Wellbeing in prison design
A guide

Levels of guidance:

HIGH LEVEL - Masterplan

INTERMEDIATE LEVEL - Building

DETAIL LEVEL - Specifications

Limited or lack of natural light leads to sleep loss, stress and other negative effects on wellbeing

Excessive amount of barriers reduces a degree of free movement and increases a feeling of being confined

Direct artificial light increases discomfort

Limited or no views creates stressful conditions

Inadequate cell layout disables multiple activities

Inadequate ventilation and inability to control it increases discomfort and stress

Hard materials with no acoustic absorption have negative impacts on health and wellbeing

Dead-end corridors can prompt territorial behaviour

Matter Architecture
Lily Bernheimer
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Richard Barnes

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Wellbeing in prison design

Executive Summary

New Design Guidance

A team led by architecture practice Matter has developed guidance to improve the design of prisons. Setting out a series of practical design principles, *Wellbeing in Prison Design* argues that the way in which prisons have been commissioned and built in the past has proved to be a barrier to rehabilitation and the welfare of the workforce.

Report link: http://bit.ly/MatterPrisonWellbeingV1

Research and consultation

Funded by the RIBA and Innovate UK, the team has engaged with the Ministry of Justice (MoJ) Prison Estate Transformation Programme to provide independent guidance on design-related benefits within the prison environment and a method for monitoring the success of improvements over time.

The guidance uses evidence from the field of environmental psychology to specify areas of design that will support better health and wellbeing of people residing in, working in and visiting prisons. Focusing on planning processes, construction methods, layout, materials, landscape, atmosphere and accessibility, the guidance is informed by direct consultation with prisoners and staff at the UK's newest and largest prison, HMP Berwyn.

An electronic survey, to be delivered to the whole prison population at HMP Berwyn will provide a unique dataset and a means to monitor the effect of design improvements over time and across different establishments.

Recommendations

The guidance covers issues like lighting, acoustics and how design can support employment, positive choices and relationships. It aims to ensure that the design of any new prisons will help with desistance, rehabilitation and resettlement, arguing this will ultimately support its aim of reducing reoffending.

The report also makes recommendations for embedding design values in the government's commissioning and procurement process. This includes the effective engagement with local

Estimated cost per annum
of re-offending is
£9.5 - £13 Billion
source: ONS

£10Bn

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stakeholders in the design process, including governors, prison officers and prisoners; and the introduction of a Design Review for prisons. Design review is an independent process with a proven track record of increasing value in the commissioning of infrastructure and building projects and is described further in the report.

Future development

The *Wellbeing in Prison Design Guide* will continue to be refined and expanded through its intended use in the design of new prisons and its potential use in existing establishments. This guide focuses on prison architecture, but sits within a broader set of initiatives to promote prison reform through design, including:

RSA Transitions: Building a Rehabilitation Culture , which sets out a social enterprise model for the re-use of MoJ assets to deliver rehabilitation outcomes (RSA 2014).

The New Futures Network, a proposal for a new body to support practical innovation and prison reform.

How to use the report

The full report is organised as a set of semi-independent documents, or chapters. We anticipate there will be a wide range of interested audiences and so we have chosen to publish the full range of work undertaken in developing this first design guidance. The guide is currently neither complete nor comprehensive, but is set out as a demonstrator of how evidence can be applied through design to contribute to better outcomes. A chain of evidence is created through the set of chapters so that the basis for design improvements is made explicit and so that the guidance can be updated over time. New evidence from the electronic prison surveys currently underway will also be incorporated over time as well as acting as a monitoring method for implemented design measures. The design guidance itself is contained in chapter 4 so that it may be used independently as a reference document, via the hyperlinks on the contents page.

Wellbeing in prison design

Contents and navigation

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Matter Architecture and the authors assert all rights, including intellectual and copyright to the contents of the work. The work is offered freely to prison commissioners, designers and operators for use in their normal design, retrofitting and adaptation projects, providing that these rights are acknowledged and not adversely affected and that feedback is provided to the team to help improve the design guide.

Additional support to prison design and construction professionals is available via consultancy. Please contact Roland at Matter for details.

Matter Architecture

Matter Architecture is a new practice, formed in 2016 by Roland Karthaus (formerly principal of Karthaus Design) and Jonathan McDowell (partner McDowell and Benedetti 1996-2016).

Our buildings aim to be uplifting, responsive to their context and enduring for people to use and enjoy for the long term. We avoid narrowly specialising so that our mix of work makes for a rich and creative environment in which every project is unique and benefits from a breadth of knowledge and research.

An RIBA Chartered Practice, Matter works on a wide range of projects across all building types and scales, for public, private and trustees clients. These include community and education projects, housing, commercial, infrastructure and bridges, public realm, urban design and masterplans.

The team

The *Wellbeing in Prison Design* project has been developed collaboratively by a multi-disciplinary team, led by Matter including: Spaceworks Consulting, an environmental psychology practice working in the built environment; Rachel O'Brien consultant specialising in prisons policy and engaging prison-users and staff; and RP Barnes Associates (RPBA), a justice consultancy with expertise in service-providers operating inside and outside prisons. The composition of this team and the methods employed are intended to incorporate wider experience and knowledge into the process of designing prison buildings, whilst focusing on achieving changes through physical design measures.

Roland Karthaus, Director, Matter Architecture

Roland Karthaus co-founded Matter Architecture with Jonathan McDowell in 2016. He has been a registered Architect since 2002, a Member of the Royal Institute of British Architects, an RIBA Client Adviser and a member of the RIBA Planning Group. He is a Fellow of the RSA and a Design Council Built Environment Expert. Matter's Lucy Block and Anthony Hu worked together with Roland and the University of East London's Agata Korsak to conduct the work.

Lily Bernheimer, Director, Space Works Consulting

Lily Bernheimer is an environmental psychologist and founding director of Space Works Consulting, which works to make human environments work better for people. Her first book, *The Shaping of Us: How Everyday Spaces Structure our Lives, Behaviour, and Well-Being*, was published by Little Brown in 2017.

Rachel O'Brien, Prison reform consultant

Rachel O'Brien has led the RSA's work on prisons for the last 10 years. She co-authored with Karthaus *RSA Transitions: Building a Rehabilitation Culture* (RSA 2014) and, with Jack Robson, *A Matter of Conviction* (RSA 2016). Rachel recently completed work on a proposal for a new body to support prisons and their partners in reform (*The New Futures Network*, RSA 2017).

Richard Barnes, Director, RP Barnes Associates

Richard Barnes is a justice consultant and social entrepreneur. He is working to create new employment and social inclusion opportunities for prisoners and people with convictions in the community. His current interests range from prison design conducive rehabilitation environments, creating a whole system rehabilitation culture and effective partnership working.

Wellbeing
in prison design

Introduction, context and scope

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Contents

Abstract

This chapter forms part of Matter's *Wellbeing in Prison Design* project that seeks to develop an evidence base for improving prison design through the application of environmental psychology.

The context of the project, the aims, objectives and scope, as well as the fieldwork and engagement process that have led to the development of the design guide are described here.

The views in this report are those of the authors.

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1.1 The policy context

When it comes to reforming the prisons of England and Wales, the last few years can seem like a series of false starts. When the Queen's Speech in May 2016 led on prison reform, there seemed reasons to hope that we had reached a tipping point where common sense would trump long-term, cross-party political nervousness.[1] The then Lord Chancellor and Secretary of State, Michael Gove signalled a renewed emphasis on prisons' rehabilitative role and promised to tackle the deeply centralised and over bureaucratic processes of what was the National Offender Management Service (NOMS), creating a leaner, clearer central leadership coupled by greater autonomy for prison governors.

Gove's vision was radical and controversial. Influenced by his experience of academy schools when education minister, he set up the Coates review of prison education, emphasising the need for higher aspirations in learning and employment, giving governors control over education budgets and proposing prison league tables.[2] Most radically, he intended to enable prisons to be established as independent legal entities with the power to enter into contracts, generate and retain income and establish their own boards with external expertise. Six reform prisons were created to test and drive change.

Gove was replaced by Liz Truss in July 2016 in the wake of the EU referendum result. The reform agenda continued, albeit with less emphasis on prison autonomy. In November 2016, the government published its *Prison Safety and Reform White Paper* and the subsequent *Prisons and Courts Bill* was welcomed by some as potentially an historical shift in thinking about the purpose of prisons and how they are run. Two key elements of the bill were

"… the vast majority of prisoners will at some point leave jail and rejoin our communities, which is why what happens inside matters to us all. And it's why, when offenders are sent to jail, they should be held in conditions that help them turn their lives around."

David Lidington, Lord Chancellor and Secretary of State for Justice, Evening Standard, 14 August 2017

broadly welcomed. First, was the attempt to define in law the purpose of prisons to include rehabilitation and preparation for release. Second, were the proposed strengthening of the power of Her Majesty's Inspection of Prisons and the Prisons Ombudsman. Alongside the proposed legislation, changes were made to the structure and nature of NOMS; it was replaced in April 2017 by Her Majesty's Prisons and Probation Service (HMPPS) focused on operational delivery, with policy led by the Ministry of Justice (MoJ). The *Bill* was scrapped soon after the recent general election that resulted in David Lidington becoming the third person to hold the post of Lord Chancellor and Secretary of State for Justice since 2015.

Just a month in to office, Her Majesty's Inspector of Prisons' (HMIP) latest annual report would have crossed the new Secretary of State's desk.[3] It concludes that prison reform would not succeed unless the violence and prevalence of drugs in jail are addressed and prisoners are unlocked for more of the working day. In August, the President of the Prison Governors' Association expressed her grave concern about the state of the service and arguing that the operational and policy split between HMPPS and MoJ was exacerbating problems.[4] Meanwhile, the work done by the RSA on creating a new body to support reform – the *New Futures Network* – revealed governors' concern that far from relinquishing central control, the watered down reform agenda and new HMPPS structure struck the wrong balance between accountability and freedoms.[5] Despite securing funding for an additional 2,500 frontline staff, the prison service is struggling to recruit and train staff fast enough to compensate for those officers leaving.

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1   Queen's Speech, 18th May 2016

2   Coates, 2016

3   HM Chief Inspector of Prisons for England and Wales, 2017

4   Prison Governor's Association

5   O'Brien, 2017

Like his immediate predecessors, Lidington acknowledges that there are deep-seated challenges that successive governments have failed to tackle. He has also said that he wants to see the number of people in prison reduced. Despite this, during the summer the MoJ released figures that show it is projecting that the prison population will rise by an additional 1600 people between 2019 and 2022; on 10 November 2017, there were 86,163 people in prison.

New prisons

In November 2015, Chancellor George Osborne, announced that £1.3 billion would be spent on building 10,000 new prison places, many replacing provision in out-dated prisons that would be closed. The new establishments announced to date, look set to be on a smaller scale than the UK's largest and newest prison, HMP Berwyn, with which this study has worked.

Driven by frequent reminders about the decline of safety in some prisons, the public debate about reform has focused on the need to reduce the size of the prison population, for additional resources, and for clear, consistent political leadership and an operational culture that empowers governors and staff. Although the discussion amongst governors, officers and prisoners tends to be more nuanced, the public debate has had less to say about the government's plans to build new establishments or about the relationship between buildings, design and how these factors impact all those inside prisons – whether working or living – their families and agencies working inside. There is some evidence

The prison system has been overcrowded in every year since 1994. Overcrowding affects whether activities, staff and other resources are available to reduce risk of reoffending, as well as distance from families and other support networks

Source: Prison Reform Trust Bromley Briefing 2017

and substantial agreement that smaller prisons work better. For example, unpublished data analysed in a Prison Reform Trust 2008 report showed that larger institutions are consistently poorer at meeting prisoners' needs than smaller ones.[6]

This report, and the project it forms part of, seeks to make a contribution to addressing these questions with the aim of influencing the future commissioning of prisons. In the wake of the HMIP annual report, Lidington announced that, in the absence of legislation, the MoJ will take the recommendations of reports made by the Inspectorate more seriously, setting up a new unit to ensure a "timely" response to reports and explain when they do not accept recommendations. It is worth noting that in setting out its expectations for prisons, HMIP uses four 'healthy prison' tests that have some overlap with the criteria we focus on here:

• Safety – prisoners, particularly the most vulnerable, are held safely.

• Respect – prisoners are treated with respect for their human dignity.

