ADVANCING CORRECTIONS
Journal of the International Corrections and Prisons Association

Article 6: Greenspace and Wellbeing in Custodial Environments (ACJ20-A006)

ICPA
International Corrections & Prisons Association

Scholarly Reflections on Core Considerations for Correctional Practice

Edition #20 - 2026

www.icpa.org

GREENSPACE AND WELLBEING IN CUSTODIAL ENVIRONMENTS

Dominique Moran, University of Birmingham, UK

Abstract

This paper examines the relationship between greenspace and wellbeing in correctional environments, tracing the development of an evidence base that now supports its inclusion in prison design and policy. Research has long demonstrated the health and psychological benefits of nature exposure in community settings such as hospitals and schools, yet prisons have historically lagged behind in applying this knowledge. Early empirical work in prisons identified lower stress-related illness among prisoners with natural views, initiating a research trajectory that connects greenspace to improved wellbeing outcomes. Subsequent qualitative and mixed-method studies have explored horticultural and green-skills programs, reporting consistent benefits including reduced anxiety and depression, enhanced mood, self-efficacy, and social connection. Despite operational and conceptual barriers—cost, security, and perceived public opposition—recent large-scale analyses have transformed the field. Using GIS mapping and national administrative data, recent work has demonstrated statistically significant associations between the extent of prison greenspace and reduced self-harm and violence, findings corroborated by further research linking biodiversity and environmental quality to improved outcomes. Collectively, this growing body of evidence identifies greenspace as a credible, low-cost intervention with multi-pathway benefits for prisoner wellbeing, and institutional staffing and safety. Building on this foundation, the paper presents the *Design Principles for Prison Landscapes: Security, Biodiversity and Wellbeing*, developed collaboratively with landscape and ecological specialists. These guidelines translate research into actionable design strategies that integrate security-compatible planting, biodiversity enhancement, and microclimate management while maintaining visibility and control. The principles align with the UN Sustainable Development Goals and the Nelson Mandela Rules, bridging research and practice. Overall, the paper argues that well-designed prison greenspaces enhance security, rehabilitation, and environmental performance simultaneously, reframing nature not as an aesthetic feature in custodial environments, but as an essential component of humane, evidence-based design.

Keywords: greenspace, wellbeing, prisons, nature contact, prison design, biodiversity, climate change mitigation

Introduction

Green spaces play a crucial role in promoting physical, mental, and social wellbeing. Access to parks, gardens, and natural environments encourages physical activity, which improves fitness and reduces the risk of chronic disease. Nature contact can lower stress levels, heart rate, and blood pressure, while exposure to greenery has been shown to boost mood, attention, and overall mental health. Green spaces also foster social interaction and a sense of community, providing safe, welcoming environments where people can connect and unwind. For those living in dense urban areas, even small pockets of nature can offer restorative effects, improving concentration and resilience. On a broader scale, green spaces contribute to cleaner air, reduced urban heat, and biodiversity—all of which enhance the quality of life. Ultimately, contact with nature supports human wellbeing by nurturing both body and mind, helping people feel calmer, healthier, and more connected.

Green spaces are also vital for mitigating the impacts of climate change. Vegetation absorbs carbon dioxide—the main greenhouse gas driving global warming—and stores carbon in biomass and soil. Urban parks, woodlands, and gardens help to regulate local temperatures by providing shade and releasing moisture through evapotranspiration, which reduces the "urban heat island" effect. Green roofs and walls can further insulate buildings, lowering energy use for cooling and heating. Vegetated areas also manage stormwater more effectively, absorbing rainfall and reducing the risk of flooding linked to extreme weather events. Beyond their physical functions, green spaces support biodiversity, helping ecosystems adapt to changing climates and maintain essential services like pollination.

These benefits have been recognized for some time, and investing in green space has become both an environmental and a wellbeing imperative, with national programs and certification schemes increasingly embedding the wellbeing and environmental benefits of green space into planning and construction. Designers and planners increasingly incorporate green space into hospitals, schools, and housing developments to maximize health and environmental benefits. In healthcare settings, access to gardens and views of nature support recovery, reduce stress, and improve patient outcomes. Schools use green playgrounds and outdoor classrooms to enhance learning, concentration, and physical activity. Housing projects integrate communal gardens, tree-lined streets, and green roofs to foster social connection, biodiversity, and energy efficiency. Sustainable drainage systems (SuDS) manage rainwater naturally while adding attractive planting. Across sectors, evidence-based design ensures that green infrastructure is not decorative but a core feature promoting wellbeing and climate resilience.

