the world consuming at that level. Simmons looks at a community that was built as a part of developing “Zero Energy Development” standards in England. He models the resources that citizens would need to live in this ZED community versus a typical low-density community. Simmons goes further than attempting to calculate average resource use for these two types of developments, though; he invents the terms “eco-zero,” “eco-willing,” and “eco-hero” to describe relative levels of environmental conscientiousness amongst the hypothetical residents of the developments. An eco-hero, for example, would be likely to look for a job that does not require commuting with a private car; one who is eco-willing would not prioritize this in looking for a job, but would be likely to take public transit to work if it were convenient enough; an eco-zero would be unwilling to switch to public transportation. This model shows that an eco-hero living in a compact, transit-connected community can get much closer to a LOW footprint than can the same person living in a conventional suburb. It also shows that a significant portion of a person’s footprint still depends on one’s personal choices about quantity and type of resource consumption.

A Set of Questions to ask of urban development projects

Combining many of the suggestions for project evaluation described above, I recommend asking a set of questions of urban development projects. These questions are intended to hold projects to a high standard of sustainable development while leaving room for diverse methods of getting there. Rather than a laying out a specific set of requirements to which a project should conform, these questions suggest a logical way of assessing the quality of the project according to the definition of sustainable development furnished at the outset: that sustainable development elevates the consideration of environmental and social concerns to the level of priority that

economic development normally occupies alone, doing so in a transparent manner that allows for informed debate about policy options.

It is useful to think of the likely environmental benefits of urban development projects in two broad categories: (1) direct improvements in environmental conditions that will be realized through the physical development of a site, and (2) changes that the development will make in the behaviors of those who live and work on the site. The first category includes green building practices, such as energy efficiency and non-toxic materials use, site design that preserves natural features of the landscape, and other concrete physical components of building and landscaping. The second category includes measures such as access to non-automobile transportation, a pedestrian-friendly design that is meant to encourage walking, and other elements whose impact relies on changing the behavior of a development's users. Many measures may fall into both categories; the reuse of a brownfield site, for example, improves onsite environmental conditions through cleanup while also theoretically preventing the use of a greenfield site elsewhere. Often, though, they are distinct, dealing either with onsite environmental conditions or behavioral influence. Determining which of these two categories particular measures fall into can clarify how a development will produce environmental benefits. A project with a clear focus on the environmental outcomes of sustainable development will make specific connections between its features and the ways in which it will influence behavior.

The following questions set up a way of evaluating the contribution of a development project to urban environmental sustainability, both through its physical, on-site attributes, and through elements intended to influence environmental behaviors. To Spirn's concerns for urban natural systems, I add consideration of projects' impacts on regional and global environmental systems. To do this, I draw on the ecological footprint concept as well as the idea of strategic

environmental impact assessments as documented by Mondini and Valle (2007). I also incorporate useful concepts from LEED-ND (USGBC 2007) and the writings of Deakin (2007), Simmons (2007), and others on assessment methods. Rather than dealing separately with the natural systems in cities, these questions deal broadly with several concerns: open space preservation and enhancement, conservation of natural resources, pollution and waste, and natural hazards. For each question, I establish criteria for judging what a fundamental rethinking of development according to sustainability principles— i.e., strong sustainability —might be, and what more modest steps towards sustainability— i.e., weak sustainability —might be. The scoring of a project according to these criteria is subjective; the questions are intended to draw out conflicts and force proponents of development projects to make strong arguments for their use of the term “sustainable development,” not to provide an objective scoring system.

These questions focus on the environmental aspects of sustainability. The concept of sustainability also includes economic and social concerns, but by embracing the notion that social and economic concerns must be addressed within environmental limits, I look first at how we can evaluate the environmental benefits of a site. It is important to note, too, that recent efforts to plan for urban sustainability are largely driven by concern over climate change and other environmental impacts. If the environment is to serve as a driving force for plans and a justification for the course of action taken, it is essential to ask questions that force consideration of the extent of the project’s environmental contribution.

- First, *does this project explicitly provide mechanisms to enable the preservation and enhancement of open space and habitat for endemic plants and animals?*

Preservation of open space is a major goal of environmentalists and one that is at the heart of long-range sustainability planning. Well-documented benefits of open spaces include the carbon sequestration and air filtration capacities of a large tree canopy cover, the recreational uses of open spaces that are vital to human health, and the conservation of habitat for plants and animals. In the past, planners in suburbs and exurbs with large amounts of open space considered lower density to be a tool of open space preservation, but in reality sprawling development has replaced most valuable ecosystems on the outskirts of cities with homes and disconnected patches of lawn monocultures. Compact development, leaving room for well-connected open spaces populated with native plants and animals, is now recognized as an ideal for open space planning, thanks in large part to the landscape ecology work of Richard Forman (e.g., Forman 1986).

Ideally, direct ways for a development project to preserve and enhance open space should depend on a well-formulated, regional ecological plan, as the idea of limiting growth to specific centers while strategically preserving corridors, patches and larger reserves of open space is difficult to achieve piecemeal. To move toward strong sustainability, a project should consider its relationship to such a plan, or, in the absence of one, to where it fits into the ecology of its region, perhaps drawing on academic or environmental organizations' expertise on the region's environmental needs. The best choice for an undeveloped site may be no development at all, considering the difficulty of reestablishing open spaces once they are developed – transfers of development rights, land trust purchases, and other mechanisms that allow housing and job growth to occur in already-developed places should be considered. Sites within dense urban centers can maximize the benefit of open spaces that do exist within their bounds, installing

green roofs, landscaping outdoor areas, and encouraging biodiversity within their bounds. Native landscaping, green roofs, pocket parks, and connections with larger open spaces can foster urban biodiversity. A very stringent requirement for urban developments to contribute directly to the conservation of open space might also require developers to purchase land outside of the city to mitigate the impacts of development within the city. Where endangered species are present, this type of mitigation is required, but elsewhere it is not common. Weak sustainability would make use of some of these practices without maximizing their presence, incorporating open space planning to the extent that it does not interfere with the project's economic and other goals.