• Purposeful activity – prisoners are able, and expected, to engage in activity that is likely to benefit them.

• Resettlement – prisoners are prepared for their release into the community and helped to reduce the likelihood of reoffending.

Our starting point chimes with the current reform agenda's emphasis on the need for prisons to become places of progress that promote active citizenship and to use David Lidington's phrase, provide the conditions that help people turn their lives around. These questions are being addressed in a context

6   PRT Briefing, 2008

where too often public debate still suggests there are binary choices: between 'hard' and 'soft' regimes; between security and rehabilitation; between stability and reform. Given the state of many of our prisons and the harm this is bringing to those who live and work in them, there are those who may see the questions that we explore in this report at best for another day and at worse, irrelevant. Instead, some conclude that the only way to address the current challenges facing the service is to drastically reduce numbers. Others argue we need tougher regimes. Some conclude that nothing can be done.

Aside from the defeatism of the last of these positions, all have some merit and their own internal logic. The prison population is too high and set to rise. Too many prisons are overcrowded and there are people inside that should not be. The government has not removed the huge challenge of recruitment and retention of frontline staff. While those who call for harsher regimes could do well to visit our prisons and spend time with the staff and prisoners there, we do need staff that have authority. But we need to look at the evidence of what works best in gaining this. There are plenty of brilliant governors, officers and prisoners working together with sensitivity and some success. As any good governor will tell you, alongside security, prisons need to be run by consent and that is being sorely tested in some establishments with tragic consequences. Authority comes through building strong relationships, through mutual respect, high-levels of trust and by giving people – staff and prisoners – a higher sense of purpose and hope.

Prisons are closed, restricted communities and as such the way they look, feel, are designed and built has enormous impact on those inside.

The risk is that if we abandon belief in deeper reform, seeing this as a distraction rather than something that has to happen alongside getting the basics right, we risk embedding the fatalism that many in the service already feel. The evidence suggests that when any institution becomes dominated by a culture of fatalism, blame and opposition can become the norm and culture becomes very hard to shift. Counter-intuitively, progress seems to rely on reaching for a higher purpose.

We would argue that in reaching for this higher purpose we need to change the way we think about the contribution that design and buildings can bring. While prisons are narrowly associated with punishment, it is the removal of people's liberty and the restrictions on them that – in theory at least – forms that punishment. Prisons function 24 hours a day, 365 days a week; are places of work for staff and prisoners; and are charged with providing opportunities for education and skills development, healthcare, behavioural interventions, accommodation, food, contact with family and other basic needs. Prisons are closed, restricted communities. As such, the way they look, feel, are designed and built has enormous impact on those inside. The nature of this impact will depend upon a range of factors including whether the spaces provided – old and new – allow for strategies of choices to be maximised, giving people as much autonomy as possible in constrained conditions; whether they create the right conditions to care for a population that includes increasing numbers of older people and those with multiple needs; and whether they signal to those that live and work in prison that they are valued and to those in the community that they have a role to play.

1.2 Aims and objectives

The aim of the *Wellbeing in Prison Design* project is to improve the environment of prisons for all their users, through informing adjustments to their architectural design with the overall objective of supporting rehabilitation and resettlement to reduce re-offending. The design of prisons is complex and requires specialist knowledge about their operational, safety and security requirements. Within the context of prison reform to improve rehabilitation outcomes, the current prison design parameters and process are considered to be lacking as they do not result in environments that support rehabilitation. In addition to the operational requirements, other standards that should in theory apply to all prisons are not always applied in practice in the UK, even in newly built establishments, including the UNODC Mandela rules[1], building regulations and non-compulsory but relevant guidance on the design of education spaces, etc.

The objective of the *Wellbeing in Prison Design* project is not to incorporate, nor to supplant these existing standards, but to develop additional guidance aimed at improving the health and wellbeing of those people working in, visiting and residing in prisons. The link between health and wellbeing, and rehabilitation and resettlement is expanded on in chapter three. The existing standards provide for the simple, functional requirements of a prison to safely hold people in custody and for basic welfare, staff working and prisoner facilities; but not more than this. The output of the *Wellbeing in Prison Design* project is guidance intended to bring evidence from the field of environmental psychology to bear on prison design, to move beyond this basic provision towards environments that can support the rehabilitative activities

Health and wellbeing are considered as prerequisites to enable rehabilitation and successful resettlement.

envisaged in the prison reform agenda. These include:

- A different relationship between prisoners, officers, staff and service-providers to enable supporting pathways for rehabilitation and resettlement to be developed.

- Reducing and mitigating the long-term stress levels of all the users of prisons.

- A better relationship between prisons and their surrounding communities, supporting pathways to resettlement.

Environmental psychology in prisons

Environmental psychology does not propose a straightforward causal connection between characteristics of the environment that are sensed by individuals, and their physiological responses. What it does reveal are the correlations, the links, between the built environment and people's wellbeing and to identify the key aspects that appear to have greatest impact. For some issues, such as overcrowding, there is a vast body of experimental evidence and correlational research in a range of environments demonstrating that people tend to engage in more anti-social behaviours when overcrowded. Likewise, lower levels of privacy in residential prison environments have been linked to higher-level use of health care services.

In these cases, it is possible to speak with greater certainty about the connections between environments and behaviour; some of the ways human beings respond to their environments are theorised to have developed due to evolutionary pressures over

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1   The recently revised United Nations standard minimum rules for the treatment of those held in prisons (Nelson Mandela rules) set out the minimum rights and standards that should be afforded to those in the care of the state and over a range of issues, including: hygiene; the provision of nutritious food, sleeping arrangements (stipulating that only one person should be housed in each cell); access to and provision of healthcare, the use of solitary confinement and so on. See Penal Reform International "The Mandela Rules: an animated introduction" for summary. https://www.penalreform.org/news/10071/

thousands, even millions of years and as such are universally relevant, regardless of individual characteristics. At the same time, human physiology at any point in time is affected by many more factors than only the current environment. For example, a person may have a pre-existing health condition that makes them more sensitive to stressful conditions.

Prisons are inherently stressful environments and people on custodial sentences are over-represented with health and other special needs. Long-term stress has significant, negative effects on people's health and wellbeing, so reducing stress through environmental adjustments to a prison seems a sensible measure. However, prisons are highly unusual environments, and the combination of specific requirements and over-representation of residents with health and other complications or pre-dispositions means that simple, universal measures for reducing stress may not apply in the same way.

Likewise, the design of prisons impacts significantly on operational issues. A category 'A' or 'B' prison 'rerolled' as a category 'C' or 'D' establishment will face huge cultural challenges in shifting staff behaviour in relation to issues like free movement and security. Buildings can play a huge role in either enabling this shift to take place or acting as physical barrier to change.

All these factors make generalisations difficult and unwise. These are sophisticated design issues and part of the purpose of this project is to reveal some of the complexity of considerations that are required to be integrated in the design process. Part of the critique of the project is to highlight the need for a greater variety of environments within prisons, to deal with the diverse

The purpose of this project is to reveal some of the complexity of inputs that are required to be integrated in the design process.

and complex needs of the population. Prisons are also amongst the least adaptable of buildings, whilst the demands placed upon them are continually changing. Well-designed buildings should support those that operate and use them to deal with these changing demands and this is a key area where prison design can be much improved.

Existing research on prison environments

An established field of research into the application of environmental psychology to prisons exists within a wider body that incorporates organisational and other factors, known as 'situational' design. Mainly, the objectives of this research are to reduce violence and self-harm within prisons: effectively, pacification. The *Wellbeing in Prison Design* project is focused on enabling supportive environments for pro-active engagement with rehabilitation and resettlement activities. Philosophically, this is based on the principle of helping those in prison return to society as citizens with autonomy. It is important to note however that citizenship is only possible in environments that are relatively safe and stable, and so the existing body of research remains pertinent though it has been mainly undertaken in prisons in the US, where the penal system is quite different from the UK.

Wider context

At the time of writing, the prison service can appear to be on the brink of a crisis. Although some establishments remain relatively stable, a severe reduction in staffing numbers has resulted in deep

frustration amongst prisoners and staff, and major disturbances in several prisons have occurred against the gradually worsening backdrop of self-harm and individual cases of violence. The Chief Inspector of Prisons concluded the prison reform agenda depends upon tackling some of these deep-seated issues.

Within this context, it is important to emphasise the limitations of this work and indeed the limitations of buildings themselves in delivering on the objectives of reducing reoffending. The philosopher Michel Foucault, who studied penal history at length in the 1960s and '70s, observed that the architect can only support or work against the objectives of 'liberation', never achieve them alone. For our purposes, we might re-appropriate his term to mean rehabilitation or resettlement. At its most successful, this *Wellbeing in Prison Design* project will not improve outcomes in isolation, but if outcomes are to be significantly improved, then the design of prisons must be improved. As the last two years have starkly shown, policy and politics can change rapidly and operation also changes on a cycle that is much faster than buildings; a longer-term approach is therefore both challenging and essential.

The psychological potential of design

The infamous 'panoptican' designed by Jeremy Bentham in the 19th century used the architectural configuration of the prison to trigger psychological responses in the prisoner such that they would in effect, become agents of their own subjugation. The tentative potential of environmental psychology is for the architecture of prisons to trigger more positive responses,

Policy and politics can change rapidly and operation also changes on a cycle that is much faster than buildings; a longer-term approach is therefore both challenging and critical.

supporting individuals' journeys to resettlement. Whilst direct evidence of such architectural effects are difficult, if not impossible, to disentangle from the complexity of the prison experience, they are well developed in other areas of public facilities design, such as schools, hospitals and libraries. The complexities of the prison design challenge are crying out for similarly creative responses, but to date the procurement process and relentless downward pressure on costs has made this all but impossible. By giving weight in terms of rehabilitation benefits to specific design measures, the *Wellbeing in Prison Design Guide* aims to enable the rebalancing of the value of design in this process.

Innovative precedents and case-studies

There has been very little design innovation in prison architecture over the past 50 years in the UK. Exemplars from abroad have been much publicised, such as Halden in Norway, but the significant differences in social, political and economic context make their relevance limited. More directly applicable is the recently built HMP Low Moss in Scotland. Significant areas of design innovation have been achieved here, but are mainly restricted to the non-residential areas of the prison. It is also relevant that the Scottish Prison Service has devolved power over the commissioning of prisons. In England and Wales, the nearest comparator is HMP Berwyn, which opened in 2017. In undertaking our research, several study visits have been made to HMP Berwyn, with full engagement of the staff and peer mentors from amongst the population. HMP Berwyn is considered as a 'baseline' level of design, beyond which improvements are proposed.

Architecture and technology

It is also worth touching on the impact of technology within the operation of prisons. HMP Berwyn provides a laptop to each man in custody, through which educational resources and an internal network can be accessed. This is used for ordering meals etc. and is being utilised by the *Wellbeing in Prison Design* project to undertake an electronic survey. There is much greater potential for the use of technology, in particular in areas of interest to this project, such as prisoner autonomy. Currently in HMP Berwyn, a system of hand-written 'passes' is in operation, for limited free movement between the houseblocks and facilities. This seems an obvious area of opportunity for the use of electronic access controls that are in use in other countries. Technology changes at a much faster rate than the physical fabric of buildings and so architecture must allow for technology in an adaptable way. The *Wellbeing in Prison Design* project design guidance does not make specific recommendations for the use of technology, but technology will form part of the response to many of the issues raised. A further note of caution is that there is a risk of technology enabling a reduction in staffing resources and reduction in free movement outside of cells as more services are delivered remotely within the cell. Some degree of autonomy on-line is not the same as physical autonomy.

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1.3 Scope

The *Wellbeing in Prison Design* guide is neither fully comprehensive nor universally applicable at this stage. The genesis of the environmental psychology-based guidance is described in the following chapters. It has developed in parallel with the MoJ Prison Estate Transoformation Programme's (PETP) current procurement process in order to provide the opportunity for PETP to test and refine the guidance through application and so that they can be used to monitor and report on the benefits arising from design measures. The aim is for the design guide to expand to become both more comprehensive and more widely applicable over time; for the adaptation, expansion or refurbishment of the existing prison estate.