Whilst the design and construction of new facilities in other sectors has embraced this evidence-based approach, arguably the correctional sector has lagged behind. To an extent, this is because although the evidence base for the wellbeing effects of green spaces in contexts such as hospitals and schools is already well-established, until relatively recently, comparable evidence for the correctional sector has been lacking. Research in this area has been much needed, because incorporating green space into prisons presents more significant practical and conceptual difficulties than its introduction in hospitals and schools. A triple bottom line of cost, safety and security (Moran & Turner, 2019, p. 64) has resulted in many prisons being austere, harsh, and sterile environments. Policymakers, influenced by perceptions of public opinion, often assume that prison conditions must remain inferior to those experienced by low-paid workers outside. Consequently, green space within prisons can be extremely limited (Moran, Turner & Jewkes, 2016). Features such as lawns, shrubs, and trees are often viewed as

costly to install and maintain, as well as posing potential security risks, either by enabling incidents at height, weaponization of materials or concealment of contraband (Moran & Turner, 2019). Combined with additional concerns that generous green areas might appear an unjustified "luxury" to taxpayers, their inclusion has frequently been curtailed.

Until recently, the small number of research studies has meant that the evidence base for the benefits of green spaces in prisons rendered such objections difficult to challenge. Ernest Moore provided early empirical evidence that incarcerated people with views of natural landscapes from their cells made significantly fewer sick calls than those with views only of concrete or inner yards, suggesting that visible greenspace reduces environmental stress in prison populations (Moore, 1981). Further studies replicated and extended Moore's work, showing that prisoners and staff felt calmer when prisons offered more visually complex views, and that prisoners with a higher percentage of naturalistic elements visible from their cells made fewer sickness-calls than those with views dominated by the built environment (Spafford, 1991, West, 1986).

Additional qualitative and mixed method studies in the UK have examined horticultural programs, finding marked improvements in prisoners' mental health and wellbeing, particularly reductions in anxiety, enhanced purpose, self-esteem and mood (Farrier et al., 2019). Another line of work has examined prison design and nature contact more broadly. Moran & Turner (2019) argue from qualitative interviews in the UK and Norway that contact with nature can ameliorate stress, reduce tension, and support psychological restoration in imprisoned populations.

Small-scale and qualitative studies, whilst of high quality individually, had not proved persuasive to policymakers. However, by 2020, methodological innovation enabled GIS (Geographical Information Systems) measures of greenspace within prison perimeters to be linked to published administrative data on self-harm, violence and staff absence. This work, which found that prisons with more greenspace had significantly lower levels of self-harm and violence, when controlling for prison age, size, type, and crowding, was the first study at the national scale, and provided a more robust evidence source for policymakers (Moran, Jones, Jordaan & Porter, 2021)

Today, there is a growing, convergent literature which finds that contact with greenspace — whether measured as proximate vegetated land, participation in horticultural programs, or exposure to biodiverse landscapes — is associated with improved mental health and reduced harmful incidents among incarcerated populations. The most recent cross-prison analyses show consistent negative associations between the extent/quality of greenspace within and near to prisons and institutional harms (self-harm, interpersonal violence, assaults) and positive associations with self-reported wellbeing. Smaller evaluation and program studies of horticultural/green-skills interventions corroborate mechanisms (restoration, social connection, skill-building) and show improvements in mood, self-efficacy and behavior. Together, the body of evidence supports greenspace as a promising, low-cost component of prison wellbeing and safety strategies.

The research evidence shows that prison-level greenspace correlates with better outcomes. Since our original set of findings in 2021, I have shown in a series of studies with colleagues that prisons with higher percentages of greenspace show lower rates of recorded self-harm and violence after controlling for a suite of institutional covariates (prison size, security category, level of crowding,

transport connections etc.). The finding is robust across specifications and aligns with complementary analyses showing positive associations between greenspace and prisoner self-reported wellbeing (Moran et al., 2021a&b, 2022, 2023).

Greenspace effects are context-dependent. Our research was also able to show that the benefits of greenspaces are amplified where local environmental quality is better (higher biodiversity, lower air pollution) (Moran et al., 2024). This suggests that more biodiverse greenspace is more beneficial – both for incarcerated people and, of course, for ecological aspirations.

A wider body of work also shows that structured horticultural programs produce positive psychological and social effects. Evaluations of prison gardening and horticultural therapy continue to report improvements in wellbeing scales, reduced anxiety and depression symptoms, enhanced self-efficacy and social skills, and qualitative gains in identity and employability (Lee et al., 2021, Fisk & Hamilton-Giachritsis, 2024). These programs clearly depend on the presence and accessibility of the sorts of green spaces in prison that are *already* supporting wellbeing in the ways we have shown.