A project can also aim to reduce pressure on open spaces by influencing behavior. Dense developments in urban areas that claim to be sustainable rely heavily on the theory that such developments reduce the need for open space and habitat-rich areas to be used for housing, business, and other human uses. Few projects, however, go beyond making the broad claim that they are reducing development pressure on open spaces to come up with mechanisms to actually do so. Clearly it is important to consider long-term trends, even if the degree to which a particular project contributes to these trends may not be quantifiable. Many planners (e.g., Fishman 2005) are hopeful that re-enchantment with cities and urban revitalizations will be enough to curb urban sprawl, and mainly recommend reducing restrictions on compact development in order to reduce demand for open space development (Ewing et al. 2007). This hope, however, relies on a voluntary reduction in land consumption on the part of those who remain in low-density areas. I argue that relying on this trend is inadequate to make the claim that a project represents strong sustainability; the project *must* tie its provision of housing, commercial, or industrial capacity to a reduction of the need for it elsewhere. This may involve transfers of development rights or other mechanisms that would move the expected benefits from

the realm of influencing behaviors to that of directly reducing open space development. It may mean simply mean showing through detailed analysis that the particular features of the project will realistically reduce the need for open space development elsewhere, but the broad statement that increasing density in developed areas will reduce development of open spaces should be considered weak sustainability.

- *Second, does this project maximize the conservation of water, fossil fuels, and other natural resources?*

With climate change at the center of most recent environmental efforts, the conservation of resources is largely centered on fossil fuel use. Water conservation has long been a focus of conservation efforts, and climate change has raised the visibility of water supply issues because of increasing occurrences of drought. This category also includes mined materials, wood, and other resources whose overuse depletes ecosystems and contributes to carbon emissions, pollution, and landfilling.

Direct features of a project that purports to contribute to strong sustainability should include measures to minimize the use of water and energy, and should include alternative energy production. Graywater reuse systems, low-water-flow and energy-efficient fixtures and appliances, combined heat and power generation, and building orientation that takes advantage of opportunities for passive heating and cooling are just a few of the physical attributes that ought to be included in such projects. By contrast, a project that fosters weak sustainability would simply reduce the consumption of water, energy, and natural resources to levels below those of a typical similar project.

In addition to conserving resources through physical features, the project should encourage resource-conserving behavior. One of the most important ways that demand for energy can be reduced is to encourage transportation by methods other than the automobile. This is a large part of the environmental benefit that Smart Growth and New Urbanist planners ascribe to development that has a walkable street pattern and a mixture of uses, enabling access by foot, bicycle, or public transit to many of the places residents and workers need to go. Reduced resource use is also attributed to compact development on the basis that people who live in such developments are consuming less energy, building materials, miles of sewer lines, and other infrastructure-related resources that are consumed at a higher per-capita rate in low-density developments. Plans that claim to reduce resource use through influencing behaviors should draw specific and realistic connections between the development's form and how and where resource use will be reduced, perhaps using Simmons' (2007) technique of modeling hypothetical ecological footprints of people who live or work onsite and comparing it to an ecological footprint elsewhere. Incentives should also be built into the development, such as reduced prices for units that do not have a vehicle and thus will not be making use of space devoted to parking. Other measures that could realistically be expected to reduce auto use might be carefully planned pedestrian and bicycle routes that follow the travel patterns of those likely to use them, secure and covered bicycle parking that is more convenient than parking for cars, or even eliminating parking structures for residences altogether.

- *Third, will this project clean up and prevent pollution of water, soil, and air?*

Air, water, and soil pollution abounds in urban areas, and projects should contribute to cleaning up and restoring the urban ecosystems. In addition to dealing with the contamination that is a by-

product of urban systems, projects should contribute to efforts to reduce contamination at the source. Reducing the production of pollution and waste requires major changes in production and consumption systems. The linear metabolism of cities (Girardet 1999) means that natural resources are generally brought in, consumed, and exported as waste, creating landfills, soil and water pollution, and greenhouse gas emissions, in addition to the shortages of resources that result. McDonough's (2002) *Cradle to Cradle* sets ambitious goals regarding the production of building materials, paper goods, and other everyday products: he advocates cradle-to-cradle processes that envision the next use of the product and make it in such a way that it can easily be transformed into a new use. Newman and Jennings (2008) ask us to see cities as sustainable ecosystems, and to mimic natural systems by integrating production and consumption. Local production of food and finished goods, wastewater reuse systems, large-scale composting, and sophisticated systems to allow the reuse of finished goods are part of this vision of sustainable urban ecosystems.

Direct contributions to pollution and waste reduction can include cleanup of existing soil and water pollution and landscape and site design features that minimize future pollution as well as high standards for reusable and locally sourced building materials. Strong sustainability with respect to pollution and waste management would mean looking at the life cycle of any materials used and choosing low-energy, non-toxic options. Bioswales, pervious sidewalk and street materials, and other storm-water controls can prevent contamination of water bodies. A project demonstrating strong sustainability will implement such measures to the maximum extent possible, while one exhibiting weak sustainability will implement only those measures with a cost that is comparable to standard materials, and will stop short of looking for innovative ways to reduce pollution over the lifecycle of the materials being used.

In terms of changing behavior, a project exhibiting strong sustainability should make heavy use of incentives for the businesses and residents that will occupy it to reduce flows of wastes and toxic materials. Developers should design incentives that encourage business practices that prevent waste and toxic materials creation and should encourage residents to reduce resource use and reuse wastes. One common incentive to reduce waste is fees for garbage pick-up, with no charge for recycling and composting. Projects could also include convenient facilities for composting and recycling, with requirements that all organic wastes be composted. They could include education and promotion of environmentally responsible residential and business practices, acknowledging that a major reduction of the pollution and waste produced on a particular site must involve environmentally responsible purchasing and disposal by those who use the site.