Design guide structure

The design guide is structured as a framework that connects evidence of environmental parameters with specific design issues in prisons. Reviewing these issues as part of the design process is intended to enhance the already developed new design guidance to incoporate psychological factors and drive up the quality of design proposals, rebalancing their value in relation to the existing pressures of security and budgets. The design guide is not intended to be a 'tickbox standard', but through a process of application and testing, the degree to which the design issues are being addressed can be assessed as part of the procurement process. This means that in order for the construction programme to contribute towards the identified benefits of rehabilitation, designs must respond to the issues raised through the design guide. It is therefore a catalyst for more thorough, integrated and innovative design thinking, rather than a substitute for it.

The design guide is a catalyst for more thorough, integrated and innovative design thinking, rather than a substitute for it.

Assumptions and exclusions

Alignment with the current PETP programme means that some strategic-level decisions and assumptions already taken are not addressed. These will be revisited as the scope is reviewed and refined:

- **Scale and location:** there is strong evidence and consensus that smaller, more local prisons support resettlement.

- **Relationship with the outside:** there is strong evidence and consensus that Release On Temporary Licence (ROTL) provides crucial pathways into employment for people in custody. The use of ROTL has stalled recently, due to a small number of high-profile ROTL failures. Whilst these were serious incidents, the rehabilitation cost of restricting ROTL in response across the board has not been properly considered. Aside from these changes in policy, not enough emphasis is being given to enabling ROTL through architecture. Although ROTL is an operational policy matter, the way that the prison relates to its context, surrounding communities and visitors is directly relevant to our work.

- **Adaptation and decommissioning:** if prison reform is successful, the logical consequence is that the prison population will reduce, something recently overtly stated as a goal by the Secretary of State. Prisons are highly-specific, inflexible structures that are difficult to partially decommission or 'mothball'. Once again this is an area somewhat out of scope of a study focused on environmental psychology, but the importance of 'future proofing' significant public facilities

such as prisons cannot be overstated in terms of long-term performance.

- **Purpose of prison:** an overarching question remains contentious: 'what is prison for?' The dual requirements of securing people away from society and preparing them for re-integration can be antagonistic. Some argue that true prison reform requires a shift to a much greater use of 'open' category D prisons and other types of sentence. This project is intended to intervene in the status quo, but allied to the issues of adaptation and future-proofing, the consensus around the purpose of prison may change over time, revealing the inflexibility of our current phsyical estate.

- **Operational matters**: the current prison design process incorporates input from operational specialists and is tested using latest staff resourcing models. This is an important part of the design process and an area where prison design has been lacking in the past. Our project has benefited from this interaction, but as a result has embedded current assumptions that may change over the longer term. Once again, the issue of adaptability is raised and whilst it is important that buildings are designed to support operational patterns, they should also be tested against different operational circumstances to ensure their resilience.

This project is intended to intervene in the status quo, but allied to the issues of adaptation and future-proofing, the consensus around the purpose of prison may change over time, revealing the inflexibility of our current physical estate.

Categorisation within the prison estate

As noted in the introduction, the characteristics and needs of the prison population are extreme, diverse, mulitple and complex. At the higher level, the prison service provision is categorised as follows:

- Risk categories A (highest risk) to D (lowest risk)

- Men's estate (majority) and Women's estate (minority)

- Youth estate

- Within these exist separate units for segregation of particular prisoners and temporary separation of individuals from the main population

At this stage, the design guide is focused on new category C prisons within the men's estate, however the environmental psychology on which it is based is more broadly applicable and the intention is to review and expand it for use across other categories and for existing establishments.

Operational design and technology

As noted, the design guidance is informed by current operational design, but endeavours to remain neutral, focusing on the physical qualities of the spatial design and the types of interactions, or opportunity for seclusion that may be supported. This relationship between building design and supportive environment is a complex one and has both literal aspects relating to predicted activities and transactions within operational planning and more nuanced, qualitative dimensions that are more difficult to isolate but are

equally important to the overall role that the building plays. A similar approach is taken in relation to technology: emerging technology use is considered and will form an important part of design responses, but is not specified in the design guidance. In practice, prisons are not early adopters of technology and so the incorporation of new technologies into the use of buildings will be first tested in other environments, albeit with different requirements. The high-security requirements and literally 'heavy' construction techniques of prison buildings mean that retro-fitting technology is expensive and difficult if not 'future-proofed'.

Three levels of guidance

In order to establish the design guide for testing, three 'levels' of design issues have been identifed: a high, strategic level; an intermediate level and a specific, detailed level. Within each of these levels, the contents have been selected for the design guide according to priority of need and ability to make change, with the intention that these will be expanded in future. As noted earlier, HMP Low Moss demonstrates that design innovation can be applied to the non-residential parts of the prison, such as the staff and entrance facilities, the education building and so on. The prisoner accommodation or houseblocks are therefore prioritised (though not exclusively) in this design guide as areas in most urgent need of design attention.

1.4 The journey

Hypothesis

The contention that this project rests on is that knowledge from the field of environmental psychology, informed by specific prison research can be applied to the design process to produce architecture that is more supportive of health and wellbeing. In turn, it is argued that this enables stronger capacity and capabilities (potential) for resettlement of individuals in custody, as well as improving their ability to engage with the support services and training programmes that are delivered within prison.
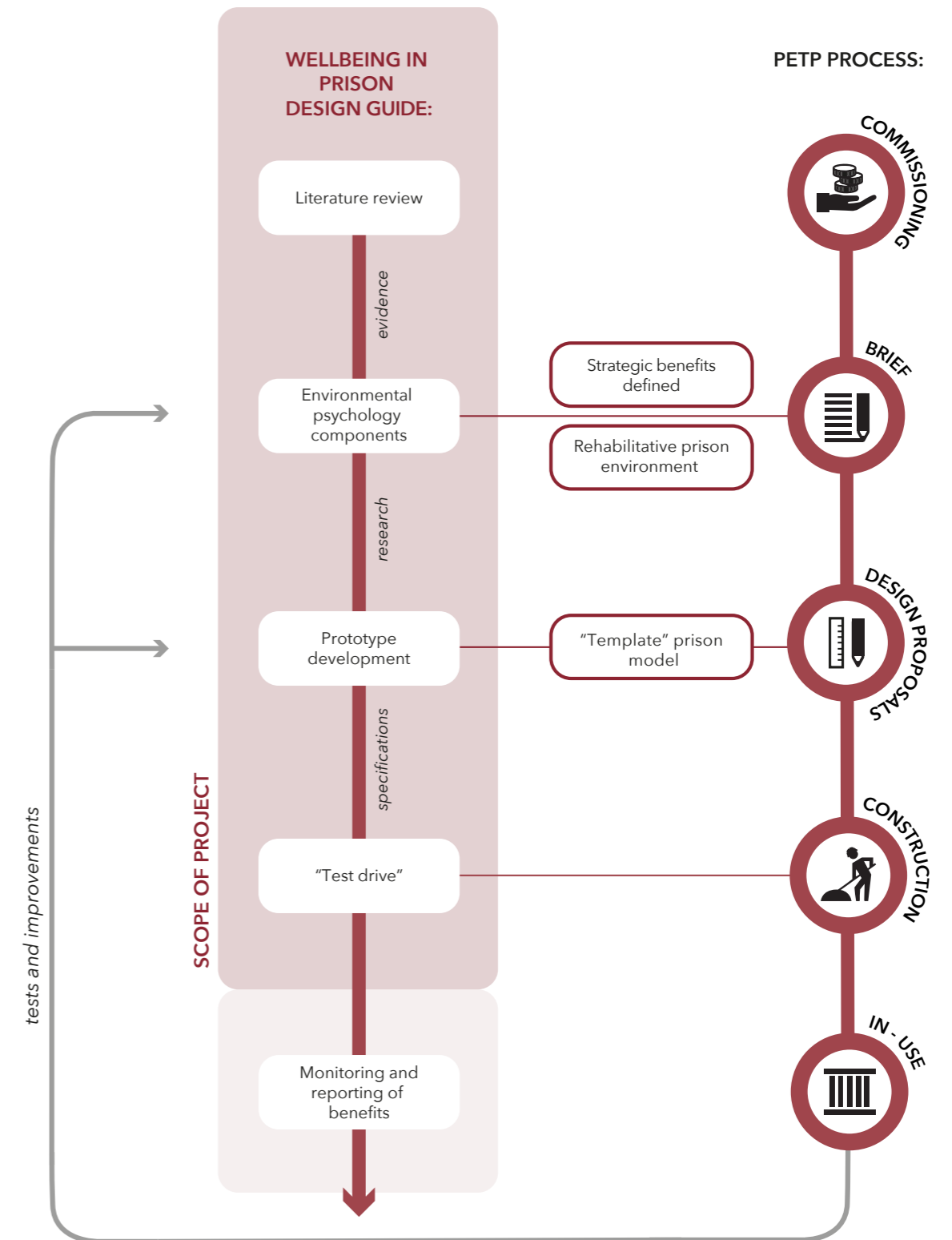
The brief

The *Wellbeing in Prison Design* project evolved from broader research into the principles of prison design, supported by the RIBA Research Trust. In turn, this developed from a previous project titled - *RSA Transitions*[1]. This work explored the potential for putting Ministry of Justice (MoJ) land and building assets to more productive use. The *Wellbeing in Prison Design* project is therefore part of a wider, ongoing review of the role of physical assets within the prison reform agenda. Parallel work on the policy and operational changes needed for reform is being developed by the New Futures Network, launched recently by O'Brien and Dow at the RSA[2]. These parallel strands of work can be thought of as the 'hardware' and 'software' of the prison service that need to develop together to enable and implement change and learn from one another.

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1   O'Brien and Karthaus, 2014

2   https://www.thersa.org/action-and-research/rsa-projects/public-services-and-communities-folder/new-futures-networks

matter

This network formed the basis for a round-table discussion held at HMP Askham Grange in December 2016, at which the need for improved design guidance to refocus on rehabilitation outcomes was identified. The MoJ's PETP team shared their thinking to date on design development and their plan for the delivery of rehabilitation benefits through the new prisons construction programme. This enabled the *Wellbeing in Prison Design* team to target the work of the project to provide additional inputs into the existing process and to link these to the benefits on which the programme would be measured. These circumstances provide a unique opportunity to engage with a live process in which meaningful change may be implemented. On this basis, an application was made to Innovate UK for early design funding, which was awarded to develop the pilot. Further meetings with the PETP team have continued on a monthly basis during the design period. For this reason, the design guide is focused on the areas that have been identified as priorities and has been 'mapped' onto the MoJ specification documents so that it may be incorporated as requirements for new prison design. The design guide is designed to be 'test-driven' through the current procurement process, so that it can be refined as well as expanded for broader use. The electronic survey, piloted in HMP Berwyn, is intended as a long-term generator of new evidence for improvements in prison design.