How does green space support wellbeing?
The empirical literature and program evaluations converge on a small set of partly overlapping mechanisms. Exposure to natural landscapes is known to reduce physiological stress and to restore directed attention capacity in non-prison populations, and self-report data from prisoners suggest similarly restorative effects in custody. Collective gardening and green projects create structured social interaction, routine, and pro-social roles that reduce isolation and can de-escalate violence. Programs report improved teamwork and communication. Horticultural training can also build practical skills that increase self-esteem and prospects post-release, potentially providing a pathway from improved wellbeing to reduced recidivism risk, though long-run causal evidence here is sparse. Vegetation can also attenuate noise and capture particulates; the presence of biodiversity and lower air pollution magnify greenspace benefits, suggesting environmental quality moderates psychosocial gains (Moran et al., 2024).

The strengths of the evidence here are in the multiple complementary data sources: large cross-prison administrative datasets (self-harm and violence records), survey data on self-reported wellbeing, and detailed program evaluations provide convergent signals.

The robustness of the evidence base now enables translation into practical recommendations for practitioners and policy-makers:

1. **Protect and expand greenspace in and around prisons, prioritizing quality not just quantity**. Our analysis shows that biodiverse, low-pollution green areas confer greater benefits than close-mown lawns. Design guidance should therefore prioritize species diversity, layered planting and microhabitats compatible with security requirements.
2. **Implement and evaluate structured horticultural programs as part of rehabilitation.** Evidence from program evaluations points to psychological, social and skill-building benefits.
3. **Invest in site-level monitoring and experimental evaluation.** Green spaces improve wellbeing and are associated with lower levels of self-harm and violence, but operational security concerns are still valid. Custodial services should ideally monitor the effects of greening initiatives, allowing

robust return-on-investment analyses for estate planning.

Recent, rigorous cross-prison analyses indicate that greenspace is a credible, multi-pathway contributor to prisoner wellbeing and institutional safety. Benefits are most reliably observed where greenspace is of higher environmental quality and when green exposure is accompanied by structured programs and broader operational supports. To convert promising associations into robust policy prescriptions, custodial services could support monitoring and experimental program designs while adopting pragmatic greening and horticultural strategies now as low-risk, potentially high-return complements to other interventions.

Policymakers and designers are increasingly deploying the evidence base summarized above in the development or new prisons and the retrofit of existing ones. However, introducing green spaces into prisons is not straightforward. Operational staff have justifiable security concerns, and care must be taken to ensure that safety needs are addressed. For this reason, and to translate evidentiary insight into actionable design, I have recently collaborated with landscape architect Emma Widdop and urban ecologist Jon Sadler to develop ***Design Principles for Prison Landscapes: Security, Biodiversity and Wellbeing***.

This guide is intended as a bridge between research and implementation. It outlines practical principles for designing prison landscapes that balance wellbeing, security and ecological integrity. The Design Principles map directly to the UN Sustainable Development Goals, the UN Nelson Mandela Rules and the Bangkok Rules, and build on UNOPS *Technical Guidance for Prison Planning* and the International Committee of the Red Cross' *Towards Humane Prisons*. They are underpinned throughout by robust academic research, by reflection on many years of advising prison systems and individual prisons on inclusion of green spaces, and benefitted in draft from the critique and insight of an international expert advisory group with membership drawn from Australia, the Netherlands, France, Norway, Ireland, Sweden and the USA, as well as representatives of Penal Reform International, the UN Interregional Crime and Justice Research Institute (UNICRI) and the United Nations Office for Project Services (UNOPS).

Key features include:

- **Typology-sensitive design**: Guidance tailored for different custody categories (e.g., high security, medium, open) and incarcerated populations (e.g., mental health, older age, neurodiversity).
- **Sightlines and vegetation layering**: Recommendations for planting schemes that maintain visibility and reduce concealment risk while offering varied green experience (trees, shrubs, groundcover).
- **Biodiversity enhancement**: Strategies to incorporate native species, habitat microfeatures (e.g., pollinator beds, structural complexity) and soil health to elevate ecological value.
- **Microclimate and buffer systems**: Use of vegetative buffers to mitigate noise, dust, solar gain and wind, especially in sites near roads or polluted zones.
- **Phased retrofit and modular interventions**: Solutions for adding green space incrementally in existing prisons, with modular elements (raised planters, green screens) and flexibility.
- **Security-compatible features**: Vegetation choices and layout constraints that preserve necessary security clearances, penetration risk management and maintenance access.
- **Monitoring and evaluation linkage**: Guidance on instrumentation (air quality, noise, soil moisture,

biodiverse metrics) integrated with wellbeing and incident tracking systems.