- *Finally, does this project take sufficiently preventive measures to minimize the likelihood of storm damage, flooding, and harm from other natural hazards?*

Hurricanes Katrina and Rita brought national attention to the importance of careful planning in the face of natural hazards, and to the potential for increasingly severe storms in the face of climate change. Every project should take into consideration the particular threats that are present on its site. Features of the project should address those threats, but strong sustainability demands that the threats shape what is placed on the site as well, and that future sea level rise and increases in storm severity be taken into consideration. Natural hazard mitigation specialist Dennis Mileti (1999) makes the argument that losses of property and lives are due to failures of human planning for disasters rather than to the natural hazards themselves. He calls for a more sustainable approach to natural hazards mitigation and contends that local land use planning is

the most powerful as well as the least well-used tool available to reduce natural hazard threats. According to Mileti, local land use planning should look at long-term hazard threats, should anticipate change and ambiguity, and should reject the short-term solutions that are often used to deal with natural hazards.

These questions can be summarized using a chart (Table 1) that leaves space for each component to be rated with respect to the features of the project and the behaviors it hopes to induce. Using a modified version of the rating system that Mondini and Valle (2007) describe, a rating of (0) in any of these categories would mean that a project does not address the component or does not achieve significant progress with regards to it. A rating of (+) would mean that the project addresses the component and incorporates changes regarding it but does not show the type of rethinking and re-planning that strong sustainability would require. A rating of (++) would indicate that the project has taken major steps with regard to the component, making its maximum possible contribution to sustainable development. These ratings are qualitative and subject to debate –they are intended to force planners and developers to explain how a project will deliver environmental benefits and why some elements are prioritized over others. Equally, they are intended to provide environmental groups, local politicians, and concerned citizens with the means to challenge how thoroughly those benefits have been explored and provided for.

Table 1: Rating System for Proposed Urban Development Projects

	Direct Features	Behavioral Changes
Open Space		
<i>Preservation of Habitat</i>		
<i>Restoration of Habitat</i>		
<i>Creation of Recreational Spaces</i>		
Pollution & Waste		
<i>Waste</i>		
<i>Soil contamination</i>		
<i>Water contamination</i>		
<i>Air Pollution</i>		
Natural Resources		
<i>Energy</i>		
<i>Water</i>		
<i>Building Materials</i>		
Natural Hazards		
<i>Site Specific Threats</i>		
<i>Planning for Climate Change</i>		

The Case of Willets Point

The proposed redevelopment of Willets Point is spoken of as a potential model of a sustainable community and a demonstration of New York’s commitment to environmental improvement. It is a project that will, if approved, transform a neighborhood dramatically and contribute to emerging standards of what sustainable development means in the context of New York City. Given the extent of the proposed transformation, this project could illustrate almost every one of the hopes that planners, advocacy groups, and others have for the future of the city. It also demonstrates many of the challenges associated with putting the idea of sustainable urban development into practice. Planners who have worked on the redevelopment of the area see a potential transformation of a toxic wasteland into a shining example of how to develop

sustainable urban communities (Walsh 2008); business owners and their allies see the current plans as nothing more than the latest attempt to take their property and create another haven of elite city living in place of a solid industrial job base (Scully 2008). Environmental groups see the redevelopment as an embodiment of a regional smart-growth strategy (Hendrick 2008); some observers see a gung-ho mayor attempting to leave a lasting mark on the city (Sterling 2008). I argue that the Willets Point redevelopment will incorporate many features that will improve environmental conditions and contribute to natural resource conservation to some degree. But the development being considered for Willets Point does *not* represent the type of rethinking of development that strong sustainability requires. In fact, the project makes manifest the many challenges to fundamentally rethinking development with sustainability in mind.

Willets Point: History and Political Context

The redevelopment of Willets Point, a 61-acre on the Flushing Bay in Northern Queens (Figure 1), is not a new plan. Every potential urban development in New York comes with a long history of political, economic, and social tensions, with attempts at sustainable development superimposed on that history. In the case of Willets Point, the story of the site begins with the Brooklyn Ash Removal Company, which was simultaneously in the business of incinerating much of early-twentieth-century New York's waste and of developing real estate in Brooklyn and Queens on land created by dumping the incinerator's ashes into wetlands (Miller 1998). The company obtained access to 320 acres of wetlands in Northeastern Queens in 1909. Running up against limits to easily accessible wetlands that could profitably turned into suburban developments, Brooklyn Ash used its vast acreage in Queens to pile ashes higher and higher, creating what F. Scott Fitzgerald famously referred to in *The Great Gatsby* as a "valley of ashes"

separating New York City from the rural Long Island communities to its east. Much of the 320-acre ash dump was eventually transformed into Flushing Meadows-Corona Park for the 1964 Worlds Fair, but the Willets Point area had by that time acquired a substantial number of auto businesses that successfully resisted Willets Point's incorporation into the park. A football stadium plan spearheaded by Donald Trump failed in the 1980's; New York's failed bid for the 2012 Olympics killed plans to create a stadium there more recently.