WELLBEING IN PRISON DESIGN GUIDE:

PETP PROCESS:

COMMISSIONING

Literature review

evidence

Strategic benefits defined

BRIEF

Environmental psychology components

Rehabilitative prison environment

research

DESIGN PROPOSALS

Prototype development

"Template" prison model

specifications

SCOPE OF PROJECT

"Test drive"

CONSTRUCTION

tests and improvements
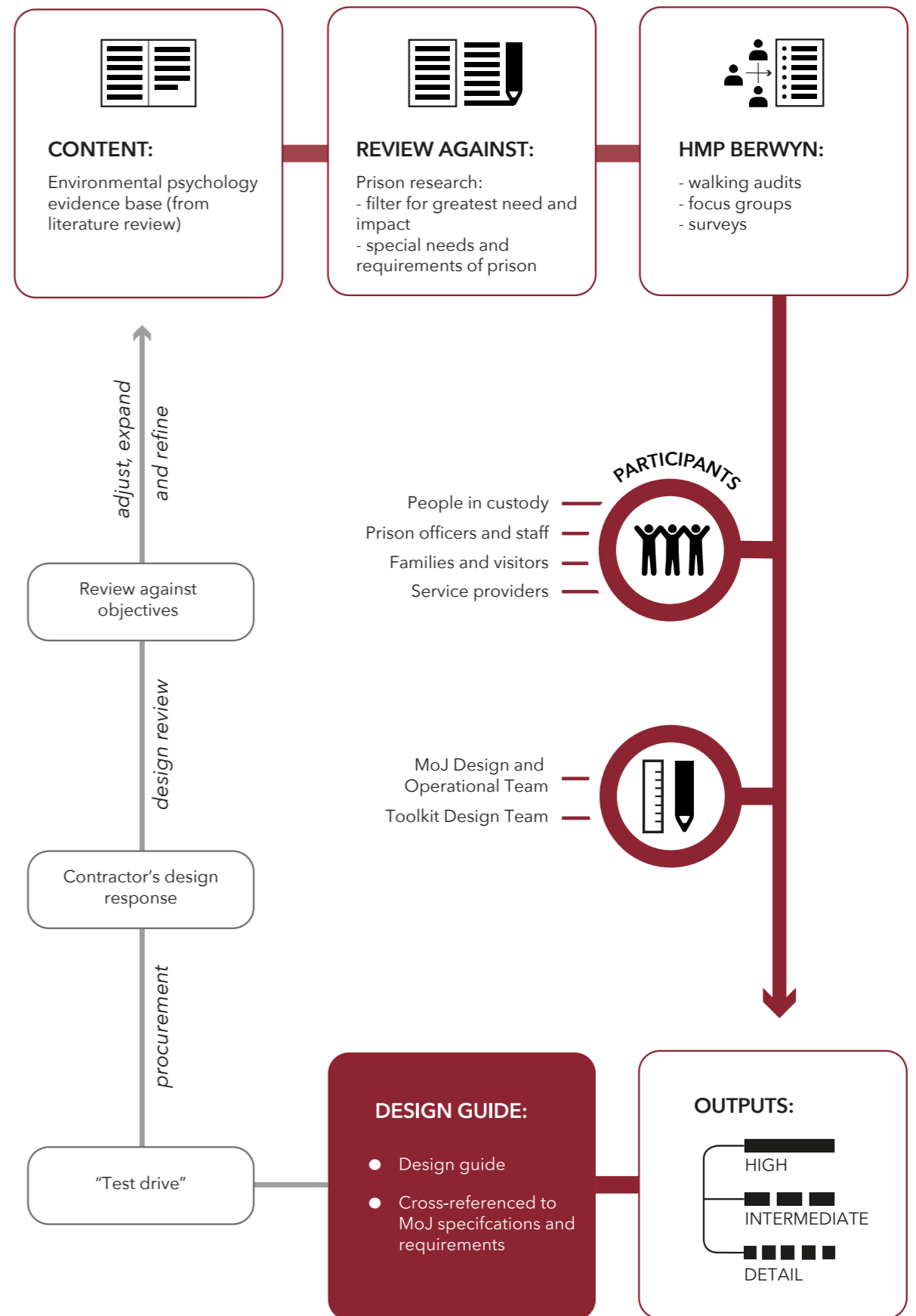
Monitoring and reporting of benefits

IN - USE

1.5 Process

The design guide has been developed primarily through desktop research, drawing on a body of knowledge from the field of environmental psychology and using existing prison research to 'filter' this information for appropriateness and relevance as far as possible in the limited project period of six months.

HMP Berwyn is the UK's newest prison, having opened during the period of the project and so the team took the opportunity to 'sense test' the emergent thinking with the institution's staff and men in custody. A follow-up electronic survey provides some tentative primary data to inform the process, but the aim is to avoid specific responses to a particular situation and so the primary evidence is treated as purely informative in the design guide at this stage. Over time, this survey input can be used to expand the evidence. It should be noted that the team did not investigate the basis for decision-making in past designs, but only the buildings in their current use. The findings are therefore not a lessons-learned exercise, but merely highlight issues arising that may be taken into consideration in future design work.

A further purpose of this fieldwork was to demonstrate the value of engaging with qualitative post-occupancy feedback. Amongst the findings in Berwyn are some areas of poor staff welfare provision, and problems regarding environmental comfort for all users of the building. This is already having identifiable, detrimental effects on the operation of the establishment. These same issues are encountered in other relatively new facilities and anecdotally reported as problematic, so the opportunity for iterative feedback could be improved. Equally, there are successful design measures that are clearly assisting the building-users in their work on a daily basis and these should be identified and valued. The fieldwork is described in the chapter three.

CONTENT:
Environmental psychology evidence base (from literature review)

REVIEW AGAINST:
Prison research:
- filter for greatest need and impact
- special needs and requirements of prison

HMP BERWYN:
- walking audits
- focus groups
- surveys

adjust, expand and refine

design review

procurement

Review against objectives

Contractor's design response

"Test drive"

PARTICIPANTS

People in custody
Prison officers and staff
Families and visitors
Service providers

MoJ Design and Operational Team
Toolkit Design Team

DESIGN GUIDE:
- Design guide
- Cross-referenced to MoJ specifcations and requirements

OUTPUTS:
HIGH
INTERMEDIATE
DETAIL

1.6 Reference List

Coates, S. (2016). *Unlocking Potential: a review of education in prison*. London: Ministry of Justice.

HM Chief Inspector of Prisons for England and Wales (2017) *Annual Report, 2016 –17*. London: HMIP.

O'Brien, R. and Karthaus, R. (2014). *Building a Rehabilitation Culture*. London: RSA.

The Prison Reforms Trust (2008) *Titan Prisons: A Gigantic Mistake*. London: The Prison Reform Trust

Wellbeing
in prison design

2

Environmental evidence base

Matter Architecture

Lily Bernheimer

Rachel O'Brien

Richard Barnes

matter
ARCHITECTURE

Contents

Abstract

This chapter forms part of Matter's *Wellbeing in Prison Design* project that seeks to develop an evidence base for improving prison design through the application of environmental psychology.

A literature review summarises the environmental psychology evidence base. The evidence base is tabulated and cross-referred to in the design guide by means of hyperlinks.

The views in this report are those of the authors.

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2.1 Literature review

The following review of existing research presents a broad overview of evidence on the environmental parameters relevant to human well-being in built environments. In order to avoid being restricted by the constraints of conventional prison design standards and assumptions, this review covers a wide-ranging array of human and environmental factors related to wellbeing. In some areas such as territory, crowding and layout, we have also included insights from the rich body of evidence investigating the dynamics of these issues as they play out more specifically in the design and management of prisons. Research indicates that prison environments play a significant role in the well-being of those who live and work in them - both directly and through environmental mediation of social and behavioural dynamics.

While prison design has historically sought to deprive incarcerated persons of their 'sense of self', recent findings suggest that supporting a strong and positive sense of identity is critical to the rehabilitative function of these spaces. Especially for those serving short sentences or nearing the end of longer terms, incarceration environments fostering a sense of 'normality', autonomy, positive growth and constructive social interactions are key to successful re-integration in society.

Understanding people, place and purpose dynamics

In assessing the overall wellbeing of an organisation like a prison, environmental factors can be understood to impact individual and group wellbeing and behaviour on three different levels.[1] At each of these levels, it is important to consider what the broader wellbeing evidence tells us, but also whether a given design is a good fit for the people and purpose of that space:

- Physical: Traditionally called 'hygiene factors', issues like good air quality, moderate temperature and cleanliness impact our wellbeing on a basic physical level and have historically been given the most attention.

- Functional: Issues like layout, space allocation and sociofugal (pulling apart) versus sociopetal (pulling together) design affect our performance on a functional level – whether the space is well designed for the kinds of activities that take place there.

- Psychological: Sitting above the first two layers is the consideration of how factors like colour, texture, light quality, dimensions and the general look and feel of a space impact our mood, concentration, productivity and identity and how this matches the purpose of the place. Calming ambient lighting and rounded tables may not be well-suited to the competitive and high-stress requirements of an exam room, for instance, but may help foster positive social relationships in a prison visitors' centre.

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1   Vischer, 2008

Outcomes

Human factors

The wellbeing outcomes of environmental parameters are mediated by human factors such as physical health determinants and personal space needs.[5]

Physical

Living, working and institutional environments must support health at the basic physical level in order to foster overall wellbeing and rehabilitation. Failure to provide basic facilities such as adequate sanitation supplies can have a broader detrimental effect on wellbeing via secondary problems likely to result from psychological distress. In one American study, staff members reporting poorer conditions in the prisons they worked in took more sick leave and were more likely to have increased levels of drinking and smoking.[2]

- Sleep: Sleep deprivation has a negative impact on physical and mental health as well as mood and behaviour.

- Fitness: Daily physical activity has a positive impact on physical and psychological wellbeing. Physical activity can be encouraged through 'active layout' (interior layouts and site configuration leading occupants to use stairs etc.) as well as accessible and appropriate athletic facilities.[3]

- Nutrition: Appropriate accommodations for dining and self-catering are important to healthy nutrition, socialisation and self-efficacy. Research suggests that dining with others can promote healthier eating habits, foster positive social relations

Larger prison populations and overcrowding have both been linked to a number of negative outcomes such as increased anonymity, social fragmentation, stress, loss of personal space and anti-social and violent behaviours

and reduce stress, especially at work.[4] Adequate dining and self-catering facilities can help encourage communal eating and taking an active role in the daily food preparation tasks needed for 'normal' life. Ensuring drinking water is easily accessible throughout a site can also help encourage water drinking water over sugary and caffeinated beverages.[5]

Spatial / functional

- Personal space: The ability to maintain adequate interpersonal distances - defined by cultural and situational norms - is important to wellbeing. In smaller spaces, personal space bubbles expand.[6] Men in particular seem to desire more personal space in environments with low ceilings, narrow rooms, in the corner (rather than the centre of a room) and in more crowded spaces.[7] Incarcerated men with more aggressive tendencies have also been found to have larger personal space bubbles, which are larger when approached from behind.[8]

- Crowding / density: Crowding leads to a number of negative psychological and behavioural outcomes including social withdrawal, reduced pro-social or cooperative behaviours, increased aggression (especially in men) and stress-related impacts on physical and mental health.[9] Smaller social groupings in work and housing arrangements are generally linked to a variety of wellbeing and interpersonal relationship benefits. At the large scale, group sizes averaging around 150 have been connected to higher rates of social cohesion and informal social control than groups exceeding this number.[10]

2   Bierie, 2012

3   WELL Building Standard http://standard.wellcertified.com/fitness/interior-fitness-circulation
    http://standard.wellcertified.com/fitness/exterior-active-design

4   http://standard.wellcertified.com/nourishment/mindful-eating

5   Centers for Disease Control and Prevention. Increasing Access to Drinking Water and Other Healthier Beverages in Early Care and Education Settings. Atlanta, GA: US Department of Health and Human Services; 2014.

6   White, 1975

7   Savinar, 1975

8   Kinzel, 1970

9   Wener, 2012

10 Dunbar, 1993

In prisons, both overcrowding and large population sizes have been linked to a number of negative outcomes such as increased anonymity, social fragmentation, stress, loss of personal space, anti-social and violent behaviours.[11] Inmates housed in single-occupancy rooms have been found to exhibit lower levels of the stress hormones linked to 'fight or flight' responses. At least two Dutch studies have found that prisoners housed in double rooms experienced less positive and more distant relationships with officers than those housed in single rooms.[12] Beyond numerical calculations of people per square feet, subtleties of environmental design (such as low ceilings and narrow spaces) can impact physiological stress levels via perception of crowding. Across varying social densities in prisons, higher perceived levels of crowding have been linked to higher levels of circulating stress hormones.[13]

Psychological

- Identity: Research has shown that we use place to support a strong, stable sense of identity through facets including self-efficacy, self-esteem, belonging, positive distinctiveness and continuity over time. Place-related identity processes are particularly important in living spaces.[14] Community and social relationships also play an important role in supporting a strong and stable sense of self.

Lack of private space has been found to lead to more territorial and aggressive behaviour in public areas and also shifts the balance of solitary activities to public space

Control factors

While this literature review is focused on environmental design rather than management, it would be impossible not to consider how certain environmental parameters play out in relation to institutional regime. The overall cohesion of an environment - how well it comes together as a whole to work for the organisation and community - is typically tied to issues of individual and group control.

Individual control

- Atmospheric conditions: The negative wellbeing implications of poor atmospheric conditions are compounded by lack of control. Insufficient control over light, noise, temperature and air quality intensifies stress and discomfort.

- Privacy: Personal space, territory and personalisation all relate intimately to privacy, which is defined not just as the state of being alone but the ability to control access to oneself. In prison, 'privacy or lack thereof becomes one of the defining concepts of incarceration,'.[15] Lack of private space (e.g. individual rooms, visual and/or acoustic privacy) has been found to lead to more territorial and aggressive behaviour in public areas of institutional facilities,[16] and also shifts the balance of solitary activities to public space.[17] Lower levels of privacy in residential prison environment have been linked to increased use of health care services.[18] But the desire for privacy must be balanced with the potential difficulties of isolation, which may cause particular stress for inmates with special needs.

