

**ALTERING THE HOME LANDSCAPE FROM LONDON'S
BOROUGH TO AMERICA'S "SIN CITY":
ARE URBAN AUTHORITIES USING THE RIGHT SET OF
LAND USE LAW AND POLICY TOOLS IN ADAPTING TO
CLIMATE CHANGE?**

"Climate change is a private property problem."

–Dr. Paul Babie¹

"We ain't got no yard."

–Avon Barksdale²

INTRODUCTION

In London, England, local borough councils are utilizing land use regulations to stop Londoners from removing their front gardens. Nearly 6,000 miles away in Las Vegas, Nevada, in the United States, municipal authorities such as the Southern Nevada Water Authority are doing the exact opposite—offering monetary incentives for landowners to tear *out* their front lawns. What is the connection between these disparate municipal approaches to the home environment in two different countries, and why is it important?

The answer is that London and Las Vegas, metropolises of vastly different natural environments, are both responding to mounting threats from climate change. While many scientists predict increasingly extreme weather patterns as a result of climate change, these cities have already begun to feel the effects. In rainy London, a city of roughly thirteen million people,³ surface-water flooding from excessive rainfall constitutes the greatest water-related threat to the city.⁴ In dry Las Vegas, a city of nearly two million people,⁵ increasing water scarcity in an arid desert environment has forced city officials to confront the dire reality of drought.⁶

1. Paul Babie, *Climate Change: Government, Private Property, and Individual Action*, SUSTAINABLE DEV. L. & POL'Y, Winter 2011, at 19, 19.

2. Peter Clandfield, "We Ain't Got No Yard": *Crime, Development, and Urban Environment*, in THE WIRE: URBAN DECAY AND AMERICAN TELEVISION 37, 45 (Tiffany Potter & C.W. Marshall eds., 2009) (quoting *The Wire: Middle Ground* (HBO television broadcast Dec. 12, 2004)).

3. Dennis J. Parker, *Disaster Response in London: A Case of Learning Constrained by History and Experience*, in CRUCIBLES OF HAZARD: MEGA-CITIES AND DISASTERS IN TRANSITION 186, 188 (James K. Mitchell ed., 1999).

4. GREATER LONDON AUTH., THE DRAFT CLIMATE CHANGE ADAPTATION STRATEGY FOR LONDON: PUBLIC CONSULTATION DRAFT 7 (2010) [hereinafter ADAPTATION STRATEGY FOR LONDON], available at http://legacy.london.gov.uk/mayor/priorities/docs/Climate_change_adaptation_080210.pdf.

5. ROBERT GLENNON, UNQUENCHABLE: AMERICA'S WATER CRISIS AND WHAT TO DO ABOUT IT 1 (2009). Las Vegas is currently competing with Phoenix as America's fastest-growing city. George F. Will, *A City That Bets on Water*, WASH. POST, Feb. 27, 2005, <http://www.washingtonpost.com/wp->

These two cities have targeted the outdoor home environment as an area of particular adaptive potential. In London, private gardens constitute one-third of the city's green space and one-fifth of its land area; they nurture two-thirds of London's trees.⁷ Given the substantial area occupied by these private gardens, they play a pivotal role in soaking up rainfall and mitigating water run-off from impermeable city surfaces into London's overwhelmed sewers.⁸ In Las Vegas, restless and retired Americans move to "Sin City" only to plant lush lawns in hopes of recreating the idyllic suburban landscapes of their former eastern or northwestern abodes.⁹ Residential environments have consequently sopped up a large portion of the city's meager water supply.¹⁰

This Note seeks to answer a number of questions raised by the climate-related land use policies of London and Las Vegas. How are the regulatory and incentive schemes of these municipalities changing home landscapes? Are these cities striking the right balance, each in its distinctive physical environment, between private property rights and the public interest? Are they using the most effective combination of law and policy tools in addressing potential climate change? What other options may exist? At stake is the very future of our home environments. This Note concludes that while London relies heavily on local planning regulations and Las Vegas tends to favor monetary incentives, both could benefit from a cross-pollination of ideas to solve their respective problems.

Part I describes the predicted effects of climate change, including flooding and drought, in London and Las Vegas, respectively. This Part also discusses the common historical foundation of American and British property law, as well as the choice of the urban environment. Part I also explains the value of the home environment from a public policy perspective. Next, Part II analyzes the land use law and policy responses to climate change-induced flooding in London's boroughs. This Part begins by

[dyn/articles/A54745-2005Feb25.html](http://www.dyn/articles/A54745-2005Feb25.html); William R. Travis, *A Changing Geography: Growth, Land Use, and Water in the Interior West*, in *WATER AND CLIMATE IN THE WESTERN UNITED STATES* 171, 174 (William M. Lewis, Jr. ed., 2003).

6. Will, *supra* note 5 (noting that, as of 2005, Las Vegas had endured "a five-year drought, the worst in 100 years of record-keeping and perhaps . . . the worst in 500 years").

7. GREATER LONDON AUTH., *CRAZY PAVING: THE ENVIRONMENTAL IMPORTANCE OF LONDON'S FRONT GARDENS* 5 (2005) [hereinafter *CRAZY PAVING*], available at <http://legacy.london.gov.uk/assembly/reports/environment/frontgardens.pdf>. Front gardens, the focus of this paper, make up between 3% and 5% of London's land area. *Id.*

8. *Id.*

9. Will, *supra* note 5.

10. Erik Olsen, *Planet Us: Las Vegas' Changing Landscape*, N.Y. TIMES, July 18, 2007, <http://video.nytimes.com/video/2007/07/18/us/1194817120315/las-vegas-s-changing-landscape.html?scp=1&sq=las%20vegas&st=cse>.

outlining the current state of planning and land use law in Britain before moving to the specific law and policy tools that London boroughs are using (to differing degrees) to mitigate surface-water flooding in the city. Part III describes Las Vegas's attempts via land use regulations and incentives to control citizens' outdoor home environments. This Part provides background on Las Vegas's current water shortage and summarizes the tools being used by the city to curb water-intensive horticulture in the face of protracted drought. Finally, Part IV compares, contrasts, and evaluates the methods used by London and Las Vegas to control the home environment as part of climate change adaptation. This Part discusses the effectiveness of these methods, whether city authorities are striking the right balance between private property rights and the public interest, and whether other valuable tools might be available in each city.

I. BACKGROUND

A. Climate Change Effects in an Urban World

While scientists predict various environmental repercussions from climate change, flooding and drought are frequently at the top of the list.¹¹ Depending on geography, population density, infrastructure, and myriad other factors, natural hazards like flooding and drought will likely contribute to widespread population displacement, refugee crises and other social justice issues,¹² greater international conflict, and increased national security risks from resource "wars."¹³ Even studies that do not acknowledge a direct link between climate change and extreme weather patterns admit that such hazards have been on the rise.¹⁴

11. FRED KRUPP & MIRIAM HORN, *EARTH: THE SEQUEL* 9 (2008); JAMES G. SPETH, *THE BRIDGE AT THE EDGE OF THE WORLD* 22–24 (2008); ADAPTATION STRATEGY FOR LONDON, *supra* note 4, at 7; Robin Thompson, *The Inter-Regional Dimension: The Greening of London and the Wider South East*, in *GROWING GREENER CITIES: URBAN SUSTAINABILITY IN THE TWENTY-FIRST CENTURY* 46, 52 (Eugenie L. Birch & Susan M. Wachter eds., 2008); Jocelyn C. Zuckerman, *The Constant Gardeners*, *ONEARTH MAGAZINE*, Winter 2011/2012, at 30, 31–32.

12. SPETH, *supra* note 11, at 25.

13. KRUPP & HORN, *supra* note 11, at 9.

14. Raymond J. Burby, *Natural Hazards and Land Use: An Introduction*, in *COOPERATING WITH NATURE: CONFRONTING NATURAL HAZARDS WITH LAND-USE PLANNING FOR SUSTAINABLE COMMUNITIES* 1, 3 (Raymond J. Burby ed., 1998) ("Worldwide more than three million people have lost their lives in flood, earthquake, landslide, hurricane, volcanic, and other natural disasters over the past two decades, and almost one billion have been affected in other ways.").

Adding fuel to the fire, our world is rapidly urbanizing. A historically unprecedented majority of the world's population now lives in cities.¹⁵ The American Southwest, including the Las Vegas region, has been growing faster than the national average for the past four consecutive decades. Between 1990 and 2000, five western states including Nevada experienced the highest growth rate in the nation (37%), a total increase from 10.8 million to 14.9 million residents.¹⁶ Western stereotypes—the fiercely independent rancher and the swashbuckling, land-sustaining cowboy—have been shattered given that 82% of today's Westerners are urbanites, 4% above the national average.¹⁷ One scholar predicted that London, with a sprawling metropolitan population of nearly thirteen million people, would nonetheless become (only) the world's thirteenth-largest city in the early twenty-first century.¹⁸ “Megacities” like Lagos, Nigeria and Sao Paulo, Brazil are developing rapidly, and the Worldchanging Group foresees “dozens of new megacities” across the globe by 2015.¹⁹

As the world urbanizes, greater conurbations of people will be exposed to natural hazards, increasing the probability of large-scale displacement and other social justice issues. Furthermore, since cities attract and concentrate business and capital investment, entire economies will be placed at risk. Where more capital and investment exist, more may be lost from a natural disaster. These losses can have devastating effects on entire regions or countries, as in Las Vegas's impact on all Nevada.²⁰ The problems facing London and Las Vegas therefore exemplify the special climate-related challenges facing our urban environments.