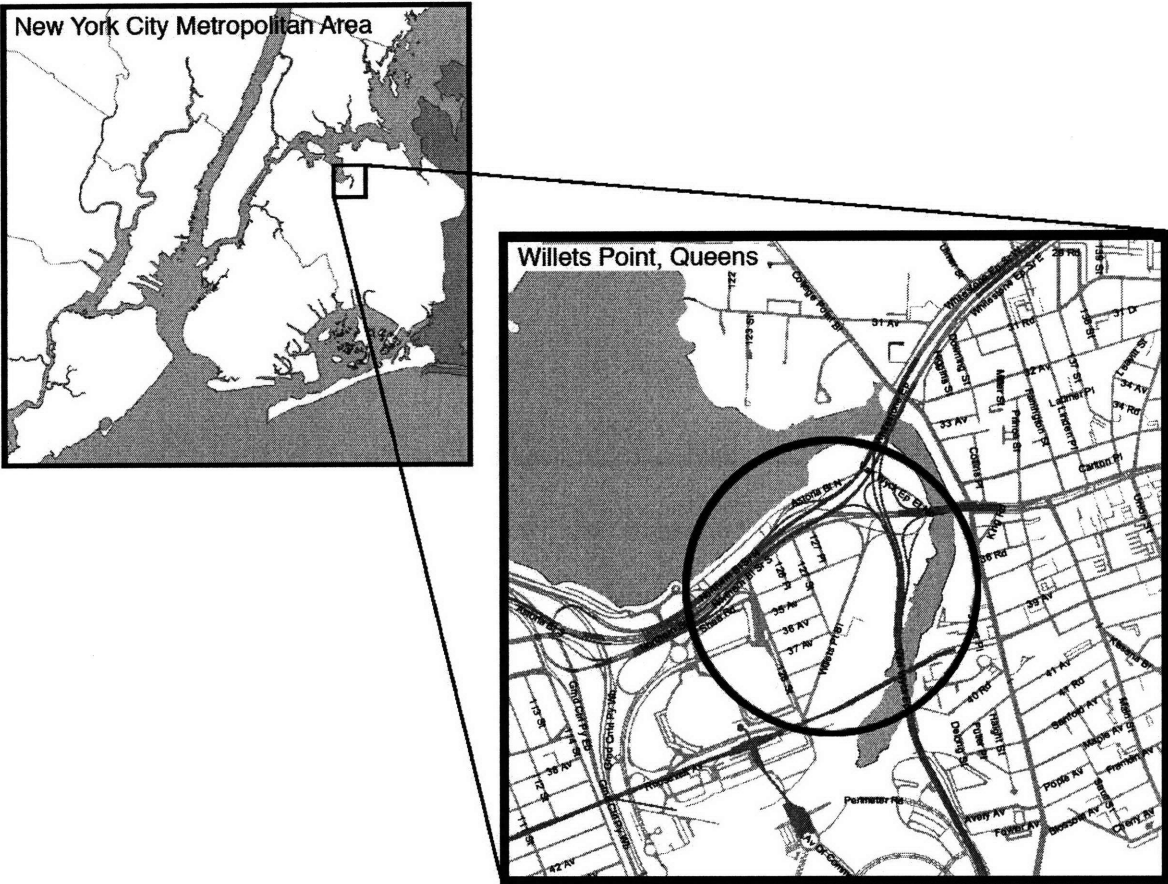


Figure 1. Willets Point is a 61-acre peninsula on the Flushing Bay in Northern Queens.

Former Queens Borough President Claire Shulman made the redevelopment of Willets Point a high priority during her administration of 1986-2002, and she remains one of its strongest advocates. In response to a request from Shulman's office, the Economic Development

Corporation (then known as the New York City Public Development Corporation) commissioned a study completed by Urbitran Associates in 1991. The study examined redevelopment options at Willets Point and concluded that with city investment in infrastructure the site would attract more and better-quality development, though the study recommended that the primary use of the site remain industrial (New York City Public Development Corporation 1991). Shulman rejected this conclusion, calling the study shortsighted and recommending that an international trade center or other non-industrial uses be built on the site (Office of the Queens Borough President 1993). Shulman's successor, Helen Marshall, has followed Shulman's lead on the Willets Point project and advocated for a non-industrial redevelopment. Without the simultaneous push for the project from the Mayor's office, however, many doubt that the project would have gone far (Angotti 2008; Sterling 2008). After New York's bid for the 2012 Olympics failed, the redevelopment of Willets Point remained a priority of the Bloomberg administration. Many longtime observers of plans for Willets Point believe that Mayor Bloomberg considers the area's redevelopment to be part of his legacy and has a strong personal commitment to pushing the redevelopment forward (Sterling 2008; Choe 2008). Adding to the impetus for redevelopment is the recent construction of Citi Field, the replacement for the Mets' Shea Stadium. The new stadium was built directly across the street from Willets Point; its location brings the swath of auto shops along the run-down Willets Point Boulevard directly into the view of baseball game attendees.

The redevelopment of Willets Point has only recently been promoted as being sustainable. The idea that, for environmental reasons, a dense, mixed-use residential and commercial community would be the optimal land use at Willets Point is firmly grounded in the ideal of the compact city. Mayor Bloomberg's plan for a "Greater, Greener New York," released

on Earth Day of 2007, established a large suite of environmental goals, including a 30 percent reduction in New York’s carbon emissions by 2030. Known as PlaNYC 2030, the plan repeatedly touts the benefits of density, detailing the city’s environmental problems but being sure to call to mind that “our density, apartment buildings, and reliance on mass transit means we are also one of the most carbon-efficient cities in the United States; New Yorkers produce 71 percent less CO₂ per capita than the average American” (New York City Office of Long Term Planning and Sustainability 2007). An essential part of New York’s plan is the projection that the city’s population will increase by one million people by 2030 and the effort, supporting Bloomberg’s pre-existing “New Housing Marketplace” plan, to create enough new and rehabilitated housing units to accommodate the population increase. PlaNYC cites “avoided sprawl” (New York City Office of Long Term Planning and Sustainability 2007, 135) through the provision of housing for almost a million new residents as the number one method of reducing New York’s contribution to climate change. The Willets Point project’s environmental impact statement lists this and several other goals of PlaNYC in detailing the ways in which the project will contribute to to the city’s sustainability goals. The overall goals of PlaNYC cited in the EIS (New York City Economic Development Corporation 2008) are to:

- Create enough housing for almost a million more people, and find ways to make housing more affordable
- Ensure that every New Yorker lives within a 10-minute walk of a park
- Add to the capacity of New York City’s regional mass transit system
- Develop critical back-up systems for New York City’s water network, ensuring a dependable source of water
- Reach a full “state of good repair” for New York City’s roads, subways, and rails
- Provide cleaner, more reliable power by upgrading New York City’s energy infrastructure
- Reduce New York City’s global-warming emissions by more than 30 percent by 2030
- Achieve the cleanest air quality of any big city in America

- Clean up all contaminated land in New York City; and
- Open 90 percent of New York City's rivers, harbors, and bays for recreation by reducing water pollution and preserving natural areas.