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11 Wortley, 2002; Hunt et al. 1993; Marrero, 1977

12 Beijersbergen et al. 2014

13 Schaeffer et al. 1988

14 Twigger-Ross and Uzzell,1996

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15 Wener, 2012, p.118

16 Zimring et al. 1982

17 Wener and Olson,1980

18 Moore, 1985

- Personalisation: Personalisation has many benefits, such as increased wellbeing, higher morale, greater satisfaction with work and lower staff turnover. These positive psychological benefits are understood to be a result of support for the expression of identity and distinctiveness.[19] Inability to personalise living spaces constricts agency, expression and customisation and hampers place attachment, which has negative impacts for wellbeing, health and interpersonal dynamics.[20] Creative involvement in one's environment through activities such as gardening, mural painting and involvement in design processes has been linked to greater valuation, sense of ownership, concern for maintenance, self-esteem and efficacy.[21]

- Autonomous movement: Institutional environments like prisons and hospitals are typically what are called 'low control' or 'low choice' spaces—designed to limit patients' or inmates' ability to move around or otherwise control their surroundings. This situation can reinforce feelings of helplessness, ineffectiveness and abnormality, running counter to the rehabilitative goals of such environments.[22] Institutional environments enabling choice and physical movement hold the potential to foster more uplifting psychological states and bolster occupants' sense of wellbeing and self-efficacy.[23]

Group level control

- Territory: While territoriality may be perceived as a problematic and/or aggressive behaviour, the ability to easily define and maintain one's territory appears to foster more harmonious

The presence of nature, views and daylight can impact health, stress response, rehabilitation, cognitive function, problem solving skills, aggression and actual levels of violence in prison environments

Source: Wener 2017

social relations to a certain extent. The loss of privacy that inmates typically experience may intensify dominant, territorial behaviour, especially in high-turnover situations.[24]

- Collective efficacy: Collective efficacy - based on high levels of trust, cohesion and informal social control within a community - is harder to achieve in interior, unsurveilled areas and high-density settings, where anonymity hampers the social cohesion and helping behaviours needed for informal social control.[25]

Place factors

Biophilia

'Biophilia' literally means 'love of the living world', but this term refers to the innate attraction humans have for the natural world. The large body of biophilia research has consistently demonstrated that physical and psychological wellbeing is supported by environmental conditions similar to those that would have been evolutionarily advantageous to our survival in the natural world.

At the simplest level, wellbeing may be supported through the presence of indoor plants, nature images, vegetative landscaping and green recreation areas. But biophilia can also be used as a guiding principle to help us understand which environmental parameters will best support wellbeing across many areas of design and construction. In terms of atmospheric conditions, for instance, we often find that the lighting or air quality conditions best supporting wellbeing are similar to natural conditions in some way. The presence of nature, views and daylight can impact health, stress response, rehabilitation, cognitive function, problem

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19 Wells et al., 2007; Sundstrom, 1986

20 Lewicka, 2015

21 Norton et al. 2012

22 Olson, 1978

23 Bell et al. 2001

24 Sundstrom and Altman, 1972

25 Gifford, 2007

solving skills, aggression and incidence of violence in prison environments.[26]

Indoor

- Nature elements: The presence of plants in a workspace can reduce blood pressure and increase attentiveness and reaction time by 12% for people performing stressful tasks.[27]

- Views: The presence of windows with a view of natural elements like trees has been demonstrated to have especially strong restorative power in institutional environments. Patients recovering from surgery in a room with view of a tree have been found to recover more quickly and experience less pain in the process.[28] The wellbeing effects of a window may be derived from a combination of daylight, nature content and 'prospect', each of which may also be independently beneficial.

  - Nature Views: Visual access to nature has been linked to lowered heart rate and blood pressure,[29] and positively influencing overall happiness, mood and attitude.[30]

  - Prospect: 'Refuge and prospect' refers to our evolutionary preference for environments that enable us to have a good view of our surroundings (prospect), while also offering some degree of protection or enclosure (refuge). Far-reaching window views have been linked to reduced, boredom, fatigue and irritability,[31] as well as improved comfort and perceived safety.[32]

Landscaping offers the biophilic benefits of visual connection with nature, but green recreation and gardening spaces both hold potential for more comprehensive wellbeing benefits of increased physical activity, skill building and self and collective efficacy.

Outdoor

- Green recreation space, landscaping and gardening: The wellbeing benefits of green/open space amenities and landscaping are well documented. In hospital settings, gardens have been found to reduce stress, increase physical activity and foster socialization, all of which aid rehabilitation.[33] Landscaping offers the biophilic benefits of visual connection with nature, but green recreation and gardening spaces both hold potential for more comprehensive wellbeing benefits of increased physical activity, skill building, self and collective efficacy.

Atmosphere

In institutional settings such as hospitals, mild variations in light, temperature, airflow and sound levels have been found to create a better environment for wellbeing than ones in which these factors are held artificially constant.

Lighting

Artificial light sources differ from daylight not only in the quality of illumination – especially fluorescents and standard LEDs, which lack warmth and warp colour perception - but in their consistency.[34] Sunlight changes in intensity, colour and direction throughout the course of the day and year. The blue-toned, uni-directional light sources which are typically found shining intensely for many hours of the day and night in institutional settings can interfere with circadian rhythms.[35] Insufficient darkness for sleeping is often a

26 Wener, 2012

27 Lohr et al. 1996

28 Ulrich, 1984

29 Brown et al. 2013

30 Barton and Perry, 2010

31 Clearwater and Coss 1991

32 Browning et al. 2014; Wang and Taylor, 2006; Petherick, 2000

33 Ulrich, 1999

34 Wei et al. 2014

35 Harvard Health Letter (May 2012), 'Blue Light has a Dark Side: Exposure to Blue Light at Night, Emitted by Electronics and Energy-Efficient Lightbulbs, Harmful to Your Health', (updated 2 September 2015)

major problem for inmates, with major negative repercussions for wellbeing and problematic behaviour.[36] Recent studies have found significant wellbeing benefits from varying the light spectrum throughout the day in hospitals.[37] Dynamic and diffuse light, from both natural and artificial sources, positively impacts circadian system and is linked to increased visual comfort.[38] Beyond optimising natural light resources, wellbeing can be enhanced through refining the intensity, quality, direction, variability and control of light sources. Simple accommodations such as providing task lighting in work spaces and curtains in living spaces enables control of lighting conditions, with great wellbeing benefits for workers and residents.[39]

Acoustics

Unpredictable, intermittent and uncontrollable noise - endemic in the typically poor acoustical conditions of prisons - causes significant stress, with powerful and enduring negative impacts on wellbeing.[40] But interestingly, the negative effects of noise exposure can be reduced if people have the power to control their exposure to noise to some extent.[41] Good acoustics are also a very important consideration for working environments within prisons, especially for work requiring higher cognitive processing and complex verbal processes.[42]

Air quality, smell and temperature

Variation in airflow and temperature has been linked to positive impacts on wellbeing, productivity, concentration and comfort.[43]

So-called 'first generation' prisons, designed with the goal of isolating inmates for solitary penitence, have been found to precipitate sense of anonymity and deindividuation leading inmates to become disassociated from the consequences of their actions

- Air quality: Poor ventilation systems contribute to poor indoor air quality, containing high levels of volatile organic compounds and microbial pathogens. Exposure to these pollutants can play a part in a variety of health problems, including upper respiratory illness, asthma and allergies. Poor air quality has also been linked to decreasing work productivity and sick building syndrome (SBS), a phenomenon of health issues (including fatigue, headache and breathing difficulties) typically affecting occupants of airtight office buildings. It is believed that SBS is caused by high levels of indoor air contaminants resulting from poor ventilation, off-gassing building materials, indoor water and combustion leaks.[44] While carbon dioxide is only one of many harmful air pollutants, its presence is often used to benchmark general air quality because it is easy to detect.[45]

- Thermal comfort in living and working spaces has significant implications for overall wellbeing, health and productivity.[46] Thermal comfort has also been identified as one of the leading factors impacting general satisfaction with indoor environments.[47] In office environments, workers' performance has been found to decrease by 6% when overheated and 4% when too cold.[48] Overly-warm temperatures have been linked to higher prevalence of Sick Building Syndrome symptoms, particularly in relation to overheated buildings in winter.[49] At the other end of the spectrum, cold temperatures restrict blood flow to hands, resulting in decreased productivity for manual tasks.[50]

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36 Wener, 2012

37 Ilic et al. 2016

38 Browning et al. 2014; Figueiro et al. 2011; Kim and Kim, 2007

39 Wener, 2012

40 Evans, 1982; Glass and Singer, 1972

41 Glass and Singer, 1972

42 Haapakangas et al. 2008

43 Browning et al. 2014; Wigö, 2005; Tham and Willem, 2005

44 WELL Building Standard, 2017

45 WELL Building Standard, 2017

46 Fisk, 2002

47 Frontczak and Wargocki, 2011

48 Seppänen et al. 2004

49 Seppänen and Jaakkola, 1989

50 Ibid

Beyond these immediate physiological responses, extreme temperatures have been found to impact our affinity for those around us and have even been linked to behavioural outcomes, such as aggression.51 There is some evidence to suggest that people are more likely to help others under more optimal temperature conditions (relative to season).52 The relationship between temperature, emotional state and pro- or anti-social behaviour is a complex one, but there is strong overarching evidence for the wellbeing benefits of thermal comfort.

Layout

At the high level, intelligent site and building layout may be one of the easiest ways to positively impact wellbeing, behaviour and social relations at no additional cost. Layout should be carefully planned in terms of configuration as well as legibility, wayfinding and circulation. Allocating the appropriate amount of space for the many activities, functions and people of a prison environment also has a major effect on wellbeing through its impact on issues such as crowding, territory and privacy.

- Scale and proportions are important considerations, which impact factors such as personal space, refuge, prospect, comfort and awe. Facial recognition may be a particular point of interest in determining optimal length of wings and corridors to enhance a sense of safety and lessen anonymity. Facial recognition in able-sighted people remains very strong up to distances of 8m away. From distances further than this, research has found that face recognition progressively

Optimal buildings offer a balance of proportions and configuration supporting comfort with a sense of 'bigger than self' inspiration

declines, reaching 0% at a distance of 50m. At distances of approximately 10m, recognition is at around 75%, while dropping to 25% at 25m.53

In hospital settings, shorter walking distances for nurses have been linked to more time spent with patients, higher staff and patient satisfaction, lowered staff absenteeism and enhanced quality of care. Issues of scale may also be related to layout however. Radial curvilinear hospital ward layouts were found to enable these benefits over single and double corridor designs by locating nurse stations centrally.54

- Sociofugal and sociopetal space: Matching layout to the functional and psychological setting of a space is important to support wellbeing. In environmental psychology, 'sociopetal' space describes environments that facilitate interaction and communication, whereas 'sociofugal' space deters it. Seating in institutional settings is often unmovable and sociofugally arranged in line with health and safety routines, which can negatively impact on social interaction. Healthcare settings designed to offer privacy, while also supporting opportunities for social interaction, appear to provide rehabilitative benefits. In one study, social interaction doubled as a result of layout changes giving residents more privacy, while simultaneously arranging common space seating more sociopetally.55 Spatial configurations fostering an adequate balance of privacy and social interaction are beneficial to wellbeing in both workspaces and residential environments. Research has also found that common spaces may not encourage interaction unless they are easily accessible in the natural circulation.56

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51 Bell et al. 2001

52 Page, 1978

53 Loftus and Hartley, 2004

54 Trites et al. 1970

55 Halpern, 1995

56 Stryker, 2012

- So-called 'first generation' prisons, designed with the goal of isolating inmates for solitary penitence, have been found to precipitate a sense of anonymity and deindividuation, leading occupants to become disassociated from the consequences of their actions.[57] Panopticon-model prisons, for instance, were designed for surveillance, physically distancing officers from prisoners via their cavernous scale and segregation of guards in central surveillance towers. Sociofugal prison layout has been linked to negative impacts in relationships between inmates as well as between men and guards, including dehumanisation, victimisation and cognitive disengagement.[58]

  Recent research from the Netherlands has provided evidence for the psychological and behavioural impact of such designs. Surveying 1,715 prisoners in 32 detention centres of different design styles, researchers found that those housed in panopticon-style facilities experienced less positive relationships with officers than those in other layouts such as campus, high-rise, or radial designs. Prisoners in campus layout facilities reported the most positive relationships with officers. Overall, layouts designed to distance officers from inmates (such as panopticon and radial) were found to foster more negative relationships than layouts expressing less sociofugal design philosophies (such as the courtyard, rectangular and high-rise models).[59]

- Refuge and Prospect: Beyond window views, refuge and prospect are important factors to consider in interior layout and high-level site configuration. Layouts which don't provide adequate prospect (poor sightlines, too enclosed) can enhance

perceived and actual threats to personal safety. Alternatively, large undefined spaces may not provide adequate opportunities for refuge. Environments enabling a strong sense of refuge have been linked to improved concentration, attention and perception of safety.[60] Partially enclosed spaces and sociopetal layouts can often support a good balance of the human need for refuge and prospect.