15. Alex Steffen, *Cities*, in *WORLDCHANGING: A USER'S GUIDE FOR THE 21ST CENTURY* 225, 225 (Alex Steffen ed., 2008); Zuckerman, *supra* note 11, at 31 (referencing a United Nations study that projects a 65% urban population worldwide by 2050); *World Urbanization Prospects: The 2009 Revision*, U.N. SECRETARIAT, DEP'T ECON. & SOC. AFF., POPULATION DIV., <http://esa.un.org/wup2009/unup/index.asp> (click on “Percentage urban” in left-hand “Select Variables” column and “World” in right-hand “Select Country/Region” column and then click “Display” below) (last visited Mar. 25, 2012) (noting an urban world population of 50.1% in 2009 with a projected increase to 68.7% by 2050).

16. Travis, *supra* note 5, at 171.

17. *Id.* at 172.

18. Parker, *supra* note 3, at 188.

19. Steffen, *supra* note 15, at 225.

20. See Jon Christensen, *Water Forces Las Vegas to Choose: Gaming Town or Suburb of Los Angeles*, in *WATER IN THE WEST* 224, 225 (Char Miller ed., 2000) [hereinafter Christensen, *Water Forces Las Vegas to Choose*] (“Because the economic engine of Las Vegas drives the state, its problems become the problems of Nevada as a whole.”).

B. The International Context

Environmental issues are global issues, and this applies particularly to climate change where local carbon dioxide emissions ignore political boundaries and influence the global system.²¹ International cooperation, which to date has largely failed in the climate change arena, will be essential if mitigation and adaptation efforts are to succeed.²² This Note's comparison of local-level climate change adaptation measures in the United States and the United Kingdom is a deliberate attempt to acknowledge climate change's global nature and to suggest solutions within this paradigm at the local land use level. The distinctive geographies of America and Britain create disparate natural hazards that invite different (yet transferable) solutions. For example, as an island nation subject to high precipitation, Britain has a long history of flooding and excess water, which may explain London's admirably proactive approach to this problem and its potential to teach American cities something in turn. Whether in the context of policy decisions or technology transfers, no country—not even Britain—will be an island unto itself as climate change takes center stage.

Furthermore, the United States and the United Kingdom share a strong common law tradition that greatly facilitates a comparative legal analysis.²³ Legal solutions, especially those involving property and local land use, are likely to transfer more smoothly between these countries than between nations with different legal systems. This inherent connection greatly enhances the pragmatic value of this Note.

C. Why the Home Environment?

An examination of land use law and policy tools addressing climate change adaptation in the context of the home environment is warranted for several reasons. First, increased natural hazards like flooding and drought will profoundly affect our homes and personal spaces, raising sensitive property rights issues. Beyond the obvious worth of private gardens and lawns in economic terms, these landscapes are also cultural extensions of ourselves. For example, one author identifies the front lawn as one of America's foremost contributions to landscaping.²⁴ While Americans may

21. Edward C. Wolf, *Local Greenhouse Forecast*, in *WORLDCHANGING: A USER'S GUIDE FOR THE 21ST CENTURY*, *supra* note 15, at 506, 506–07.

22. SPETH, *supra* note 11, at 28–29.

23. ARTHUR R. HOGUE, *ORIGINS OF THE COMMON LAW* 249 (Liberty Press 1985) (1966).

24. Michael Pollan, *Beyond Wilderness and Lawn*, in *NATURE, LANDSCAPE, AND BUILDING FOR SUSTAINABILITY* 66, 66 (William S. Saunders ed., 2008).

have inherited the lawn from the English aristocracy's pastoral ideal, Americans effectively democratized it in the post-Civil War era.²⁵ The English garden has an equally solid and long-standing foundation in the British psyche.²⁶ When local government steps in, as it has in these cases, to restrict citizens' use of their personal spaces, important issues arise concerning the proper balance between private and public interests, even if the governmental action does not rise to the level of a taking.²⁷

Second, our home environments themselves contribute to (or may ameliorate) natural hazards such as flooding and drought that impact the public sphere. London authorities persistently emphasize the value of urban front gardens to surface-water management and pollution reduction in the city.²⁸ In the United States, at least 50% of domestic water usage goes to watering residential lawns and gardens.²⁹ Half of this domestic-use figure constitutes unnecessarily wasted water.³⁰ Furthermore, a solid 60% of Las Vegas's municipal water supply goes to residential landscaping and watering lawns.³¹ In both locations, the home environment therefore represents both a source of the problem and a remedial opportunity in the climate change discussion. For American readers, the following background on British property rights and local government operations should place these trends in perspective.

25. *Id.* at 74–75. Michael Pollan argues that this “democratizing” came as a result of three important developments: the inventions of the lawn mower (1832) and barbed wire (to keep livestock off lawn beds) (1872), in conjunction with Frank J. Scott’s “ecstatic paean to the beauty and indispensability of the front lawn” in *The Art of Beautifying Suburban Home Grounds* (1870). *Id.* at 75.

26. See ETHAN CLARKE & CLAY PERRY, ENGLISH COTTAGE GARDENS 9 (First Am. ed. 1986) (noting Britons’ devotion to their gardens). American writer Washington Irving also reflected:

The taste of the English in the cultivation of land, and in what is called landscape gardening, is unrivalled. They have studied nature intently, and discover an exquisite sense of her beautiful forms and harmonious combinations.

. . . .

. . . The rudest habitation, the most unpromising and scanty portion of land, in the hands of an Englishman of taste, becomes a little paradise.

Washington Irving, *Rural Life in England*, in THE SKETCH BOOK OF GEOFFREY CRAYON, GENT., 50, 51–52 (Malcolm Bradbury ed., rev. ed. 1993).

27. See *infra* notes 162–63 and accompanying text.

28. CRAZY PAVING, *supra* note 7, at 6–8; DEP’T FOR CMTYS. & LOCAL GOV’T & ENV’T AGENCY, GUIDANCE ON THE PERMEABLE SURFACING OF FRONT GARDENS 6 (2008) [hereinafter GUIDANCE ON PERMEABLE SURFACING], available at <http://www.communities.gov.uk/documents/planningandbuilding/pdf/pavingfrontgardens.pdf>.

29. CONNIE LOCKHART ELLEFSON ET AL., XERISCAPE GARDENING: WATER CONSERVATION FOR THE AMERICAN LANDSCAPE 3 (1992).

30. *Id.*

31. Olsen, *supra* note 10; Jon Christensen, *Las Vegas Seeks Watery Jackpot in Northern Nevada*, in WATER IN THE WEST 233, 233 [hereinafter Christensen, *Las Vegas Seeks Watery Jackpot*]; Christensen, *Water Forces Las Vegas to Choose*, *supra* note 20, at 229.

II. SURFACE-WATER FLOODING IN LONDON

*[F]ew British citizens have a sense of the responsibilities and risks of living in a close relationship with water. Our houses do not shelter behind towering dikes but, wherever possible, open up to the river and celebrate the light and life of the water.*³²

A. Background

1. The Source for British Property Rights

The British fundamental right to property does not stem from a national constitution as in the United States of America.³³ The British constitution (with a lowercase “c”) differs from what most Americans understand a constitution to be—a self-contained, codified document. Instead, myriad statutes, case law, and unwritten standards create a broad “set of the most important rules and common understandings” in the United Kingdom.³⁴ Britons, as Council of Europe adherents, only recently acquired a codified fundamental right to property from Protocol 1, Article 1 (P1-1) of the European Convention on Human Rights, as enshrined in the U.K. Human Rights Act of 1998.³⁵ Echoing certain themes and language from the American Constitution that protect private property interests, P1-1 provides:

Every natural or legal person is entitled to the peaceful enjoyment of his possessions. No one shall be deprived of his possessions except in the public interest and subject to the

32. WILL ANDERSON, *HOMES FOR A CHANGING CLIMATE* 59 (2009).

33. Tom Allen, *Controls over the Use and Abuse of Eminent Domain in England: A Comparative View*, in *PRIVATE PROPERTY, COMMUNITY DEVELOPMENT, AND EMINENT DOMAIN* 75, 77–78 (Robin Paul Malloy ed., 2008); see U.S. CONST. amend. V (“[N]or shall any person . . . be deprived of life, liberty, or property, without due process of law; nor shall private property be taken for public use, without just compensation.”).

34. ANTHONY KING, *THE BRITISH CONSTITUTION* 3, 5–6, 10 (2007). One therefore does not formally “amend” the British constitution as in America, and the specific notion of “unconstitutionality” has little meaning to British ears. Constitutional change occurs through the normal passage or repeal of acts in Parliament or politicians’ common understandings, making the British constitution highly prone to change. See also A.W. HERINGA & PH. KIIVER, *CONSTITUTIONS COMPARED: AN INTRODUCTION TO COMPARATIVE CONSTITUTIONAL LAW* 35 (2d ed. 2009) (noting that, in the United Kingdom, statutes, case law, and constitutional conventions take the place of a unified written constitution).