The New York City Economic Development Corporation (EDC) spearheads current plans for the redevelopment of Willets Point. After conducting a planning process for neighboring Downtown Flushing in 2003, the EDC released a Downtown Flushing Development Framework whose recommendations included the redevelopment of Willets Point. The EDC issued a Request For Expressions of Interest in 2004 that included no specific requirements for what should be included in the redevelopment. Of those who responded, eight developers were selected as finalists and a targeted Request For Proposals was issued in 2006. Current plans for Willets Point call for assembling all of the land on the 61-acre site through purchase and, if necessary, condemnation and acquisition through the power of eminent domain (New York City Economic Development Corporation 2008). The use of eminent domain will almost certainly be necessary, since all land on the site—with the exception of public streets and sidewalks—is privately owned. The 228 businesses, 1,711 employees, and one resident of Willets Point are uniformly opposed to the redevelopment and quite skeptical of the business relocation and worker retraining programs that the Economic Development Corporation has planned. In place of the mixture of auto parts and service shops, waste-transfer stations, and food-product warehouses that currently occupy the site, a mixed-use development would be built. Though a developer has not yet been chosen, the EDC's guidelines for the development are detailed and include plans for the construction of a convention center, 5,500 housing units, 1.7 million square feet of retail space, 500,000 square feet of office space, and new sidewalks, streets, and open spaces. All of this would be preceded by the demolition of all existing structures on the site as well as all underground utilities. Extensive excavation and remediation would take place, and

additional fill would be added in order to raise the entire site out of the 100-year floodplain, in which much of it now rests. New highway ramps would also be built.

On May 1 of 2007, just a week after the unveiling of PlaNYC 2030, Mayor Bloomberg described the EDC's master plan for the site, praised the economic benefit the project would bring to the city, and emphasized its "green" features, saying that "Willets Point can and will serve as a model of sustainable development" (Bloomberg 2007). The extent to which the development represents sustainable development is debatable, however. Tom Angotti, a Professor of Urban Planning at Hunter College and an outspoken critic of the project, is skeptical, saying that after the release of PlaNYC 2030, "all big projects got dressed up in green" (Angotti 2008). This, he claims, does nothing to help the environment but goes a long way in "selling" the project. On the other hand, there are very real environmental issues at Willets Point that any sustainability plan would be wrong not to address. The EDC's claim that the entire site must be cleared prior to redevelopment hinges on two assertions. The first is that the contamination on site requires extensive clean-up through a combination of capping, *in situ* remediation, and excavation to remove petroleum tanks and other materials. Frequent flooding at the site means that contamination migrates within the site and that the investment in remediating only some portions of the site would not be justified because this migration would make recontamination likely (Walsh 2008). The second, closely related, justification for redeveloping the entire site at once is that most of Willets Point lies within the 100-year floodplain; the EDC plans to use up to six feet of fill to raise the entire site above it. Because of the need to clear the site, says Melanie Lenz (2008), a former Project Manager on the Willets Point redevelopment at EDC, planners had the opportunity to work with a "blank canvas" in envisioning new uses for the site. A rarity in New York's highly developed landscape, this site offered the chance to re-

imagine a large site from the ground up. Incorporating the latest green technologies on the site of a former brownfield to create a mixed-use community in an area well served by transit makes a compelling environmental story.

Controversy over the future of Willets Point currently focuses on the equity of the development process and outcomes, not on whether the redevelopment will be environmentally beneficial. Opposition to the project on equity grounds is based on two mostly separate concerns: the displacement of the area's existing businesses and the affordability of the housing that will be built in their place. Existing businesses do not want to move, pointing out the ideal location of the site –it is directly next to two highways, giving trucks easy access, it is well-known as a destination for inexpensive auto parts and repairs, and it is within walking distance of neighborhoods that supply most of its employees. House of Spices, a manufacturer and distributor of Indian foods, many of which are manufactured nowhere else in the country (Soni 2008), owns the largest single parcel in Willets Point (Angotti and Romalewski 2006). Owner and president of House of Spices G.L. Soni expresses anger that the city's plans do not make room for existing businesses to stay, pointing out that many of these businesses have paid taxes and operated successfully in spite of the lack of basic city services in the neighborhood. The EDC promises that businesses that own their property will be relocated, but many of the landowning businesses in the neighborhood do not believe the EDC will find them high-quality space. House of Spices and several other businesses own and occupy large parcels in Willets Point, but the majority of businesses are small auto shops that rent space. As a cluster, these small rental businesses offer a large variety of services at low prices, but located separately the businesses would have difficulty surviving. They are not part of the EDC's relocation plans at the moment because conflicts of interest prevent the EDC from entering discussions with renters

while they are in negotiations with the owners of the land (McKnight 2008). The lack of inclusion of these rental businesses in the EDC's plans has provoked anger. For workers at Willets Point, job loss seems imminent. To the EDC's plans to coordinate with LaGuardia Community College to create a worker-retraining program, many of these workers respond that they are insulted to be offered training for low-paying retail jobs as a replacement for skilled blue-collar jobs (Batista 2008). Many workers seem to assume that the jobs would be lower-skilled retail jobs, though it is not clear at this stage what types of jobs a worker-retraining program would prepare displaced workers to do,

Affordable housing is the second major equity-based element of the controversy over Willets Point. The EDC cites the shortage of affordable housing in Queens as well as the rest of New York City as an important reason for moving forward with the Willets Point redevelopment (NYCEDC 2008). Critics of the plan, though, argue that most of the housing that will be built is unlikely to be affordable to average Queens residents. The Pratt Center for Community Development criticizes the plans for Willets Point extensively (Conte, Katz, Lander and Narciso 2008). Conte and her colleagues claim that it is highly unlikely that a large amount of the housing built at Willets Point will be affordable to low- and moderate-income families. The two other major affordable housing developments that have been planned during the Bloomberg administration have included no housing that is affordable to low-income residents and few units affordable to moderate-income residents; most units considered affordable were affordable to the middle-income range. Because of the concerns about businesses and about the affordability of housing on the Willets Point site, twenty-nine of the New York City Council's fifty-one members have signed a letter to the city's Deputy Mayor for Economic Development declaring

their opposition to the project as currently proposed and stating that it is unlikely to pass the public review process (Brown 2008).