- Legibility: Legibility is supported by distinctive and coherent qualities of an environment that enable us to easily form cognitive maps and find our way around a space. Contemporary prison facilities may suffer from poor legibility originating from two opposing problems. On the one hand, housing blocks often replicate identical designs across rooms, floors, wings and buildings, resulting in a lack of distinctive features which can prove highly disorienting. On the other hand, lack of coherence in the overall site plan and labyrinthine networks of security checkpoints can lead to poor legibility due to convoluted complexity. Research has demonstrated that humans tend to display a natural preference for environments that balance coherence and complexity as well as legibility and mystery.[61] As with refuge and prospect, an optimal balance of comfort and stimulation supports wellbeing best, though mystery is less desirable in situations associated with risk (such as dark urban streets and, most likely, prisons).[62] Prison legibility is likely to be improved by creating greater coherence in masterplanning and greater distinctiveness in housing blocks. Beyond layout, many factors covered in the design section present great tools to use in creating more legible and engaging prison environments.

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57 Zimbardo, 1970

58 Wortley, 1996; Bandura, 1976

59 Beijersbergen et al. 2014

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60 Grahn and Stigsdotter, 2010; Wang and Taylor, 2006; Petherick, 2000; Ulrich et al. 1993)

61 Kaplan, 1987; Herzog and Bryce, 2007

62 Herzog and Flynn-Smith, 2001

Design

The typically sterile and bland design standards of institutional environments like hospitals and prisons enhance stress and anxiety by mimicking the experience of neurophysiological breakdown. Minimalist spaces lacking colour and legibility evoke sensations similar to the symptoms brought about by conditions such as stroke, macular degeneration and visual agnosia.[63]

Aesthetics

- Colour: There is surprisingly a dearth of strong and broad evidence on the relationship between specific environmental colours, mood, wellbeing. But there is good evidence that general lack of colour in institutional environments has negative wellbeing implications and contextual integration of colour with broader design, texture etc. has positive effects.[64]

- Shapes and Materials: There is a strong evidence base on the negative impact of 'hard architecture', defined as materials resistant to human impact.[65] Research has suggested that environments and furnishings designed to resist violent destruction may actually 'challenge' people to destroy them, resulting in environments that are dehumanising, expensive, ineffective.[66] Curved forms have also been linked to calmer feelings than angular ones.[67]

- Order and Complexity: A good environmental balance of order and complexity has been found to have a positive impact on both perceptual and physiological stress responses.[68] Highly-ordered environments, those with little variation in colour,

material, detail and ornamentation etc. provide few clues for spatial familiarity, which can enhance disorientation, boredom and stress. Alternatively, environments which are too complex can hamper wayfinding and sense of safety.

- Comfort and Awe: Finally, optimal buildings offer a balance of proportions and configuration supporting comfort with a sense of 'bigger than self' inspiration. For instance, varying ceiling height throughout a building, with lower ceilings in more private rooms and higher ceilings in public spaces, may help achieve a balance of these parameters.[69]

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63 Salingaros and Madsen, 2008

64 Wener, 2012

65 Sommer, 1975

66 Sommer, 1975

67 Dazkir and Read, 2011; Papanek and Victor, 1995

68 Salingaros, 2012; Joye, 2007; Taylor, 2006; Kaplan, 1988

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69 Kaplan, 1988

2.2 Environmental evidence base

ID	Category	Subcatagory	Evidence		Reference
1.1.1	1 People factors	1 Physical	1 Sleep	Sleep deprivation has a negative impact on physical and mental health as well as mood and behaviour.	Colten, H.R., & Altevogt, B.M. (2006). Sleep Disorders and Sleep Deprivation: An Unmet Public Health Problem. Washington, DC: The National Academic Press.
1.1.2			2 Fitness	Daily physical activity has a positive impact on physical and psychological wellbeing. Physical activity can be encouraged through 'active layout' (interior layouts and site configuration leading occupants to use stairs etc.) as well as accessible and appropriate athletic facilities.	WELL Building Standard (2017).
1.1.3			3 Nutrition	Appropriate accommodations for dining and self-catering are important to healthy nutrition, socialisation, and self-efficacy. Research suggests that dining with others can promote healthier eating habits, foster positive social relations, and reduce stress, especially at work. Adequate dining and self-catering facilities can help encourage communal eating and taking an active role in the daily food preparation tasks needed for 'normal' life. Ensuring drinking water is easily accessible throughout a site can also help encourage water drinking over sugary and caffeinated beverages.	Centers for Disease Control and Prevention. (2014.) Increasing Access to Drinking Water and Other Healthier Beverages in Early Care and Education Settings. Atlanta, GA: US Department of Health and Human Services
1.1.4			4 Basic Facilities	Failure to provide basic facilities such as adequate sanitation supplies can have a broader detrimental effect on well-being via secondary problems likely to result from psychological distress. In one American study, staff members reporting poorer conditions in the prisons they worked in used more sick leave and were more likely to have increased levels of drinking and smoking.	Bierie, D.M. (2012). The Impact of Prison Conditions on Staff Well-Being, 56(1), 81-95.
1.2.1		2 Spatial / Functional	1 Personal space	The ability to maintain adequate interpersonal distances–defined by cultural and situational norms–is important to well-being. In smaller spaces, personal space bubbles expand. Men in particular appear to desire more personal space in environments with low ceilings, narrow rooms, in the corner (rather than the centre of a room), and in more crowded spaces. Incarcerated men with more aggressive tendencies have also been found to have larger personal space bubbles, which are larger when approached from behind	Kinzel, A.F. (1970). Body-Buffer Zone in Violent Prisoners. American Journal of Psychiatry, 127(1), 59-64.

ID	Category	Subcatagory	Evidence		Reference
1.2.2			2 Crowding / density	Crowding is associated with a number of negative psychological and behavioural outcomes including social withdrawal, reduced pro-social or cooperative behaviours, increased aggressiveness (especially in men), and stress-related impacts on physical and mental health. Smaller social groupings in work and housing arrangements are generally linked to a variety of well-being and interpersonal relationship benefits. At the large scale, group sizes averaging around 150 have been connected to higher rates of social cohesion and informal social control than comparable groups greatly exceeding this number. In prisons, both overcrowding and large population sizes and have been linked to a number of negative outcomes such as increased anonymity, social fragmentation, stress, loss of personal space, and anti-social and violent behaviours. Inmates housed in single-occupancy rooms have been found to exhibit lower levels of the stress hormones linked to 'fight or flight' responses. At least two Dutch studies have found that prisoners housed in double rooms experienced less positive and more distant relationships with officers than those housed in single rooms. Beyond numerical calculations of people per square feet, subtleties of environmental design (such as low ceilings and narrow spaces) can impact physiological stress levels via perception of crowding. Across varying social densities in prisons, higher perceived levels of crowding have been linked to higher levels of circulating stress hormones.	Wener, R. (2012). The Environmental Psychology of Prisons and Jails: Creating Humane Spaces in Secure Settings. Cambridge: Cambridge University Press. Cox, V.C., Paulus, P.B., & McCain, Gavin. (1984). Prison crowding research: The relevance for prison housing standards and a general approach regarding crowding phenomena. American Psychologist, 39(10), 1148-1160. Dunbar, R.I.M. (1993). Coevolution of neocortical size, group size and language in humans. Behavioral and Brain Sciences, 16, 681-735. Wortley, R. (2002). Situational Prison Control: Crime Prevention in Correctional Institutions. New York: Cambridge University Press. Hunt, G., Riegel, S., Morales, T., & Waldorf, D. (1993). Changes in prison culture: Prison gangs and the case of the "Pepsi Generation". Social Problems, 40, 398-409. Marrero, D. (1977). Spatial dimensions of democratic prison reform. Prison Journal, 57, 31-42. Beijersbergen, K.A.; Dirkzwager, A.J.E.; van der Laan, P.H.; Nieuwbeerta, P. (2014). A Social Building? Prison Architecture and Staff-Prisoner Relationships. Crime and Delinquency, 62(7), 843-874. Inspectie voor de Sanctietoepassing. (2011). Meerpersoonscelgebruik [The use of double bunking]. Den Haag, The Netherlands: Inspectie voor de Sanctietoepassing. Google Scholar Schaeffer, M.A.; Baum, A.; Paulus, P.B. ; Gaes, G.G. (1988). Architecturally Mediated Effects of Social Density in Prison. Environment and Behavior, 20(1), 3-20. Twigger-Ross, C.L., & Uzzell, D.L. (1996). Place and Identity Processes. Journal of Environmental Psychology, 16, 205-220.

ID	Category	Subcatagory	Evidence		Reference
1.3.1		3 Psychological	1 Identity	Research has shown that we use place to support a strong and stable sense of identity through facets including self-efficacy, self-esteem, belonging, positive distinctiveness, and continuity over time. Place-related identity processes are particularly important in living spaces. Community and social relationships also play an important role in supporting a strong and stable sense of self.	Twigger-Ross, C.L., & Uzzell, D.L. (1996). Place and Identity Processes. Journal of Environmental Psychology, 16, 205-220.
2.1.1	2 Purpose factors	1 Individual control	1 Atmospheric conditions	The negative well-being implications of poor atmospheric conditions are compounded by lack of control. Insufficient control over light, noise, temperature, and air quality intensifies stress and discomfort.	Glass, D. C., and Singer, J. E. (1972), Urban Stress. New York: Academic Press.
2.1.2			2 Privacy	Personal space, territory, and personalisation all relate intimately to privacy, which is defined not just as the state of being alone but the ability to control access to oneself. And in prison, 'privacy or lack thereof becomes one of the defining concepts of incarceration,' in the words of Richard E. Wener, a leading expert in the environmental psychology of prisons. Lack of private space (e.g. individual rooms, visual and/or acoustic privacy) has been found to lead to more territorial and aggressive behaviour in public areas of institutional facilities, and also shifts the balance of solitary activities to public space. Lower levels of privacy in residential prison environments have been linked to greater use of health care services. But the desire for privacy must be balanced with the potential difficulties of isolation, which may pose particular stress for inmates with special needs.	Zimring, C., Weitzer, W., & Knight, R.C. (1982). Opportunity for Control and the Designed Environment: The Case of an Institution for the Developmentally Disabled. In A. Baum & J. Singer (Eds.), Advances in Environmental Psychology, Volume 4: Environment and Health (Vol 4, pp. 171-210). Hillside, NJ: Lawrence Erlbaum. Wener, R.E., & Olson, R. (1980). Innovative Correctional Environments: A User Assessment. Environment & Behavior, 12(4), 478-493. Moore, E. (1985). Environmental Variable Affecting Prisoner Health care Demands. Paper presented at the Proceedings of the American Institute of Architects, Los Angeles.
2.1.3			3 Personalisation	Personalisation has many benefits, such as increased well-being, higher morale, greater satisfaction with work, and lower staff turnover. These positive psychological benefits are understood to be a result of support for the expression of identity and distinctiveness. Inability to personalise living spaces constricts agency, expression, and customisation. Preventing personalisation also hampers place attachment, which has negative impacts for well-being, health, & interpersonal dynamics. Creative involvement in one's environment through activities such as gardening, mural painting, and involvement in design processes has been linked to greater valuation, sense of ownership, concern for maintenance, self-esteem and efficacy	Wells, M., Thelen, L., and Ruark, J. (2007). Workspace Personalization and Organisational Culture: Does Your Work Space Reflect You or Your Company?' Environment and Behavior, 39, 616-634. Sundstrom, E., & Sundstrom, M.G. (1986). The Psychology of the Physical Environment in Offices and Factories. Cambridge: Cambridge University Press.