35. PETER SPARKES, *A NEW LAND LAW* 35 (1999); Allen, *supra* note 33, at 77. The United Kingdom ratified both the Convention and the Protocol in the 1950s, but the Human Rights Act of 1998 “incorporated [them] into domestic law.” *Id.*

conditions provided for by law and by the general principles of international law.³⁶

These provisions are not intended to impair the authority of a nation to enforce laws deemed necessary to control the use of property in accordance with the general interest or to secure the payment of taxes or other contributions or penalties.³⁷ Yet the European Convention and the Human Rights Act, incorporating the Convention's P1-1 into British law, have given Britons a much greater ability to challenge governmental decisions affecting their property.³⁸

2. The Local Government Context

Precisely because the United Kingdom lacks a written constitution, national authorities have greater discretion to create and dismantle local government.³⁹ In fact, "local authorities today owe their existence and powers entirely to statute"⁴⁰ and therefore operate subject to parliamentary repeal. The rise of elected local authorities in England and Wales during the nineteenth century gave way to "regular and probably too frequent changes to both structure and function" as politicians debated the state's place in society.⁴¹ Local authorities are subject to the common law *ultra vires* doctrine, which requires exercise of power consistent with a statute's express or reasonably implied mandate.⁴²

In London, local authority organization differs considerably from the rest of England and Wales. On the broad metropolitan level, the Greater London Authority (GLA) exercises certain powers pursuant to the Greater London Authority Acts of 1999 and 2007.⁴³ The GLA serves alongside the Mayor of London (who holds GLA executive power) and the London Assembly, an elected body of twenty-five members that checks the power of the Mayor.⁴⁴ The organization seeks to promote "economic development

36. Protocol to the Convention for the Protection of Human Rights and Fundamental Freedoms art. 1, Mar. 20, 1952, C.E.T.S. 5.

37. Allen, *supra* note 33, at 77.

38. *Id.*; SPARKES, *supra* note 35, at 36.

39. S. H. Bailey, *The Structures, Powers, and Accountability of Local Government*, in ENGLISH PUBLIC LAW 199, 200 (David Feldman ed., 2d ed. 2009).

40. *Id.* at 209.

41. *Id.* at 200.

42. *Id.* at 215–16.

43. *Id.* at 200–01; *About the GLA*, GREATER LONDON AUTH., <http://www.london.gov.uk/who-runs-london/greater-london-authority/about-gla> (last visited Mar. 25, 2012).

44. *Who Runs London*, GREATER LONDON AUTH., <http://www.london.gov.uk/who-runs-london> (last visited Mar. 25, 2012).

and wealth creation[,] social development[,] and] environmental improvement.”⁴⁵ The GLA works with London’s thirty-three borough councils, which were established under the London Government Act of 1963⁴⁶ and are responsible for traditional local functions such as planning.⁴⁷ The boroughs must also heed the “London Plan,” which Mayor Ken Livingstone compiled in 2004 as a regional strategy for growth and development in Greater London.⁴⁸

The Town and Country Planning Act of 1947 (1947 Act) effectively placed the power of regulating development in county and other local planning authorities.⁴⁹ These statutory powers exceed those traditionally associated with American zoning, and the statutory plans created by the 1947 Act are designed to have greater influence over development than their equivalents in the United States.⁵⁰ Other regional and national authorities work in conjunction with local authorities. For example, the Environment Agency’s sustainable development agenda serves as persuasive authority for matters of local planning.⁵¹

3. Surface-Water Flooding As London’s Greatest Flood-Related Threat

As a rainy world city sitting astride the Thames estuary, London has long battled the deleterious effects of excess water. In response to a number of severe floods throughout the twentieth century, the city installed a series of flood barriers across the Thames in the 1980s.⁵² More recently, the Mayor of London, Boris Johnson, identified flooding, drought, and overheating (high temperatures) as climate change’s main threats to the city.⁵³ Within the flooding category, which includes *tidal flooding* (from the North Sea), *fluvial flooding* (from the Thames and its tributaries), and *surface-water flooding* (from substantial rainfall), the Mayor only gave a “high” risk designation to the last category.⁵⁴ Surface-water flooding occurs when rainwater, unable to seep naturally into the ground or through

45. *About the GLA*, *supra* note 43.

46. Bailey, *supra* note 39, at 204.

47. *Id.* at 200–01.

48. Thompson, *supra* note 11, at 49.

49. Parker, *supra* note 3, at 195.

50. Thompson, *supra* note 11, at 48.

51. HUGH HOWES, STRATEGIC PLANNING FOR WATER 9 (2008).

52. Dennis J. Parker & Edmund C. Penning-Rowsell, *Dealing with Disasters*, in LONDON’S ENVIRONMENT: PROSPECTS FOR A SUSTAINABLE WORLD CITY 175, 182–83 (Julian Hunt ed., 2005).

53. ADAPTATION STRATEGY FOR LONDON, *supra* note 4, at 7–13.

54. *Id.* at 7. The Mayor identified a “[l]ow likelihood of tidal flooding[] [and] a medium probability of river [fluvial] flooding.” *Id.*

drainage systems, inundates the ground surface.⁵⁵ While it is “difficult to predict” where surface-water flooding will occur, an estimated 680,000 properties in London are at risk.⁵⁶ Climate models predict increased seasonal rainfall, “with the average winter 14 per cent wetter and the wettest winter 33 per cent . . . [more] than the baseline average.”⁵⁷ More intense and frequent “extreme” weather, including torrential rainfall, is also expected.⁵⁸

London has responded to the increased threat of surface-water flooding through local planning law. Each of London’s boroughs, as well as the Greater London Authority,⁵⁹ “are responsible for using the planning process to reduce flood risk.”⁶⁰ Over the past several years, these authorities have become embroiled in an intensifying debate over the future of London’s front gardens. Front gardens account for between 3% and 5% of London’s land area, but already twelve square miles of these green spaces—the combined size of the Borough of Islington *and* the Borough of Hammersmith & Fulham, *or* roughly twenty-two Hyde Parks—have been turned into driveways since 2003.⁶¹ The significance of this trend in the context of climate change adaptation is that, while these gardens provide an oasis from the urban environment, a refuge for London’s wildlife,⁶² and

55. GREATER LONDON AUTH., PROPOSAL FOR AN INVESTIGATION INTO RAIN AND RIVER FLOOD RISK MANAGEMENT IN LONDON 4 (2010).

56. *Id.*

57. ADAPTATION STRATEGY FOR LONDON, *supra* note 4, at 25.

58. *Id.* at 15.

59. *See About the GLA, supra* note 43 (noting that the Greater London Authority works “in support of” the Mayor of London and the London Assembly, an elected body).

60. ADAPTATION STRATEGY FOR LONDON, *supra* note 4, at 29.

61. *Id.* at 51; CRAZY PAVING, *supra* note 7, at 5–6, n.3.

62. The historically close relationship between urban Londoners and their local garden wildlife is eloquently captured in Kathleen Raine’s poem “The Very Leaves of the Acacia-Tree Are London”:

The very leaves of the acacia-tree are London;
 London tap-water fills out the fuchsia buds in the back garden,
 Blackbirds pull London worms out of the sour soil,
 The woodlice, centipedes, eat London, the wasps even.
 London air through stomata of myriad leaves
 And million lungs of London breathes.
 Chlorophyll and haemoglobin do what life can
 To purify, to return this great explosion
 To sanity of leaf and wing.
 Gradual and gentle the growth of London Pride,
 And sparrows are free of all the time in the world,
 Less than a window-pane between.

Kathleen Raine, *The Very Leaves of the Acacia-Tree Are London*, in LONDON: POEMS ON THE UNDERGROUND 4, 4 (Gerard Benson et al. eds., 2009).

myriad aesthetic benefits,⁶³ they also play a primary role in reducing surface-water flooding and run-off pollution in the city.⁶⁴

Recognizing the overriding importance of front gardens in mitigating surface-water flooding, London boroughs have begun to use local planning law as a tool to prevent their further disappearance. As the London Assembly notes, as of 2005 “[t]here [wa]s nothing in planning or any other law to prevent a homeowner from covering their [sic] front garden with concrete or any other surface.”⁶⁵ However, the boroughs have inherent power to innovatively address garden loss through parking control and related regulations that place limitations on the installation of new driveways.⁶⁶ These regulations may impact single-family homeowners differently than owners of flats or other multiple-occupancy dwellings.⁶⁷ The boroughs also differ substantially in the extent to which they have used these regulations to achieve the goal of front garden preservation.⁶⁸

B. The Local Land Use Law and Policy Tools

1. Permeable Surfacing

Prior to 2008, there were few legal constraints on homeowners who wished to pave over their front gardens.⁶⁹ However, a 2008 amendment to the Town and Country Planning Order of 1995 (1995 Order; 2008 Amendment)⁷⁰ “require[d] front garden hard surfacing of more than five

63. BRIAN PLUMMER & DON SHEWAN, CITY GARDENS: AN OPEN SPACES SURVEY IN THE CITY OF LONDON 2 (1992); *43 Reasons Not to Pave*, EALING FRONT GARDENS PROJECT, <http://www.ealingfrontgardens.org.uk/page6.htm> (last visited Mar. 25, 2012). Over the past half-century, U.S. courts have become more willing to uphold land use ordinances regulating aesthetics. As Judge Bronson of the Michigan Court of Appeals opined in 1972:

The modern trend is to recognize that a community’s aesthetic well-being can contribute to urban man’s psychological and emotional stability. It is true that the question of what is beautiful and pleasing is for each individual to decide. We should begin to realize, however, that a visually satisfying city can stimulate an identity and pride which is the foundation for social responsibility and citizenship.