In the midst of important debates about the proper use of eminent domain, economic consequences for blue-collar workers, and the city's housing shortage, environmental outcomes are too easily taken for granted. Social justice concerns are important and must be addressed. Opponents of the plan, however, often concede the environmental superiority of the proposed plan without comment. Environmental concerns are real on the site and solutions are needed, but a full explanation of how the current plans will ameliorate them and how much they achieve has not been provided. To better clarify the environmental aspects of this project and how they have been arrived at, I ask how this project measures up to the environmental sustainability criteria set forth above. The rating is based on the Draft Environmental Impact Statement released by the EDC, which includes a master plan for the area (NYCEDC 2008).

Measuring Willets Point Against Environmental Sustainability Criteria

The proposed redevelopment of Willets Point will create new open space and use native landscaping within its bounds, but does not provide mechanisms to alleviate pressure on the development of open spaces outside the city. It will use energy conservation measures in its design but does not yet describe what those measures will be. The plan includes design features that are intended to encourage conservation by its users, but it does not ensure that these features are effective by pairing them with strong incentives and regulations for its users. Pollution will be cleaned up through the redevelopment, but the plans do not make fundamental changes in the city's streams of consumption and waste. Natural hazards are addressed, but threats from these hazards are not used to help determine the ideal use of the site.

Open Space

The plans for Willets Point include the creation of a minimum of eight new acres of open space. According to the EIS, this will create habitat for urban-tolerant species and will serve as a stopover for migratory songbirds. The plans also call for landscaping with native species in order to preserve wildlife to the extent possible in New York's highly developed landscape, and streetscape design guidelines call for large amounts of plantings, including street trees and wide sidewalk planting areas. For direct improvements to the site's contribution to open space enhancement, the project as currently planned receives high marks. Clearly the consideration of optimal open space has figured strongly into the design of the overall plan.

Regarding its indirect impacts on land consumption, however, the plan has little to say. This is not surprising, given the half-mile study area of the EIS, but it is important to remember that one theoretical benefit of compact development is the conservation of open space areas *outside* the developed core. This theoretical benefit rests on the assumption that compact development in cities and towns will reduce pressure on such spaces. Fast-growing suburbs that have significant amounts of open spaces may be able to channel development into compact growth, but New York City is almost entirely developed already, and that which is not is for the most part preserved as parkland. Under current land development practice, it would be near impossible for this project to tie its increase in density to a decrease in land consumption on the outskirts, but it should be noted that indirect open space conservation is not addressed.

Resource Conservation

The Willets Point redevelopment's claims to conserve resources rely heavily on its enrollment in the LEED-ND pilot program, requiring it to reach LEED-ND certification. Because of this, the

project will certainly be resource conservative compared to a project of similar size and usage that is not enrolled in LEED-ND. The LEED-ND system is point-based, however; achieving high levels of certification could come from a variety of design measures (USGBC 2007). We can assume that some of the points the project will earn will come from direct energy-conservation measures, but the only required element under the system's "Green Technologies and Construction" category is that the construction activity for the development include pollution-prevention measures. Planners who have worked on the project speak enthusiastically about the potential to incorporate green technologies into a site that is being built from the ground up; they mention the possibility of green roofs, alternative energy generation, energy efficiency, and cogeneration of heat and power. But it remains to be seen which of these features the final plan will incorporate; all sustainable design features are undergoing cost-benefit analysis in order to decide which features make the most financial as well as environmental sense. This cost-benefit analysis is certainly necessary for a project on a budget, but the lack of detail at this stage about priorities for conservation and the extent to which the project will incorporate energy, water, and materials conservation means that the current rating can only be a weak contribution to sustainability.

The project's indirect resource-conservation measures also rely heavily on the LEED-ND rating. Perhaps the most important is a theoretical reduction in fuel use because of the transit-accessible facilities the project will create. Angotti disputes this claim, however, pointing out that the crowding on the number seven train that serves the site will discourage use, and arguing that a project of this density will necessarily increase auto use in the area (Angotti 2008). He also points out that the concept of transit-oriented development originates in the suburbs. In New York, very little land is not transit-served. Angotti claims that a far more environmentally

beneficial measure would be to expand rapid bus service, increasing transit use and speed in the outer boroughs rather than adding users to an already-overtaxed subway line. Indeed, an econometric study of the factors influencing New Yorkers' choice to own and use private vehicles found that the most effective way to decrease the use of cars would be to decrease commute times for non-car transportation modes (Salon 2007). The study also showed that a decrease in car ownership should be expected from a combination of population density and shorter non-car commute times. The Willets Point plan emphasizes the pedestrian-oriented nature of the district's design guidelines, adding to the goal of indirectly influencing transportation choices through site design. Retail use is planned for the ground level of all streets, and off-street parking will be hidden from view from the street. Bike lanes are planned on the internal streets and connections to bikeways and greenways along the waterfront are being considered. While these are all positive measures, the plan does not fully analyze the ecological footprint of its users. Though design is important in influencing environmental behaviors, the ease of highway access may mean that car use is just as convenient as transit use from the site. Creating a pedestrian-oriented atmosphere is admirable, but providing thousands of off-street parking spaces, hidden from view or not, still makes it convenient to bring a car to the area. Furthermore, there are no specific plans to create incentives or regulations that will encourage resource conservation by the businesses and residents who will occupy the site.

Pollution and Waste

The extent of water and soil contamination on the Willets Point site will undoubtedly be vastly improved should the redevelopment proceed. New York's antiquated sewer system, like many cities with aging water infrastructure, uses a single system for sanitary sewerage and storm

water. During heavy rainfall events, storm water inundates the system and the combined sewer and storm water overflows into the city's water bodies. The single most dramatic improvement to the site's environmental performance under the proposed plan could very well be the construction of separate sanitary and sewer systems, along with storm-water retention features that would greatly reduce direct flows of pollutant-laden storm-water runoff into the water bodies around the site. Groundwater and soil remediation would also improve environmental conditions, though the plan does not make clear the extent to which it will use onsite remediation as opposed to capping contaminated materials. Business owners on site claim that the current plan does nothing more to remediate contaminated soil than their own actions over time. Dan Scully, Vice President of Tully Environmental Services, claims that his and other businesses encounter contaminated soil from time to time, as do almost all property owners in New York, and that that they remediate in accordance with the Department of Environmental Conservation standards (Scully 2008).