ID	Category	Subcatagory	Evidence		Reference
2.1.4			4 Autonomous Movement	Institutional environments like prisons and hospitals are typically what are called 'low control' or 'low choice' spaces–designed to limit patients' or inmates' ability to move around or otherwise control their surroundings. This situation can reinforce feelings of helplessness, ineffectiveness, and abnormality, running counter to the rehabilitative goals of such environments. Institutional environments enabling choice and physical movement hold the potential to foster more uplifting psychological states and bolster occupants' sense of well-being and self-efficacy.	Olsen, R. (1978). The Effect of the Hospital Environment. Unpublished doctoral dissertation, City University of New York. Bell et al., (2001).
2.2.1		2 Group level control	1 Territory	While territoriality may be perceived as a problematic and/or aggressive behaviour, the ability to easily define and maintain one's territory appears to foster more harmonious social relations to a certain extent. The loss of privacy that inmates typically experience may intensify dominant, territorial behaviour, especially in high-turnover situations.	Sundstrom, E., & Altman, I. (1972). Relationships Between Dominance and Territorial Behavior: Field Study in a Youth Rehabilitation Setting – Technical Report (Grant No. 70-065-PG-21). Washington, DC: Law Enforcement Assistance Administration.
2.2.2			2 Collective Efficacy	Collective efficacy–based on high levels of trust, cohesion, and informal social control within a community–is harder to achieve in interior, unsurveilled areas and high-density settings, where anonymity hampers the social cohesion and helping behaviours needed for informal social control.	Gifford, R. (2007). The Consequences of Living in High-Rise Buildings. Architectural Science Review, 50 (1), 1-16. Sampson, R. J., & Raudenbush, S. W. (2001). Disorder in Urban Neighborhoods – Does It Lead to Crime? National Institute of Justice Research in Brief. NCJ 186049, Washington, DC: United States Department of Justice, National Institute of Justice.
3.1.1	3 Place factors	1 Biophilia	1 Nature elements indoors	The presence of plants in a workspace can reduce blood pressure and increase attentiveness and reaction time by 12% for people performing stressful tasks.	Lohr, V.I., C.H. Pearson-Mims, & Goodwin, G.K.. (1996). Interior plants may improve worker productivity and reduce stress in a windowless environment. Journal of Environmental Horticulture ,14(2), 97-100.
3.1.2			2 Window Views	Nature, views, and daylight can all impact health, stress response, rehabilitation, cognitive function, problem solving skills, aggression, and incidence of violence in prison environments. The presence of windows with a view of natural elements like trees has been demonstrated to have especially strong restorative power in institutional environments. Patients recovering from surgery in a room with view of a tree have been found to recover more quickly, and experienced less pain in the process. The well-being effects of a window may be derived from a combination of daylight, nature content, and 'prospect', each of which may also be independently beneficial.	Ulrich, R. S. (1984). View through a window may influence recovery from surgery. Science, 224: 420- 421. Wener, 2012.

ID	Category	Subcatagory	Evidence		Reference
3.1.3			3 Nature Views	Visual access to nature has been linked to lowered heart rate and blood pressure, and positively influencing overall happiness, mood, and attitude.	Brown, D.K., J.L. Barton, & V.F. Gladwell (2013). Viewing Nature Scenes Positively Affects Recovery of Autonomic Function Following Acute-Mental Stress. Environmental Science & Technology, 47, 5562-5569. Barton, J. & J. Pretty (2010). What Is the Best Dose of Nature and Green Exercise for Improving Mental Health. Environmental Science & Technology, 44, 3947-3955.
3.1.4			4 Prospect	'Refuge and prospect' refers to our evolutionary preference for environments that enable us to have a good view of our surroundings (prospect), while also offering some degree of protection or enclosure (refuge). Far-reaching window views have been linked to reduced, boredom, fatigue, and irritability, as well as enhanced comfort and perceived safety	Clearwater, Y.A., & R.G. Coss (1991). Functional Esthetics to Enhance Wellbeing. In Harrison, Clearwater & McKay (Eds.). From Antarctica to Outer Space. New York: Springer-Verlag, p.410. Browning, W.D., Ryan, C.O., Clancy, J.O. (2014). 14 Patterns of Biophilic Design. New York: Terrapin Bright Green llc. Wang, K. & R.B. Taylor (2006). Simulated Walks through Dangerous Alleys: Impacts of Features and Progress on Fear. Journal of Environmental Psychology, 26, 269-283. Petherick, N. (2000). Environmental Design and Fear: The Prospect-Refuge Model and the University College of the Cariboo Campus. Western Geography, 10 (1), 89-112.
3.1.5			5 Green recreation space, landscaping, & gardening	The wellbeing benefits of green and open space amenities and landscaping are well documented. In hospital settings, gardens have been found to reduce stress, increase physical activity, and foster socialisation, all of which aid rehabilitation. Landscaping offers the biophilic benefits of visual connection with nature, but green recreation and gardening spaces both hold potential for the more comprehensive well-being benefits of increased physical activity, skill building, and self- and collective efficacy.	Ulrich, R. S. (1999), 'Effects of Gardens on Health Outcomes: Theory and Research', in Cooper-Marcus, C., and Barnes, M. (eds.), Healing Gardens: Therapeutic Benefits and Design Recommendations, pp. 27-86, New York: John Wiley

ID	Category	Subcatagory	Evidence		Reference
3.2.1		2 Atmosphere	1 Lighting	Artificial light sources differ from daylight not only in the quality of illumination – especially fluorescents and standard LEDs, which lack warmth and warp colour perception– but in their consistency. Sunlight changes in intensity, colour, and direction throughout the course of the day and year. The blue-toned, uni-directional light sources that are typically found shining intensely for many hours of the day and night in institutional settings can interfere with circadian rhythms. Insufficient darkness for sleeping is often a major problem for inmates, with major negative repercussions for well-being and problematic behaviour. Recent studies have identified major well-being benefits from varying the light spectrum throughout the day in hospitals. Dynamic & diffuse light–from both natural and artificial sources–positively impacts the circadian system, and is linked to greater visual comfort. Beyond optimising natural light resources, well-being can be enhanced through refining the intensity, quality, direction, variability, and control of light sources. Simple accommodations such as providing task lighting in work spaces and curtains in living spaces enable control of lighting conditions, with great well-being benefits for workers and residents.	Wei et al. (2014), 'Field Study of Office Worker Responses to Fluorescent Lighting of Different Cct and Lumen Output', Journal of Environmental Psychology, 39, 62-76. Harvard Health Letter (May 2012), 'Blue Light has a Dark Side: Exposure to Blue Light at Night, Emitted by Electronics and Energy-Efficient Lightbulbs, Harmful to Your Health', (updated 2 September 2015) Wener, 2012. Ilic, Ognjen, Bermel, Peter, Chen, Gang, Joannopoulos, John D., Celanovic, Ivan, and Soljačić, Marin (2016), 'Tailoring High-Temperature Radiation and the Resurrection of the Incandescent Source', Nature Nanotechnology, 11, 320-324 Browning et al., 2014. Figueiro, M.G., J.A. Brons, B. Plitnick, B. Donlan, R.P. Leslie, & M.S. Rea (2011). Measuring circadian light and its impact on adolescents. Light Res Technol. 43 (2): 201-215. Kim, S.Y. & J.J. Kim (2007). Effect of fluctuating illuminance on visual sensation in a small office. Indoor and Built Environment 16 (4): 331-343.
3.2.2			2 Acoustics	Unpredictable, intermittent, and uncontrollable noise–endemic in the typically poor acoustical conditions of prisons–causes significant stress, with powerful and enduring negative impacts on well-being. But interestingly, the negative effects of noise exposure can be reduced if people have the power to control their exposure to noise to some extent. Good acoustics are also a very important consideration for working environments within prisons, especially for work requiring higher cognitive processing and complex verbal processes.	Evans, G.W. 1982. Environmental Stress. New York: Cambridge University Press. Glass, D., & Singer, J. (1972). Urban Stress. New York: Academic Press. Glass, D. C., and Singer, J. E. (1972), Urban Stress. New York: Academic Press. Haapakangas A., Helenius R., Keskinen E., and Hongisto V. (2008), 'Perceived Acoustic Environment, Work Performance and Wellbeing Survey Results from Finnish Offices', in 9th International Congress on Noise as a Public Health Problem (ICBEN) 21-25 July 2008, Mashantucket, Connecticut, USA

ID	Category	Subcatagory	Evidence		Reference
3.2.3			3 Air quality	Variation in airflow and temperature has been linked to positive impacts on well-being, productivity, concentration, & comfort. Poor ventilation systems contribute to poor indoor air quality, containing high levels of volatile organic compounds and microbial pathogens. Exposure to these pollutants can play a part in a variety of health problems, including upper respiratory illness, asthma, and allergies. Poor air quality has also been linked to decreasing work productivity and sick building syndrome (SBS), a phenomenon of health issues (including fatigue, headache, and breathing difficulties) typically affecting occupants of airtight office buildings. It is believed that SBS is caused by high levels of indoor air contaminants resulting from poor ventilation, off-gassing building materials, and indoor water and combustion leaks. While carbon dioxide is only one of many harmful air pollutants, its presence is often used to benchmark general air quality because it is easy to detect.	WELL Building Standard. (2017). Air. WELL Building Standard. (2017). Ventilation Effectiveness.
3.2.4			4 Temperature	Thermal comfort in living and working spaces has significant implications for overall well-being, health, and productivity. Thermal comfort has also been identified as one of the leading factors impacting general satisfaction with indoor environments. In office environments, workers' performance has been found to decrease by 6% when overheated and 4% when too cold. Overly warm temperatures have been linked to higher prevalence of Sick Building Syndrome symptoms–particularly in relation to overheated buildings in winter. At the other end of the spectrum, cold temperatures restrict blood flow to hands, resulting in decreased productivity for manual tasks. Beyond these immediate physiological responses, extreme temperatures have been found to impact our affinity for those around us, and have even been linked to behavioural outcomes such as aggression. There is some evidence to suggest that people are more likely to help others under more optimal temperature conditions (relative to season). The relationship between temperature, emotional state, and pro- or anti-social behaviour is a complex one, but there is strong overarching evidence for the well-being benefits of thermal comfort.	Fisk, W.J. (2002). How IEQ Affects Health, Productivity. ASHRAE Journal, 57 (May), 56-58. Frontczak, M., & Wargocki, P. (2011). Literature survey on how different factors influence human comfort in indoor environments. Building and Environment, 46(4), 922-937. Seppanen, O., Fisk, W.J., Faulkner, D. (2004). Control of Temperature for Health and Productivity in Offices. Ernest Orlando Lawrence Berkeley National Laboratory Seppänen O, and Jaakkola J. 1989. Factors that may affect the results of indoor air quality studies in large office buildings. In: Nagda N. and Harper, J. (eds.) Design and Protocol for Monitoring Indoor Air Quality. ASTM STP 1002. Bell et al. (2001). Page, R.A. (1978, May). Environmental Influences on Prosocial Behavior: The Effect of Temperature. Paper presented at the meeting of the Midwestern Psychological Association, Chicago, IL. Cunningham, M.R. 1(979.). Weather, mood, and helping behavior: Quasi experiments with the sunshine Samaritan. Journal of Personality and Social Psychology, 37, 1947-1956.