Sun Oil Co. v. City of Madison Heights, 199 N.W.2d 525, 529 (Mich. Ct. App. 1972).

64. *CRAZY PAVING*, *supra* note 7, at 6–8.

65. *Id.* at 15.

66. *Id.*

67. *Id.* at 16.

68. *Id.* at 15.

69. *Legislation*, EALING FRONT GARDENS PROJECT, <http://www.ealingfrontgardens.org.uk/page9.htm> (last visited Mar. 25, 2012).

70. The Town and Country Planning Act of 1990 constitutes the statutory basis for both the 1995 Order and the 2008 Amendment. See DEP’T FOR CMTYS. & LOCAL GOV’T, GENERAL PERMITTED

square metres in area to: either be made of porous material or, if an impermeable surface, to direct runoff to a soakaway area or rainwater storage within the property's boundary."⁷¹ Alternatively, it would "require planning permission . . . and a fee of £150."⁷² The Amendment represented a concerted effort on the national level to address local surface-level flooding issues, and its effects remain to be seen.

While this Amendment addresses local flooding, it potentially fails to mitigate related problems such as the "urban heat island effect" (increased local temperatures),⁷³ aquifer pollution, loss of wildlife habitat and carbon dioxide absorption,⁷⁴ entrenched reliance on motor vehicles (rather than public transport), "dangers to pedestrians, increased pressure on roadside parking, destruction of green and pleasant residential roads, upset neighbours, community tensions and many other problems."⁷⁵ Preservation of actual garden environments would better address these related urban issues.

2. Pavement Crossovers

While the 2008 Amendment represents one of only a few direct legislative responses to the front gardens problem, other planning tools created for other purposes offer "proxy" solutions. For example, the London Local Authorities & Transport for London Act of 2003 (2003 Act) gives London borough councils the authority to remove unauthorized pavement crossovers⁷⁶ and to charge property owners for the work. Charged

DEVELOPMENT ORDER 1995: A CONSULTATION 5 [hereinafter CONSULTATION], available at <http://www.communities.gov.uk/documents/planningandbuilding/pdf/151222.pdf>.

71. *Legislation*, *supra* note 69.

72. *Id.*; see also GUIDANCE ON PERMEABLE SURFACING, *supra* note 28, at 5.

73. GUIDANCE ON PERMEABLE SURFACING, *supra* note 28, at 6.

74. *Problems with Hard Surfacing*, EALING FRONT GARDENS PROJECT, <http://www.ealingfrontgardens.org.uk/page5.htm> (last visited Mar. 25, 2012).

75. *Home Page*, EALING FRONT GARDENS PROJECT, <http://www.ealingfrontgardens.org.uk/index.htm> (last visited Mar. 25, 2012). Closely linked to "community tensions" and the "destruction of green and pleasant residential roads" are environmental justice issues, as evidenced by Avon Barksdale's quotation that opens this Note. *Id.* Episode 1.04 of *The Wire* evokes Baltimore, Maryland's racial and economic polarization in the context of recreational space by contrasting a leafy, green suburb as setting for white police officer Jimmy McNulty and his soccer-playing sons with a "landscape[] of fear": young African-American men playing basketball in the drug-infested concrete jungle of the inner-city projects. Clandfield, *supra* note 2, at 37, 45 (quoting STEVE MACEK, URBAN NIGHTMARES: THE MEDIA, THE RIGHT, AND THE MORAL PANIC OVER THE CITY, at xii (2006)). Cities like Baltimore and London have a moral obligation to reverse this long-standing "concretization" of the inner city for compelling public-welfare reasons ranging from the traditional (e.g., crime reduction) to the modern (e.g., climate change impacts, the subject of this Note).

76. CRAZY PAVING, *supra* note 7, at 15.

citizens have the right to receive notice and to appeal these assessments.⁷⁷ Since most people who pave over their front gardens intend to use the new space for motor vehicle parking,⁷⁸ they then must install a crossover to allow vehicle access. The borough's ability to regulate crossovers serves as a possible proxy to discourage people from paving, because if one cannot easily access the driveway space, he or she probably would not pave in the first place. If individuals fail to apply for a crossover with the borough council, the 2003 Act gives boroughs the power to prosecute those driving over pavement where no crossover exists or was authorized.⁷⁹

The major limitation on this approach is that, under current law,⁸⁰ it is limited to multiple-occupancy dwellings such as flats or semi-detached houses. For single-dwelling houses outside Article 4 conservation areas,⁸¹ crossovers are "permitted development," which means that "there is no need to apply for planning permission because it is deemed automatically to be granted"⁸² by the Secretary of State.⁸³ So while this does significantly constrict boroughs from using this proxy to stop paving, certain developments may be targeted.

Before the passage of the 2003 Act, borough councils could only prosecute perpetrators by actually witnessing them drive over the pavement block. Absurdly, the resulting judgments only applied to the specific incident, and so councils had to bring violators back to court for each and every incident. Monitoring and general efficiency problems abounded. As Craig Wilson, Director of Transportation and Highways for the Royal Borough of Kensington & Chelsea, explained: "[W]e had 5,000 cases in one year, and the Magistrate's Court asked us to leave off and give them a rest. That is the problem."⁸⁴ To some extent, the 2003 Act has repaired this inefficiency.

Notably, the Royal Borough of Kensington & Chelsea has succeeded in expanding its planning powers in the pavement-crossover sphere through litigation. The Highways Act of 1980 lists three criteria that may be considered in the crossover permitting process: "(a) [p]revention of damage

77. London Assembly, Env't Comm., Meeting Transcript 7 (Mar. 15, 2005) [hereinafter Transcript], available at [http://www.london.gov.uk/moderngov/Data/Environment Committee/2005 0315/Minutes/Transcript PDF.pdf](http://www.london.gov.uk/moderngov/Data/Environment%20Committee/2005%200315/Minutes/Transcript%20PDF.pdf). (statement of Nick Lester, Director of Transport, Environment and Planning, Association of London Government)

78. CRAZY PAVING, *supra* note 7, at 10–11.

79. Transcript, *supra* note 77, at 11; CRAZY PAVING, *supra* note 7, at 18.

80. This refers to the 1995 Order. See CRAZY PAVING, *supra* note 7, at 15 n.32.

81. See discussion on Article 4 *infra* Part II.B.3.

82. CRAZY PAVING, *supra* note 7, at 15.

83. CONSULTATION, *supra* note 70, at 17.

84. Transcript, *supra* note 77, at 12 (statement of Craig Wilson).

to the footway; (b) safe access to and egress from premises; and (c) the need to facilitate the passage of vehicular traffic on the highway.”⁸⁵ In subsequent litigation, a court held that these criteria were not exclusive and that the borough could take into consideration other factors in approving crossovers. Consequently, the borough has succeeded in significantly limiting crossover installation by requiring “substantial gain[s]” like garages that will permit multi-vehicle storage.⁸⁶ Litigation may thus serve as one method for local authorities to take greater control over crossover installations and other planning processes linked to front garden paving.

Enforcement continues to be a problem. Many boroughs fail to enforce restrictions on illegal crossovers, even after the passage of the 2003 Act. The Environment Committee notes that the costs of legal action and a lack of resources are partially responsible for this trend.⁸⁷ At the very least, boroughs need to improve their enforcement efforts if front gardens are to survive.

3. Article 4 Directions

Article 4 of the 1995 Order⁸⁸ offers another alternative to basic pavement-crossover laws. Traditionally applied to conservation and historic preservation areas, Article 4 Directions effectively tighten planning controls by suspending otherwise permitted development.⁸⁹ For example, under Article 4, pavement crossovers for single-family dwellings would no longer be permitted development, which would require those homeowners to apply for a crossover in the same fashion as owners of a multiple-occupancy dwelling.⁹⁰ Generally, local planning authorities must receive approval from the Secretary of State to apply Article 4 Directions in a certain area.⁹¹ If approved, the decision to permit crossover construction would then be largely at the borough council’s discretion. In a borough like Kensington & Chelsea that is intent on limiting crossovers to the greatest extent possible, this could result in a large crossover reduction and, perhaps, more preserved front gardens.

85. CRAZY PAVING, *supra* note 7, at 18.

86. *Id.* at 17–18.

87. *Id.* at 18–19.

88. Town and Country Planning (General Permitted Development) Order, 1995, S.I. 1995/418, art. 4, ¶ 1 (U.K.), available at <http://legislation.data.gov.uk/ukxi/1995/418/made/data.htm?wap=true>.