Indirect impacts on pollution and waste are unaccounted-for in the EDC's plans for Willets Point. No special mention is made of high standards for waste reduction or reusable materials onsite, nor are any facilities or programs mentioned that will ease or encourage recycling or composting. Though these types of features may be introduced later in the planning process, they are not addressed at this stage. This omission is of particular note because of the EDC's assertion that the existing businesses of Willets Point have created much of the contamination that is present there, and its contention that the development that replaces those businesses will be more sustainable. Some of the current businesses' practices are likely to change with relocation; outside of Willets Point, violations of environmental regulations are more likely to be noticed and reported. Relocation, though, will make no fundamental changes in

the streams of materials use and waste the businesses generate, and ignores the question of where such businesses *should* be located. The redevelopment replaces them with businesses that will presumably create less environmental damage. Retail businesses, however, may have environmental impacts as high as or higher than the auto shops and industrial uses that are there now, with the difference that polluting production processes will occur offsite, most likely in other countries.

Natural Hazards

Most of the Willets Point site lies within the 100-year floodplain, meaning that flooding is the primary natural hazard of concern. This threat is very directly addressed by the EDC's plans to add enough fill to the area to raise the entire site out of the 100-year floodplain. This will allow flood insurance to be purchased for future buildings without the extensive flood protection measures required for buildings within the 100-year floodplain. Without additional fill, the EDC claims that a fully operational sewer system may be difficult to build due to insufficient soil depth between the ground and the water table. The plan to raise the site out of the 100-year floodplain certainly addresses natural hazard concerns, but it is unclear to what degree the additional six feet of height will reduce the probability of flooding and storm damage. The height to which the site will be raised is based on FEMA requirements for flood insurance with no additional analysis of how this will affect vulnerability to flooding and storm damage at the Willets Point site. At minimum, the plan should address long-range natural hazard concerns by detailing how the additional fill will change the site's natural hazard risk, and should draw on the growing body of research on the potential effects of rising sea levels and other problems that may result from climate change.

Summary

Evaluations of each of the four elements of project sustainability are summarized in the chart below (Table 2). In some cases, a rating for either the direct or indirect effects of the project with respect to a particular element does not make sense. For example, preservation of habitat is not possible because the site contains no habitat to speak of.

Table 2. Willets Point Measured Against Sustainability Criteria

	Direct Features	Behavioral Changes
Open Space		
<i>Preservation of Habitat</i>	n/a	+
<i>Restoration of Habitat</i>	++	0
<i>Creation of recreational spaces</i>	++	n/a
Pollution & Waste		
<i>Waste</i>	0	0
<i>Soil contamination</i>	++	0
<i>Water contamination</i>	++	0
<i>Air pollution</i>	+	+
Natural Resources		
<i>Energy</i>	+	+
<i>Water</i>	0	+
<i>Building Materials</i>	+	0
Natural Hazards		
<i>Site Specific Threats</i>	+	n/a
<i>Planning for Climate Change</i>	0	0
Key: (0) = Not addressed, (+) = Weak Sustainability, (++) = Strong Sustainability		

Willets Point: Sustainable Development?

This summary chart indicates that the plans for Willets Point address most of the on-site environmental concerns enumerated above and address some of them at a level that rates as strong. Much of the environmental argument for pushing a project like this one forward, though, relies on indirect impacts such as open-space conservation outside the urban core and a net

reduction in energy use by an entire metropolitan area. Beyond stating that the project will conform to LEED-ND standards, this project does little to ensure that the project contributes to sustainable development on a larger scale. In order to represent strong environmental sustainability, the impacts of the project would need to make larger reductions in the ecological footprint of the site, looking at incentives for environmental behaviors among future businesses and residents on the site and making strong connections with a region-wide development plan. In short, the plans for the Willets Point redevelopment take steps towards environmental sustainability but do not achieve strong sustainability.

A truly sustainable development considers how to achieve environmental goals in a just and economically beneficial manner. I have focused here solely on criteria for the environmental aspects of development projects, leaving aside equity and environmental considerations. With a more complete evaluation of the project's environmental impacts, though, it is possible to look more closely at the interaction with equity and economic concerns. The onsite environmental conditions at Willets Point clearly need to be improved: sewers need to be added, soil remediation needs to be carried out, further pollution of soil and water needs to be prevented, and flooding needs to be mitigated. Even more important is the need for this project to contribute to long-range sustainability goals such as carbon emissions reductions. The evaluation described above makes clear that there are many options for how to tackle various environmental goals. Tom Angotti and Steven Romalewski (2006) proposes that a makeover as a center of "green" auto services would have a greater environmental impact than the current proposal, addressing waste and pollution in a much more meaningful and lasting way than simply moving polluting businesses out of the area. Certainly, one of the major missing elements of the Willets Point plans is a serious consideration of where the businesses that currently occupy the site should go.

Though relocation is proposed for elsewhere in the city, the type of business at Willets Point is difficult to site anywhere. Dan Scully (2008), the Vice President of Tully Environmental, doubts that even with an appropriate site the company could survive a relocation given local opposition to facilities like his –the permit to operate the company’s current waste transfer sites took five years to obtain, and a permit for another site would take at least as long to acquire. Isolated from residential neighborhoods and with easy highway access, Willets Point could be seen a perfect location for the type of businesses that currently occupy it: trucks heading to and from the site don’t need to drive through residential neighborhoods and expose their populations to diesel fumes, and few residents live in close proximity to the businesses. The EIS for the Willets Point project (NYCEDC 2008) states that none of the existing businesses fall into categories of protected industries and that the Willets Point district is not considered a protected industrial zone. Nevertheless, the city does need the services that are provided at Willets Point, and it is unclear how such industries fit in to city-wide plans for greater sustainability.