A key component of the Design Principles is the insight that landscape design can *enhance* security rather than undermining it. Positive impacts of greenspace on wellbeing reduce violence and self-harm, thus improving the security of correctional establishments. However, the design of prison landscapes can also directly act as a security asset. Use of terrain, planting and visual design can support surveillance and help manage risk. Greenspace can therefore reduce aggression and promote calm, whilst also impeding drones, controlling movement and softening institutional environments.

For practitioners, this guide translates the statistical correlations into concrete spatial and horticultural choices. The document is designed to be a useful support at any design stage, and we suggest applying the full document alongside local site surveys, risk assessments, and multidisciplinary stakeholder input (custodial, landscape, ecology, health) as part of any greening or prison design initiative.

The Design Principles are available for free download at www.greenprison.co.uk

LIST OF REFERENCES

Farrier, A., Baybutt, M. & Dooris, M. (2019) 'Mental health and wellbeing benefits from a prisons horticultural programme', International Journal of Prisoner Health, 15(1), pp. 91–104. doi: 10.1108/IJPH-11-2017-0055.

Fisk, I. & Hamilton-Giachritsis, C. (2024) 'Positive Impacts of Prison-Based Gardening and Horticultural Activities for Previously Incarcerated Individuals', Ecopsychology, 16(2), pp. 107–120.

Lee, A.-Y., Kim, S.-Y., Kwon, H. J. & Park, S. (2021) 'Horticultural therapy program for mental health of prisoners: case report', Integrative Medicine Research, 10(2), Article 100495.

Moore, E. O. (1981) 'A Prison Environment's Effect on Health Care Service Demands', Journal of Environmental Systems, 11,17-34

Moran, D, J Turner & Y Jewkes (2016) Becoming big things: Building events and the architectural geographies of incarceration in England and Wales Transactions of the Institute of British Geographers 41 (4) 416–428

Moran, D. & Turner, J. (2019) 'Turning over a New Leaf: The Health-Enabling Capacities of Nature Contact in Prison', Social Science & Medicine, 231, 62-69

Moran, D, P I Jones, J A Jordaan & A E Porter (2021a) Does nature contact in prison improve wellbeing? Mapping land cover to identify the effect of greenspace on self-harm and violence in prisons in England and Wales. Annals of the American Association of Geographers 111 (6): 1779-1795 DOI:10.1080/24694452.2020.1850232

Moran, D, P I Jones, J A Jordaan & A E Porter (2021b) Nature contact in the carceral workplace: Greenspace and staff sickness absence in prisons in England and Wales. Environment and Behavior DOI:00139165211014618

Moran, D, P I Jones, J A Jordaan & A E Porter (2022) Does prison location matter for prisoner wellbeing? The effect of surrounding greenspace on self-harm and violence in prisons in England and Wales. Wellbeing, Space and Society

Moran, D, J A Jordaan & P I Jones (2023) Green space in prison improves wellbeing irrespective of prison/er characteristics, with particularly beneficial effects for younger and unsentenced

prisoners, and in overcrowded prisons. European Journal of Criminology 21:2, 301-325
Moran, D, J A Jordaan & P I Jones (2024) Toxic prisons? Local environmental quality and the wellbeing of incarcerated populations Land 13:2, 223. DOI: 10.3390/land13020223
Spafford, A (1991) The Prison Landscape and the Captive Audience: Is Nature Necessity or Amenity? Unpublished PhD thesis, the University of Illinois, Urbana-Champaign
West, M (1986) Landscape Views and Stress Response in the Prison Environment. Unpublished PhD thesis; the University of Washington, Seattle

About the Author

Dominique Moran is a carceral geographer and leading specialist in the relationship between the design of prison environments and the wellbeing of those who live and work within them. She has extensive experience of qualitative and quantitative research within prisons in the UK and internationally, as well as in the translation of research findings into policy advice and input into prison design both across the UK, and in contexts as diverse as Colombia and New Zealand. She is lead editor of The Palgrave Handbook of Prison Design the first collection of its kind, and has published and advised widely on the role of architecture and design in custodial contexts.

Professor Dominique Moran
University of Birmingham
Edgbaston
Birmingham
UK
B15 2TT
d.moran@bham.ac.uk