89. CONSULTATION, *supra* note 70, at 17.

90. CRAZY PAVING, *supra* note 7, at 15–16.

91. See Town and Country Planning Order, art. 4; see also CONSULTATION, *supra* note 70, at 7 (discussing possible amendments to the 1995 Order to facilitate local approval of Article 4 Directions without waiting for Secretary of State approval under a theory of damage prevention).

However, as with basic pavement crossover laws, there are problems and limitations. Nick Lester, Director of Transport, Environment, and Planning with the Association of London Government, commented that “[e]ven where Article 4 Directions exist in conservation areas, they are hard to make work, and they are hard to introduce,”⁹² and there is “the enforcement question and [that of] resource[s] for enforcement.”⁹³ Christine Eborall, former chair of Ealing Local Agenda 21, discussed the Hanger Hill Garden Estate, which is subject to a maximum 50% front-garden paving allowance that has not been enforced.⁹⁴ She added that establishing conservation areas for purposes of Article 4 is administratively “burdensome.”⁹⁵ Citing four areas that have utilized Article 4 Directions, she noted only one that completely prohibits paving over front gardens;⁹⁶ other areas permit a certain percentage of front garden paving. Certain councils also may be hesitant to use Article 4 Directions given the possible £10,000–20,000 increase in property value that may come from adding a driveway to property in inner London.⁹⁷

4. Tree Preservation Orders (TPOs)

When a pavement crossover is permitted, any street trees blocking the new opening will likely be cut down, resulting in further natural habitat loss.⁹⁸ In boroughs with relatively lax local planning, such as Ealing, residents may receive permission from local authorities to remove street trees simply by alleging a nuisance; this includes the trees’ blocking of a potential crossover.⁹⁹

Tree Preservation Orders (TPOs) are another local planning tool that, by mandating protection of certain street trees, may be used by “proxy” to prevent pavement crossovers and loss of front gardens on private property.¹⁰⁰ As the London Borough of Bexley’s official website explains, a

92. Transcript, *supra* note 77, at 6 (statement of Nick Lester).

93. *Id.* at 30 (statement of Nick Lester).

94. *Id.* (statement of Christine Eborall). Ealing Local Agenda 21 is a community-based group that strives to carry out the 1992 Rio Summit’s sustainable development goals at the local level. *Our Research*, EALING FRONT GARDENS PROJECT, <http://www.ealingfrontgardens.org.uk/page2.htm> (last visited Mar. 25, 2012).

95. *Id.* at 27 (statement of Christine Eborall).

96. Transcript, *supra* note 77, at 27 (statement of Christine Eborall).

97. *Id.* at 26 (statement of Craig Wilson).

98. *Id.* at 9 (statement of Dr. Dave Dawson, Policy Manager, Biodiversity, Greater London Authority).

99. *Id.* at 14 (statement of Christine Eborall).

100. CRAZY PAVING, *supra* note 7, at 19.

TPO is incorporated into a borough's unitary development plan (UDP)¹⁰¹ and aims to protect "trees of amenity, nature or landscape conservation value."¹⁰² In Bexley, both borough council members and residents may make TPO requests, especially in the context of development proposals.¹⁰³ Dr. Dave Dawson of the Greater London Authority's Environment Team emphasized the potentially beneficial secondary effects of TPOs on stemming the loss of front gardens:

[W]hile people may get permission to overrule a tree preservation order, at least that is some assistance in trying to preserve the trees and characters of front gardens . . . [B]oroughs could . . . be much more proactive in using TPOs and that would, second-hand almost, work against both crossovers and paving of front gardens.¹⁰⁴

The series of regulatory barriers that Bexley has erected to prevent people from altering protected trees suggests that Dr. Dawson's assertion may be correct. For example, any person who would like to take action affecting a protected tree is first encouraged to approach an arboricultural specialist or a council officer in an unofficial capacity. The applicant must then submit a standardized application form and attach the following: (1) a plan identifying the affected trees; (2) details on the specific effects anticipated; (3) statement justifying the application; and (4) "[a]ppropriate evidence."¹⁰⁵ The Council refuses to consider any application that fails to meet these four requirements. Furthermore, the Council apparently has substantial discretion to reject plans, because it must broadly consider the plans in the context of the "tree's visual contribution to the area" and "good arboricultural practice."¹⁰⁶ Sanctions are also severe: Violation of a TPO is a criminal offense, and borough councils have authority to prosecute offenders in the local Magistrates' Court. Those found guilty face up to

101. See discussion on UDPs *infra* Part II.B.5.

102. *Tree Preservation Orders*, LONDON BOROUGH OF BEXLEY, <http://www.bexley.gov.uk/index.aspx?articleid=4310> (last visited Mar. 25, 2012).

103. *Tree Preservation Orders, Requests for TPOs*, LONDON BOROUGH OF BEXLEY, <http://www.bexley.gov.uk/index.aspx?articleid=7531> (last visited Mar. 25, 2012).

104. CRAZY PAVING, *supra* note 7, at 19 (statement of Dr. Dave Dawson).

105. *Tree Preservation Orders, Applications for Works to TPO Protected Trees*, LONDON BOROUGH OF BEXLEY, <http://www.bexley.gov.uk/index.aspx?articleid=7532> (last visited Mar. 25, 2012) (explaining, for example, that if someone wishes to fell a tree to prevent structural damage to property, then the application must include "reports on soil type, foundation depth and evidence of tree roots around the building," and if the individual wishes to fell a tree for safety reasons, the application must include a "report from a qualified person").

106. *Id.*

£20,000 in fines or—in more serious cases—potentially uncapped penalties following an additional hearing in the Crown Court. If a tree has been removed without the borough council's approval, equitable relief in the form of tree replacement also may be available.¹⁰⁷

In addition to TPOs, general conditions on planning consents may be used to preserve existing trees on new development sites. As with TPOs, permission is needed to alter the protected trees. The 1947 Act, the source of legal authority, confers on the local planning authority a duty to consider both preservation of existing trees and the planting of new trees in reviewing development applications.¹⁰⁸

5. Unitary Development Plans (UDPs)

Lastly, some boroughs have attempted to more directly address the front-garden-paving issue by creating presumptions against paving in their local unitary development plans (UDPs). As detailed on the official website of the City of Westminster (a London borough), UDPs are local development guides that must conform to the Town and Country Planning Act of 1990 and other regional and municipal planning law.¹⁰⁹ Westminster asserts that the UDP:

- (a) advises people on the types of development likely to get planning permission[;]
- (b) gives guidelines for us when we decide on planning applications[; and]
- (c) is the basis on which we defend our planning decisions at public inquiries.¹¹⁰

In the Transport section of its UDP, Westminster emphasizes the borough's opposition to front garden paving unless it is part of some overarching development plan, traffic management, or aesthetic improvement.¹¹¹ In

107. *Tree Preservation Orders, Offences*, LONDON BOROUGH OF BEXLEY, <http://www.bexley.gov.uk/index.aspx?articleid=7539> (last visited Mar. 25, 2012).

108. *Tree Preservation Orders, Planning Conditions to Protect Trees*, LONDON BOROUGH OF BEXLEY, <http://www.bexley.gov.uk/index.aspx?articleid=7534> (last visited Mar. 25, 2012).

109. CITY OF WESTMINSTER, UNITARY DEVELOPMENT PLAN, INTRODUCTION 3 (2007), available at http://transact.westminster.gov.uk/docstores/publications_store/planning/udp/UDP_Introduction.pdf.

110. *Id.*

111. CITY OF WESTMINSTER, UNITARY DEVELOPMENT PLAN, CHAPTER 4: TRANSPORT 238 (2007), available at http://transact.westminster.gov.uk/docstores/publications_store/planning/udp/UDP_Chapter_04_Transport.pdf; CRAZY PAVING, *supra* note 7, at 16–17.

effect, this equates to a presumption against paving that must be rebutted by the applicant through the assertion of a greater plan.

However, UDPs may suffer from the same drawbacks as general pavement-crossover law. The Environment Committee has suggested that UDPs are generally applicable to *non*-permitted development, so this would primarily impact pavement crossovers for multiple-occupancy dwellings, not single-family houses.¹¹²

III. DROUGHT AND WATER SHORTAGE IN LAS VEGAS

*Sin City encourages irresponsible behavior about everything
from sex to water.*¹¹³

A. Background

Las Vegas, a city that receives an average annual four inches of rain,¹¹⁴ is in the midst of a water crisis. Since 1999, the regional Southwest has endured a suffocating drought.¹¹⁵ But from a visitor's perspective, one would never know. On the "Strip"—the city's world-famous casino district—ostentatious fountains send plumes of water high into the sky. At other casinos, large man-made ponds and pools serve visitors with deep pockets. And at the Venetian Resort Hotel Casino, tourists get to ride gondolas through a labyrinth of indoor canals.¹¹⁶ Excess is the rule, not the exception.¹¹⁷ But appearances can be deceiving: The Strip consumes less than 1% of Nevada's water while accounting for 60% of its economy.¹¹⁸

Initially settled as a travel stop between Salt Lake City and Los Angeles, Las Vegas depended for years upon natural springs for its water supply. Today, these springs are woefully incapable of supporting the region's current population.¹¹⁹ The fastest-growing city in the United States,¹²⁰ Las Vegas's population exploded by almost 40%—from 1.37 million to 1.90 million—between 2002 and 2009.¹²¹ Residences in Las Vegas and its suburbs are major culprits in the city's dwindling water

112. CRAZY PAVING, *supra* note 7, at 16.

113. GLENNON, *supra* note 5, at 1.

114. SUSAN J. MARKS, AQUA SHOCK: THE WATER CRISIS IN AMERICA 35 (2009).

115. Felicity Barringer, *Water Use in Southwest Heads for a Day of Reckoning*, N.Y. TIMES, Sept. 28, 2010, http://www.nytimes.com/2010/09/28/us/28mead.html?_r=1&scp=1&sq.