The choice to create a residential, retail, hotel and convention center complex rather than an industrial park or another use was, according to a former project manager for the Willets Point redevelopment, made because the city’s investment in infrastructure and remediation at the site will be more easily recouped through the higher taxes on these uses (Walsh 2008). Stephen Sterling, a reporter for the *Queens Times-Ledger* who covers the Willets Point story, describes public opinion about the project by saying that no one will say that they are against the project, saying instead that they are against the way the project is being carried out (Sterling 2008). In fact, this statement is repeated often by many of those who work in the district and local City Council members opposed to the plan. In reality, however, it is the substance of the project rather than the process that poses a problem for most people. Some want a greater percentage of

affordable housing in the residential part of the existing plan, some want the industrial use of the area to remain, and some want to ensure that the type of retail in the new Willets Point does not compete with the Downtown Flushing business district (Choe 2008). Competing visions for the site should lead to public debate over the site's future, with environmental goals helping to guide the options chosen. It is not acceptable, though, for the EDC to define the solutions to environmental problems at the site based on its preferences for what to build there.

The environmental conditions at the site and the potential to improve them dramatically gives the project great credibility. Congressman Joe Crowley, along with representatives from Environmental Defense, have made public statements about the importance of the project's environmental benefits without knowing exactly what those are. Environmental Defense and the League of Conservation Voters advocate Smart Growth and Transit-Oriented Development and see the project as an embodiment of their larger strategies, but they have no specific standards on which they decide to lend their support, and do not follow the case at a level of detail that allows them to know quite how their strategies play out in the project (Hendrick 2008). Claire Shulman, who has been pushing for this project for years, freely admits that she does not know what about the project is sustainable (Shulman 2008), demonstrating that more public discussion about what the project's environmental goals are and how it can accomplish them is sorely needed. I have set forth environmental criteria for sustainable development here; criteria for social outcomes are also needed, as well as for economic outcomes. The concerns described above over the project's equity need to be taken seriously. Some have also called into question the tax income that a convention center development will realistically bring to the area, and an evaluation of the project's likely economic benefit is also needed.

Although Mayor Bloomberg referred to the development as a model of sustainable development in his initial unveiling of the master plan, the term “sustainable” has since been used variously to describe the whole project, just certain features, or just the design guidelines. Does the Willets Point project aim to be a full-scale, triple-bottom-line sustainable development? In a city that has recently put sustainability at the forefront of its public image, I argue that every major project should aim for this. The Willets Point project represents a significant financial investment at the city level, and the decision to redevelop it should come from a full investigation of the economic, environmental, and social outcomes of a far greater range of options. Rather than eliminating options for economic reasons at the outset, a development that facilitates sustainability should consider the optimal use for the site using a strong definition of sustainable development. The definition of sustainable development that I set forth above describes sustainable development as elevating environmental and social concerns to the level of priority that economic concerns normally occupy alone –the Willets Point project does not meet this definition.

Conclusions

Within current development practice, many far-reaching sustainability goals are nearly impossible to realize through a single development project, and the Economic Development Corporation cannot be blamed entirely for the aspects of the Willets Point project that do not rate highly on sustainability criteria. A lack of leadership at the federal level leaves municipalities attempting to tackle environmental problems they are simply not equipped to solve, and the lack of regional planning throughout most of the country leaves each municipality to make its own disconnected efforts at sustainability. Cities are strapped for cash and have long competed with

each other for investments, neglecting environmental and social concerns. At the city level, New York's sustainability office has made the conscious choice to put most of its efforts into its current and future building stock and its transportation system (Maron 2008). This choice is quite reasonable, since the city's buildings are responsible for 80 percent of its carbon emissions and since the superior convenience of using mass transit compared to using cars in the city is one of the city's greatest environmental assets. The environmental benefits of putting more resources into, for example, connections with a region-wide ecological plan, are much less certain.

In spite of these challenges, however, it is worth asking what an individual project *could* accomplish—and how the city could ensure that it does so. New York City could take a stronger position on rethinking development holistically, ensuring that individual development projects do as much as they can to advance sustainability goals. The case of Willets Point indicates that direct, on-site improvements to environmental performance can be made at the project level, but that for farther-reaching environmental benefits, projects can do little more than speculate. Using stringent criteria to look at the environmental benefits of projects, planners should push the envelope regarding what is possible within the scope of one project. Inter-municipal transfers of development rights would ensure that compact living translates in reality into open space conservation elsewhere—many cities in the Western U.S. use this and other tools to conserve habitat, but in the Eastern U.S. such direct conservation of open space in exchange for more intense urban development is rare (Layzer 2008). Regulations and incentives concerning vehicle storage on a site that go beyond simply hiding parking lots would mean a much more realistic expectation that reduced auto use actually occurs. The LEED-ND standards are helpful and do force a project to accomplish tangible environmental improvements. But LEED-ND's standards rely too heavily on design to make environmental change happen, and in order for such design to

be more effective it should be paired with creative mechanisms to ensure that projects go as far as they can towards sustainable development.

Competitions can be a useful tool for generating new ideas about how individual projects can be more sustainable. A competition for an affordable residential housing development contract in Cornwall, England, resulted in a prototype for Zero Energy Development standards (Simmons 2007). Projects that move towards strong sustainability could make use of such competitions to generate proposals that maximize resource conservation or demonstrate in other ways that the methods and materials used represent state-of-the-art conservation practices. Competitions for development contracts could explicitly prioritize those who use non-polluting and reusable materials, inciting creative ways to prevent pollution.

In New York, the Mayor's Office of Long-Term Planning and Sustainability could guide specific projects with a stronger hand in order to ensure that they are subject to a full sustainability evaluation. Currently that office is not intensively involved in individual development projects, setting citywide policy and allowing agencies to implement policies at the project level (Maron 2008). With their own mandates, however, city agencies may not be equipped to incorporate broad, long-range sustainability concerns into their plans; the Willets Point project demonstrates this, its economic development planners having rejected early on in the planning process the option of an industrial park because of the lower tax rates it would generate. Development projects present a large number of challenges: with the high cost of infrastructure means that the future use must generate high tax revenue, any site has a large number of groups with specific and competing goals for its future, and the environmental conditions of particular sites may prevent some uses. It is crucial, though, for cities to see large

development projects as opportunities to incorporate sustainability to the maximum extent possible; holding projects to high standards of sustainability is one step towards doing so.

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