116. GLENNON, *supra* note 5, at 2–3.

117. *Id.* at 1.

118. Will, *supra* note 5.

119. Travis, *supra* note 5, at 173.

120. GLENNON, *supra* note 5, at 1.

121. Barringer, *supra* note 115.

supply. Approximately 90% of Las Vegas's water supply comes from Lake Mead, a reservoir in the lower Colorado River Basin sitting on the Nevada–Arizona border in close proximity to the city,¹²² and a hefty 60% of that water goes to residential use *for outdoor landscaping and lawns*.¹²³ In comparison, the casinos use only 8% of the city's municipal water allocation.¹²⁴

Due to this increased regional demand, Lake Mead is on the verge of dropping below a 1,075-foot threshold “shortage” line, which may trigger an emergency reallocation plan established by the Bureau of Reclamation and seven affected states in 2007.¹²⁵ The plan provides for diversion of “40 percent more water than usual downstream to Lake Mead from Lake Powell in Utah, the river's other big reservoir, which now contains about 50 percent more water than Lake Mead.”¹²⁶ Other alternatives are currently under debate. Hearings have been postponed on a proposal for Las Vegas to pay Utah for water from Snake Valley, with subsequent construction of a \$3.5 billion, 285-mile pipeline to transport the water.¹²⁷ Other plans, such as the construction of a \$2 billion pipeline to bring groundwater from rural Nevada into Las Vegas (under great protest from many rural Nevadans), have been discouraged in favor of more pragmatic remedies.¹²⁸ The hotly contested and costly nature of these regional solutions reinforces the need for Las Vegas to find solutions closer to home, on the local planning level.

122. *Id.*

123. Christensen, *Water Forces Las Vegas to Choose*, *supra* note 20, at 229; Christensen, *Las Vegas Seeks Watery Jackpot*, *supra* note 31, at 233.

124. Christensen, *Water Forces Las Vegas to Choose*, *supra* note 20, at 229.

125. Barringer, *supra* note 115.

126. *Id.*

127. MARKS, *supra* note 114, at 22.

128. Jon Christensen, *Las Vegas Wheels and Deals for Colorado River Water*, in WATER IN THE WEST 235, 235; Christensen, *Las Vegas Seeks Watery Jackpot*, *supra* note 31, at 234.

B. The Local Land Use and Policy Tools

1. Xeriscaping Incentive Program

Xeriscaping is Las Vegas's most popular and innovative approach to controlling the home landscape in order to save water. The Merriam-Webster dictionary defines "xeriscape," derived from the Greek word *xeros*, or "dry,"¹²⁹ as "a landscaping method developed [especially] for arid and semiarid climates that utilizes water-conserving techniques."¹³⁰ In practice, xeriscaping emulates the flora of the local environment, leading (in the ideal long-term) to a simple, complete reliance on natural precipitation rather than human watering.¹³¹ Advocates debunk the notion that xeriscaping means gravel and a handful of cacti and emphasize major water-saving benefits that shun any "sacrifice in beauty."¹³²

The local campaign to promote xeriscaping began with the Southern Nevada Water Authority's (SNWA) decision to pay residents \$1 per square foot of lawn removed. After some success—followed by a moderate drop-off—SNWA agreed to pay \$2 for the first 1,500 square feet of grass removed, which attracted an additional 25,000 people. SNWA has spent over \$80 million on this project while saving over 20 billion gallons of water per year.¹³³ Currently, the SNWA's website states that it will offer property owners up to "\$1.50 per square foot of grass removed and replaced with [water-efficient] landscaping."¹³⁴

2. Zoning Codes: Landscaping Restrictions on New Development

Las Vegas has also used its local zoning and planning code to discourage new (especially water-intensive) development. Patricia Mulroy, General Manager of SNWA, has emphasized her organization's intentional targeting of new residential development in its water-saving campaign, prohibiting grass in new front yards and mandating a maximum 50% grass cover in new side and back yards.¹³⁵ In non-residential developments,

129. ELLEFSON ET AL., *supra* note 29, at 3.

130. MERRIAM-WEBSTER'S COLLEGIATE DICTIONARY 1449 (11th ed. 2003).

131. ELLEFSON ET AL., *supra* note 29, at 3, 6.

132. *Id.* at 4.

133. Olsen, *supra* note 10.

134. *Water Smart Landscapes Rebate*, S. NEV. WATER AUTH., <http://www.snwa.com/rebates/wsl.html> (last visited Mar. 25, 2012) (alteration in original).

135. Olsen, *supra* note 10; *City of Las Vegas Turf Limits*, S. NEV. WATER AUTH.,

SNWA completely prohibits new turf installation, “unless specifically permitted by approval of land use application.”¹³⁶

Chapter 19.12.030(G) (“Turf Limitations”) of the general Las Vegas Zoning Code¹³⁷ paints a slightly different and less restrictive picture, yet one that expresses the city’s commitment to reducing water-intensive turf and landscaping nonetheless:

Zoning District/Use	Use of Turf
Commercial/Industrial Districts	Limited to a maximum of 25% of total landscapable area
Public Facilities Districts	Prohibited, except for schools, parks and cemeteries
Golf Course Use	Limited to 5 acres average per hole, with a maximum 10 additional acres for driving range
Residential Districts (Single-Family)	Limited to a maximum of 50% of total front yard area
Residential Districts (Multi-Family)	Limited to a maximum of 30% of total landscapable area

Unlike SNWA requirements, this zoning provision does not categorically prohibit front lawns or require a maximum 50% back yard grass cover, but it nonetheless constitutes a strong restriction on landscaping, especially in areas zoned as multi-family residential and commercial/industrial. Subsection 2 of Section G further confirms the intent of Las Vegas’s planning authorities to promote “water efficient vegetation” through the zoning code, with an additional requirement that 50% of *non-turf* areas should include such vegetation within three years.¹³⁸ In addition, Section H (“Landscape Materials”) actually requires new development to incorporate xeriscaping to some extent: “Landscaping *shall include* drought-resistant and water efficient plant materials consistent with the Southern Nevada Water Authority xeriscape guidelines and the turf limitations of Subsection G.”¹³⁹ The city’s devotion to xeriscaping thus extends beyond the monetary incentive sphere to its official zoning code.

http://www.snwa.com/consv/restrictions_turf_lv.html (last visited Mar. 25, 2012) (applying specifically to single-family homes).

136. *City of Las Vegas Turf Limits*, *supra* note 135.

137. LAS VEGAS, NEV., ZONING CODE ch. 19.12.030(G)(1) (1997), available at http://www.lasvegasnevada.gov/files/Chapter_19.12.pdf.

138. *Id.* ch. 19.12.030(G)(2).

139. *Id.* ch. 19.12.030(H) (emphasis added).

In addition, city zoning rules now mandate that developers first identify a viable source of water for a given project before receiving approval and commencing development. Says one hydrometeorologist: “Developers will go into central Nevada to try to identify an aquifer they can draw from. That’s an onerous burden on developers, but frankly, in some areas, it’s the only way we can mitigate the issues [I]t’s a societal solution rather than an environmental one.”¹⁴⁰ Thus, while Las Vegas has utilized xeriscaping incentives and SNWA/general zoning regulations to achieve its water reduction policy, these are just two examples of a grander scheme to save every last drop.¹⁴¹

IV. DISCUSSION

A. Lessons for London

1. London Easement/Monetary Incentive Scheme

London should heed Las Vegas’s example by complementing its command-and-control regulations with a monetary or tax incentive scheme. Given boroughs’ often selective (or nonexistent) enforcement of planning regulations,¹⁴² which has led London Assembly Member Richard Barnes to recommend withholding additional land use powers from boroughs, an incentive program could help significantly.¹⁴³ Such a scheme could also succeed where British statutes and regulations have failed: preserving the significant—and often intangible—benefits of green space such as aesthetics, community cohesion, and wildlife habitat.¹⁴⁴ As discussed, current British statutes like the 2008 Amendment, in conjunction with

140. MARKS, *supra* note 114, at 82.

141. SNWA has also aired commercials, often with touches of humor, to remind people to stop wasting water. In one particular commercial, an older woman walks up to a neighbor’s front door and rings the bell. A younger man answers and says, “can I help you?” The woman responds by kicking him in the nether regions before walking away, leaving him on the ground in shock. The ad follows by saying “Don’t Make Us Ask You Again. It’s a Desert Out There,” encouraging people to check their watering schedules at www.changeyourclock.com. Olsen, *supra* note 10; *see also The Neighbor*, S. NEV. WATER AUTH., <http://www.snwa.com/apps/video/index.cfm?cid=39> (search for “The Neighbor”) (last visited Mar. 25, 2012).

142. This problem is especially apparent in the previously discussed “proxy” uses of borough regulations to prevent driveway paving. While these proxy uses may provide a clever loophole to preserve some of London’s green spaces, a more effective, targeted regulatory or incentive regime is clearly needed.

143. Transcript, *supra* note 77, at 26 (statement of Richard Barnes).

144. PLUMMER & SHEWAN, *supra* note 63, at 1–4; *43 Reasons Not to Pave*, *supra* note 63.

London borough regulations, only address surface permeability, not the actual preservation of green space. Of course, ground-level dynamics inherently differ because while Las Vegas would like people to remove their lawns, London would like people to maintain them. London therefore cannot incentivize people in the same way. Assuming that a borough would grant monetary incentives on a case-by-case basis, such a system could perversely lead property owners with no intent to pave to seek planning permission (or otherwise express such an intent) just to secure the incentive. However, this perverse incentive could be avoided by creating an easement or some related form of deed restriction or contract with the interested parties for a certain period of time.¹⁴⁵

For example, the London Borough of Southwark, a largely blue-collar borough in need of green space preservation, could pay an interested homeowner so many British Pounds (£) (or provide an equivalent tax incentive) per unit of front garden¹⁴⁶ that that individual would agree to keep green for a certain number of years. If the easement holder sold the property in the interim, the deed restriction would bind the next owner for the remainder of the agreed-upon time period. This would serve the public interest by preserving green space while limiting governmental invasion of private property. An easement would also simplify property ownership and transfer as well as maximize equity by ensuring that the garden itself remained under the original landholder's ownership, unlike in traditional eminent domain proceedings.¹⁴⁷ In another sense, such an incentive structure could "level the playing field" among London property owners where current regulations—such as pavement crossovers, which are permitted development for single dwellings but not for multiple-occupancy dwellings¹⁴⁸—treat groups differently. A term easement would provide added flexibility, allowing current or future property owners to have a say in the parcel's destiny while making the property more marketable than if a perpetual easement applied. Since most front gardens are moderately sized, the program also would not be a great drain on borough coffers.¹⁴⁹

145. ELIZABETH BYERS & KARIN MARCHETTI PONTE, *THE CONSERVATION EASEMENT HANDBOOK* 21 (2d ed. 2005) (discussing both perpetual and term easements).

146. See John D. Echeverria, *Regulating Versus Paying Land Owners to Protect the Environment*, 26 J. LAND RESOURCES & ENVTL. L. 1, 7 (2005) (recommending valuation of a government-acquired easement or other property interest at fair market value).

147. BYERS & PONTE, *supra* note 145, at 17; see also LINDSAY MALONE, *CONSERVATION ORGANIZATIONS: WHAT THEY DO AND WHY THEY DO IT* 8 (2005), available at www.cfr.washington.edu/nwef/documents/SciencePapers/tp11.pdf ("Easements are an immensely popular land conservation tool because they allow conservation organizations to protect land without having to own it and take on direct land management responsibilities.").

148. CRAZY PAVING, *supra* note 7, at 15.

149. See Transcript, *supra* note 77, at 32, 34 (discussing other financial incentives). Christine

On the other hand, some academic practitioners argue that easement incentive programs are less fair and less effective than traditional regulatory schemes. For example, Professor John Echeverria and retired attorney Jeff Pidot assert that traditional conservation easement schemes perpetuate inequity by forcing taxpayers to subsidize “the same restriction [that] could have been imposed by regulation”¹⁵⁰ to benefit a specific piece of private property. Furthermore, governmental entities are generally more accountable to the public (and therefore to uses of tax revenue) in the traditional regulatory process. In most jurisdictions, conservation easement decisions are made by individual property owners in conjunction with land trusts or other non-profits to the exclusion of the general public. While the public can vote out an elected government official for unpopular uses of tax dollars, no such albatross hangs on the neck of an unaccountable land trust.¹⁵¹ On the other hand, there are exceptions to this general rule that may provide guidance for London boroughs. For example, the U.S. Commonwealth of Massachusetts requires public review and approval on both local and state levels for decisions involving conservation easements held by charitable organizations.¹⁵²

The allure of an easement/monetary incentive scenario, while attractive in many ways, is therefore open to considerable debate.¹⁵³ While both regulations and incentive schemes arguably have their place in addressing the fate of London’s front gardens, the balance that should be struck is a more difficult question.

2. “Sustainable Urban Drainage”

London boroughs confronted with excess surface water could also learn from recent environmental enhancement projects involving the cooperation of the Environment Agency, the local (district) council, and

Eborall, Former Chair of Ealing Local Agenda 21, emphasized the value of Mayor-driven monetary incentives such as “mak[ing] it more expensive to have more cars per household and/or . . . *additional council tax* for hard-surfaced front gardens” (emphasis added). *Id.* at 32. Carlo Laurenzi, Chief Executive of London Wildlife Trust, even suggested a “stamp duty” refund—making it easier for people to sell their homes—as another possible form of financial incentive. *Id.* at 34.

150. John Echeverria & Jeff Pidot, *Drawing the Line: Striking a Principled Balance Between Regulating and Paying to Protect the Land*, 39 ENVTL. L. REP. 10,868, 10,871 (2009), available at <http://www.vermontlaw.edu/Documents/093009-echeverriaELRArticle.pdf>.

151. *Id.* at 10,872.

152. *Id.*; BYERS & PONTE, *supra* note 145, at 19.

153. See Echeverria, *supra* note 146, at 8. Echeverria also emphasizes the dangerous precedent of overvaluing easements to the detriment of taxpayers. *Id.* Since the government generally does not closely monitor easement valuations, landholders have additional incentive to price their easements above fair market value. *Id.*

private developers elsewhere in the United Kingdom. Wokingham, England, roughly forty-five minutes west of London, provides one such example. Here, these authorities worked together to create “sustainable urban drainage” in a parking lot for Tesco, one of Britain’s largest grocery chains.¹⁵⁴ First, permeable surface materials were used instead of traditional hard surfacing to stem urban run-off from entering directly into sewers and local water bodies. Pipes below the permeable surfacing catch the water before diverting it to a two-stage water chamber containing “a constructed wetland, from where it is filtered through a reed bed.”¹⁵⁵ An illustration suggests a three-level staggered dynamic: first the parking lot, which slopes down to the constructed wetland before finishing in the reeds and the receiving watercourse.¹⁵⁶

While this project likely involved new development, its principles are still valuable to London boroughs looking to reduce flooding and improve their local environments. Britain has already embraced permeable surfacing as a means to combat flooding by designating it permitted development under the 2008 Amendment.¹⁵⁷ While it is not geographically or economically possible for every borough to construct staggered wetlands and reed beds for sustainable urban drainage, myriad London-based watercourses (including the River Thames) could serve as receiving bodies.

In riparian areas where hard surfacing and flooding persist, authorities could even convert swaths of public hard road—thus avoiding any contentious property issues—into permeable surfacing for connection to a wetland and reed area. In more extreme cases involving areas suffering both from considerable flooding (a strong public interest) and limited riparian access, public authorities could exercise a “compulsory purchase” (equivalent to American eminent domain) to install wetlands and reeds for run-off dissemination into a watercourse.¹⁵⁸ If British law falls closely in line with its American counterpart, municipal drainage authorities may even enjoy the benefits of sovereign immunity in the condemnation process.¹⁵⁹ Again, because Article 1 of the First Protocol does not specifically provide for takings compensation as does the American Constitution’s Fifth Amendment, this tactic could be quite controversial. On the other hand, the

154. HOWES, *supra* note 51, at 114–15.

155. *Id.* at 115.

156. *Id.*

157. GUIDANCE ON PERMEABLE SURFACING, *supra* note 28, at 5, 23.

158. Allen, *supra* note 33, at 75; *see also* WILLIAM GOLDFARB, WATER LAW 40 (1984) (noting the power of American public entities to exercise the eminent domain power for drainage purposes).

159. GOLDFARB, *supra* note 158, at 40–41.

European Court of Human Rights offers an “extensive body of cases” addressing this issue that may persuade British courts.¹⁶⁰

B. Lessons for Las Vegas

1. Addressing Current Property Ownership Through Local Planning Law

Las Vegas has succeeded in creating a viable monetary incentive scheme to persuade people to replace their lawns with more water-friendly flora, but given the severity of its drought and the previously discussed problems associated with such monetary schemes, the city could do more to regulate current property ownership through local planning law. While Las Vegas does place restrictions on turf in new developments, unlike London it lacks any functional equivalent in the current ownership sphere. London’s 2008 Amendment, excepting changes under a certain size, mandates that permeable surfacing (or impermeable surfacing plus some means to drain the water within the property) be used for the “replacement of and repairs to existing hard surfacing *as well as* new surfacing”¹⁶¹ for permitted development.

Similarly, Las Vegas could save more water by using local planning law to require individuals to take certain conservation-driven actions with their property upon “replacement” and “repair.” For example, when locals

160. Allen, *supra* note 33, at 77–78. Alternatively, further changes in British drainage law may offer additional solutions. Craig Wilson, Director of Transportation and Highways for the Royal Borough of Kensington and Chelsea, told the Environment Committee that draining water from property onto a public highway may be illegal. Transcript, *supra* note 77, at 15–16 (statement of Craig Wilson). He suggested that such controls could also be used to stem the increase in paved front gardens. *Id.* The Environment Committee’s Chair suggested looking into the legal possibility of linking a pavement crossover grant to a condition precedent based on an assurance that sufficient drainage infrastructure is in place. *Id.* (statement of Darren Johnson). In spirit, England continues to follow the “common enemy rule” of drainage, which in its pure form permits a landowner “to do whatever is necessary to repel or expel diffused surface water regardless of damage to his neighbor’s land.” GOLDFARB, *supra* note 158, at 39. This doctrine would seem to offer little in the way of saving front gardens since it allows people to pave and drain away water with impunity. In reality, British courts have modified—softened—the doctrine in the tradition of many American states, inserting certain reasonableness requirements into the calculus. Mark Stallworthy, *The Curious Persistence of the Common Enemy Rule in English Law*, 13 ENVTL. LIAB. 39, 44 (2005). While some courts have declined to take drainage law firmly in the direction of reasonable use, judicial precedent nonetheless confirms an incremental incorporation of reasonableness standards into the common enemy doctrine. *Id.* at 43, 45. This transition to reasonableness in the nuisance tradition may offer some (even if limited) means to place liability on those who pave their gardens and drain water “unreasonably” onto neighbors’ properties. Of course, threat of such liability is unlikely to discourage people from paving in the first place unless courts begin taking a harder line on driveway drainage specifically, perhaps by invoking the public interest in avoiding floods. This would place potential pavers on notice.

161. *Legislation, supra* note 69 (emphasis added).

replace or add new lawn or flora, the zoning code could require that they only use vegetation that consumes water up to a certain threshold. (This would equate to xeriscaping by regulation rather than by incentive.) Under *Lucas v. South Carolina Coastal Council*, the city could likely avoid a constitutional taking because homeowners would not be deprived of all economic use of their properties.¹⁶² Given the large-scale public welfare issue at hand, the city would have significant leeway in enacting such regulations.¹⁶³ Of course, enforcement problems are a big concern. Local authorities in London can more easily monitor citizens' paving of front gardens—especially given the need for a curb—than those in Las Vegas can tell when individuals have added or replaced flora using water-intensive species. Furthermore, some scholars also note that for both constitutional and cultural reasons, statutes and regulations tend to “restrict” landowner action rather than require affirmative conduct.¹⁶⁴ Perhaps the basic threat of sanctions would deter many individuals from shirking the law.

162. *Lucas v. S.C. Coastal Council*, 505 U.S. 1003, 1019 (1992). In *Lucas*, a South Carolina coastal property owner claimed that the state's 1988 Beachfront Management Act, which prevented him from erecting “permanent habitable structures,” constituted a regulatory taking of his property by depriving him of all economically viable use. *Id.* at 1007, 1009. The trial court agreed and found for Lucas. *Id.* at 1007. On appeal, the Court ruled that the “total taking” inquiry requires analysis of background principles—i.e., whether the property owner's title includes such rights—alongside other Restatement factors. *Id.* at 1030–31. The Court required the balancing of these principles on remand. *Id.* at 1031.

163. In turn, the city also would likely avoid a regulatory taking under a *Penn Central* analysis, which involves the balancing of three factors: (1) the economic impact of the regulation on the property owner; (2) the investment-backed expectations of the property owner; and (3) the character of the governmental action. *Penn Cent. Transp. Co. v. New York City*, 438 U.S. 104, 124 (1978). Given that zoning law has long accorded existing land uses much greater protection than new land uses since Congress's enactment of the Standard State Zoning Enabling Act (SZEA) in the 1920s, the city would be in a particularly strong position if it mandated xeriscaping upon a property owner's decision to remove existing flora. Christopher Serkin, *Existing Uses and the Limits of Land Use Regulations*, 84 N.Y.U. L. REV. 1222, 1232–33 (2009). Las Vegas therefore could amend its zoning ordinance to require xeriscaping in specific zoning districts, e.g., residential. Following the city's current regulations on non-conforming uses, existing water-intensive flora in those districts would then be designated as non-conforming uses of land, immediately preventing their extension or expansion and necessitating their conversion into xeriscaped flora once the “nonconforming use of land is discontinued for a period of 90 days or changed to a conforming use.” LAS VEGAS, NEV., ZONING CODE ch. 19.16.030(D)(1)–(2) (1997), available at http://www.lasvegasnevada.gov/files/Chapter_19.16.pdf. More extremely, this provision also allows the city to terminate a non-conforming use of land upon written notice to the property owner, with a maximum time period of five years for the property owner to change the use. *Id.* ch. 19.16.030(D).

164. Echeverria, *supra* note 146, at 14 (“[I]t would stretch our customary understanding of the appropriate role of regulation to attempt to mandate that an owner maintain a particular age class of trees on the land, or systematically remove invasive species.”); see also Barton H. Thompson, Jr., *Providing Biodiversity Through Policy Diversity*, 38 IDAHO L. REV. 355, 364–65 (2001) (noting the lack of any requirement under the Endangered Species Act that private property owners take *affirmative* action in protecting endangered species).

2. Article 4 Equivalents in Las Vegas

Accepting the limitations of Article 4 Directions in the London scenario, Las Vegas could benefit from adopting some equivalent in its zoning code. Whereas Article 4 is usually used for purposes of conservation and historical preservation in London, a Las Vegas equivalent could focus on water scarcity. While the Nevada city already places restrictions on new developments' use of turf in its zoning code, perhaps it could designate certain parts of the city as "Water Lite" to encourage ultra-efficient development in those areas. While some baseline standards (lower than those currently mandated for new development) for water-thirsty lawns, irrigation, and other non-essential in-house water uses could represent "permitted development," anything above that standard would need local approval based on a reasonableness standard. For example, applications for additional water for a recreational pool would receive heavy scrutiny. Perhaps the municipality could help to subsidize the use of more water-efficient technologies in these areas as well.

CONCLUSION

While the climate change hazards of London and Las Vegas first appear to be oceans apart, common solutions within local land use law and policy do exist. To date, London's boroughs have utilized the mandates of local planning law to discourage people from paving over their front gardens. Las Vegas, on the other hand, has largely relied on a monetary incentive program to persuade locals to remove their water-thirsty lawns.

Both cities could benefit from a cross-pollination of ideas. Given the historic lack of enforcement—or at least selective enforcement—of planning laws among the London boroughs, legislation such as the 2003 Act (and perhaps the 2008 Amendment) has had less effect on the mitigation of local flooding than intended. A concerted campaign by local boroughs to financially incentivize Londoners to keep their front gardens, which in addition to flood mitigation provide such benefits as aesthetics, wildlife habitat, and social cohesion, could pay dividends. Boroughs could invert the Las Vegas model by paying people per square foot of land to *maintain* their front gardens through a flexible term-of-years easement linked to a monetary or tax incentive. To ease the worries of practitioners like Echeverria about public accountability, the British Parliament or the London boroughs could follow Massachusetts's lead by enacting legislation mandating greater public involvement in easement transactions. For better or for worse, in a time when many Americans and Britons are calling for

less governmental control over our daily choices, such a scheme may “represent[] the path of least political resistance.”¹⁶⁵

Under the awning of public interest, boroughs could also exercise their compulsory purchase (eminent domain) powers to condemn especially dangerous, flood-prone areas for the purpose of establishing better flood control via sustainable urban drainage. And if drainage laws continue evolving in the direction of a “reasonableness” standard, this may be yet another—albeit weaker—tool in the kit for protecting urban front gardens.

Las Vegas could follow London’s lead and do more to influence the actions of current, not just future, property owners. Las Vegas’s current zoning code places turf restrictions on new development but leaves the realm of settled property largely unregulated. Like London’s 2008 Amendment that limits changes to currently held property, Nevada’s biggest city could rezone certain districts, requiring those engaged in relandscaping to use a certain percentage of xeriscaping materials. Las Vegas could also use its zoning code to create a water-efficient district restricting certain permitted development as under London’s Article 4. In general, despite legitimate concerns about the equity and efficacy of monetary incentive programs, Las Vegas should capitalize on its past success and continue to pursue flexible incentive schemes.

Climate change requires a global response to effectively mitigate and adapt to its anticipated effects. In a rapidly urbanizing world, if common law cities like London and Las Vegas are unable to work together in solving such superficially disparate problems as flooding and drought—determining the proper balance between private property rights and the public interest in the sensitive context of our home environments—the battle may already be lost.

—*Christian D. Petrangelo*^{*†}

165. Echeverria & Pidot, *supra* note 150, at 10,871.

* J.D. Candidate 2012, Vermont Law School; M.Sc. Environmental Policy & Regulation, 2009, London School of Economics and Political Science; B.A. History, *cum laude*, 2006, Middlebury College. Contact: christian.petrangelo@gmail.com.

† I would like to thank Professor John Echeverria for his valuable feedback on my manuscript and Donna Petrangelo, my mother, who taught me the virtues of good writing and grammar and instilled in me a deep appreciation of our natural environment.