ID	Category	Subcatagory	Evidence		Reference
3.3.1		3 Layout	1 Scale & proportions	Scale and proportions are important considerations, which impact factors such as personal space, refuge and prospect, and comfort and awe. Facial recognition may be a particular point of interest in determining optimal length of wings and corridors to enhance sense of safety and lessen anonymity. Facial recognition in able-sighted people remains very strong up to distances of 25 feet away. From distances further than this, research has found that face recognition progressively declines, reaching 0% at a distance of 150 feet. At distances of approximately 34 feet, recognition is at around 75%, while dropping to 25% at 77 feet. In hospital settings, shorter walking distances for nurses have been linked to more time spent with patients, higher staff and patient satisfaction, lowered staff absenteeism, and enhanced quality of care for patients. Issues of scale may also be related to layout, however. Radial curvilinear hospital ward layouts were found to enable these benefits over single and double corridor designs by locating nurse stations centrally.	Loftus, G.R.; & Hartley, E.M. (2004). Why is it easier to identify someone close than far away? Psychometric Bulletin & Review,12(1), 43–65. Trites, D. K., Galbraith, F. D., Sturdavant, M., & Leckwart, J. F. (1970). Influence of nursing-unit design on the activities and subjective feelings of nursing personnel. Environment and Behavior, 2(3), 303-334.
3.3.2			2 Sociofugal & Sociopetal Space	Matching layout to the functional and psychological setting of a space is important to supporting well-being. In environmental psychology, 'sociopetal' space describes environments that facilitate interaction and communication, whereas 'sociofugal' space deters it. Seating in institutional settings is often unmovable and sociofugally arranged in line with health and safety routines, which can negatively impact on social interaction. Healthcare settings designed to offer privacy while also supporting opportunities for social interaction appear to provide rehabilitative benefits. In one study of dormitory facilities, social interaction doubled as a result of layout changes giving residents more privacy, while simultaneously arranging common space seating more sociopetally. Spatial configurations fostering an adequate balance of privacy and social interaction are beneficial to well-being in both workspaces and residential environments. But research has also found that common spaces may not help encourage interaction unless they are easily accessible in the natural flow of circulation. So-called 'first generation' prisons—designed with the goal of isolating inmates for solitary penitence—have been found to precipitate a sense of anonymity and deindividuation, leading	Stryker, J.B., & Santoro, M.D. (2012). Facilitating face-to-face communication in high-tech teams. Research-Technology Management, 55(1), 51-56. Zimbardo, P.G. (1970). The Human Choice: Individuation, Reason, and Order Versus Deindividuation, Impulse, and Chaos. Wortley, R. (1996). Guilt, shame and situational crime prevention. In R. Homel (ed.), The Politics and Practice of Situational Crime Prevention. Crime Prevention Studies (Vol. 5), Monsey NY, Criminal Justice Press, 11-32. Bandura, A. (1976). Social learning analysis of aggression. In E. Ribes-Inesta & A. Bandura (Eds.), Analysis of delinquency and aggression. Hillsdale, NJ: Erlbaum. Beijersbergen et al., 2014.

ID	Category	Subcatagory	Evidence		Reference
				occupants to become disassociated from the consequences of their actions. Panopticon-model prisons, for instance, were designed for surveillance, physically distancing officers from prisoners via their cavernous scale and segregation of guards in central surveillance towers. Sociofugal prison layout has been linked to negative impacts in relationships between inmates as well as between men and guards, including dehumanisation, victimisation, and cognitive disengagement. Recent research from the Netherlands has provided evidence for the psychological and behavioural impact of such designs. Surveying 1,715 prisoners in 32 detention centres of different design styles, researchers found that those housed in panopticon-style facilities experienced less positive relationships with officers than those in other layouts such as campus, high-rise, or radial designs. Prisoners in campus layout facilities reported the most positive relationships with officers. Overall, layouts designed to distance officers from inmates (such as panopticon and radial) were found to foster more negative relationships than layouts expressing less sociofugal design philosophies (such as the courtyard, rectangular, and high-rise models). Recent research from the Netherlands has provided evidence for the psychological and behavioural impact of such designs. Surveying 1,715 prisoners in 32 detention centres of different design styles, researchers found that those housed in panopticon-style facilities experienced less positive relationships with officers than those in other layouts such as campus, high-rise, or radial designs. Prisoners in campus layout facilities reported the most positive relationships with officers. Overall, layouts designed to distance officers from inmates (such as panopticon and radial) were found to foster more negative relationships than layouts expressing less sociofugal design philosophies (such as the courtyard, rectangular, and high-rise models).	
3.3.3			3 Refuge & Prospect	Beyond window views, refuge and prospect are important factors to consider in interior layout and high-level site configuration. Layouts which don't provide adequate prospect (poor sightlines, too enclosed) can enhance perceived and actual threats to personal safety. Alternatively, large undefined spaces may not provide adequate opportunities for refuge. Environments enabling a strong sense of refuge have been linked to improved concentration, attention, and perception of safety. Partially enclosed spaces and sociopetal layouts can often support a good balance of the human need for refuge and prospect.	Grahn, P. & U.K. Stigsdotter (2010). The Relation Between Perceived Sensory Dimensions of Urban Green Space and Stress Restoration. Landscape and Urban Planning 94, 264-275. Ulrich, R.S. (1993). Biophilia, Biophobia and Natural Landscapes. In: S.R. Kellert & R.S. Wilson. The Biophilia Hypothesis (73-137). Washington: Island Press. Wang, K. & R.B. Taylor (2006)

ID	Category	Subcatagory	Evidence		Reference
3.3.4			4 Legibility	Legibility is supported by distinctive and coherent qualities of an environment that enable us to easily form cognitive maps and find our way around a space. Contemporary prison facilities may suffer from poor legibility originating from two opposing problems. On the one hand, housing blocks often replicate identical designs across rooms, floors, wings, and buildings, resulting in a lack of distinctive features which can prove highly disorienting. On the other hand, lack of coherence in the overall site plan and labyrinthine networks of security checkpoints can lead to poor legibility due to convoluted complexity. Research has demonstrated that humans tend to display a natural preference for environments that balance coherence and complexity as well as legibility and mystery. As with refuge and prospect, an optimal balance of comfort and stimulation supports well-being best, though mystery is less desirable in situations associated with risk (such as dark urban streets and, most likely, prisons). Prison legibility is likely to be improved by creating greater coherence in masterplanning and greater distinctiveness in housing blocks. Beyond layout, many factors covered in the design section present great tools to use in creating more legible and engaging prison environments.	Kaplan, S. (1987). Aesthetics, Affect, and Cognition: Environmental Preference from an Evolutionary Perspective. Environment and Behavior, 19 (1), 3-32. Herzog, T.R. & A.G. Bryce (2007). Mystery and Preference in Within-Forest Settings. Environment and Behavior, 39 (6), 779-796. Herzog, T.R., & Flynn-Smith, J.A. (2001). Preference and Perceived Danger as a Function of the Perceived Curvature, Length, and Width of Urban Alleys. Environment & Behavior, 33(5), 653-666.
3.4.1	4 Design	1 Colour		The typically sterile and bland design standards of institutional environments like hospitals and prisons enhance stress and anxiety by mimicking the experience of neurophysiological breakdown. Minimalist spaces lacking colour and legibility evoke sensations similar to the symptoms brought about by conditions such as stroke, macular degeneration, and visual agnosia. There is surprisingly a dearth of strong and broad evidence on the relationship between specific environmental colours, mood, well-being. But there is good evidence that general lack of colour in institutional environments has negative well-being implications, and contextual integration of colour with broader design, texture etc. has positive effects.	Salingaros, N.A., & Madsen, K.G. (2008). Neuroscience, the natural environment, and building design. In Biophilic Design. p. 69. Wener, 2012.
3.4.2		2 Shapes & Materials		There is a strong evidence base on the negative impact of 'hard architecture', defined as materials resistant to human impact. Research has suggested that environments and furnishings designed to resist violent destruction may actually 'challenge' people to destroy them, resulting in environments that are dehumanising, expensive, and ineffective. Curved forms have also been linked to promoting calmer feelings than angular ones.	Sommer, R. (1975). Tight Spaces: Hard Architecture and How to Humanize It. Englewood Cliffs, NJ: Prentice Hall. Sommer, 1975. Dazkir, S.S., & Read, M.A. Furniture Forms and Their Influence on Our Emotional Responses Toward Interior Environments. Environment and Behavior, 44(5), 725. Papanek, Victor (1995). The Green Imperative: Natural Design for the Real World. New York: Thames and Hudson.

ID	Category	Subcatagory	Evidence		Reference
3.4.3			3 Order & Complexity	A good environmental balance of order and complexity has been found to have a positive impact on both perceptual and physiological stress responses. Highly ordered environments—those with little variation in colour, material, detail, and ornamentation etc.– provide few clues for spatial familiarity, which can enhance disorientation, boredom, and stress. Alternatively, environments which are too complex can hamper wayfinding and sense of safety.	Salingaros, N.A. (2012). Fractal Art and Architecture Reduce Physiological Stress. Journal of Biourbanism, 2 (2), 11-28. Joye, Y. (2007). Architectural Lessons From Environmental Psychology: The Case of Biophilic Architecture. Review of General Psychology, 11 (4), 305-328. Kaplan, S. (1988). Perception and Landscape: Conceptions and Misconceptions. In J. Nasar (Ed.), Environmental Aesthetics: Theory, Research, and Applications (pp. 45-55). Cambridge, England: Cambridge University Press.
3.4.4			4 Comfort & Awe	Finally, optimal buildings often offer a balance of proportions and configuration supporting comfort with a sense of 'bigger than self' inspiration. For instance, varying ceiling height throughout a building—with lower ceilings in more private rooms and higher ceilings in public spaces—may help achieve a balance of these parameters.	Alexander, C., Ishikawa, S., Silverstein, M., Jacobson, M., Fiksdahl-King, I., and Angel, S. (1977). A Pattern Language,.New York: Oxford University Press.

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Wellbeing in prison design

Core findings

3

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matter
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Contents

Abstract

This chapter forms part of Matter's *Wellbeing in Prison Design* project that seeks to develop an evidence base for improving prison design through the application of environmental psychology.

This chapter includes a summary of the linkages between health, wellbeing and rehabilitation, resettlement. The fieldwork in existing prisons is summarised and some interim conclusions are drawn, to inform the design guide.

The views in this report are those of the authors.

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3.1 Wellbeing and desistance

Although it is not yet clear the extent and nature of freedoms that will be given to prison governors, the assumption that standardised control measures and a fixed environment are needed for a security and safety for all, seems incompatible with an aim to encourage new pro-social thinking, attitudes and behaviours. The prison population is diverse, has varying risk and need,[1] and for rehabilitation to be effective the prison will need to be much more responsive to individual need. The evidence supports a need for bespoke interventions that help people to change their world view, develop strong relationships and secure the resources needed for stability and a stake in society.

A regime with a responsibility for rehabilitation has to be equipped to motivate and encourage engagement, and then to be able to respond, reward and build on progress when it is being made. The prison service's renewed focus on 'rehabilitation culture' begins to recognise that for some individuals lasting behaviour change, requires a level of personal growth of enormous magnitude, and is not a quick fix. The mix of psychosocial issues, addictions and entrenched behaviours that contribute to recidivism can be only be overcome with constant encouragement, practice and psychological reinforcement over time, in prison and after release. As people pass through the prison system and back into the community, any one institution can never consider themselves responsible for the beginning or end of a prisoner's rehabilitative journey.

A rehabilitation culture or 'whole prison' approach has been described as the institutional values, work practices, skill and behaviours needed and emphasizes the role that networks and

A regime with a responsibility for rehabilitation has to be equipped to motivate and encourage engagement, and then to be able to respond, reward and build on progress when it is being made.

relationships have to play in supporting prisoners journey to active citizenship and desistance from crime (see for example, O'Brien and Karthaus, 2014). The contention here is that the design of the building has a role to play in the implementation of that culture.

The body of evidence in environmental psychology points to the potential for building design to influence behaviour in general terms, and applies to the wider population. This section will explore rehabilitation and the evidence-led practice around the specific variables connected with the cessation of criminal behaviour. The design guide will test the extent to which prison design can shape or influence these variables in practice and become part of the complex range of resources required to support rehabilitation.

Evidence-led practice and behaviour change

The two key bodies of research that inform rehabilitation services can be found in the disciplines of cognitive behavioural psychology and criminology. The first, cognitive thinking skills, based on changing narrative and increased self-efficacy, emerged as part of what was termed the effective practice agenda during the 1990s, and underpin most offender behaviour change programmes delivered in prisons and in the community. Second, desistance theory, which takes a wider view of behavioural influences, looks at individual thinking but also takes more explicit account of relationships and circumstantial features.

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1   https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/449357/research-analysis-offender-assessment-system.pdf

Cognitive thinking skills and the effective practice agenda[2]

Setting aside the complexity of the treatment paradigm,[3] the cognitive skills research points to the psychological shifts needed to support behaviour change. These are not exclusive to cohorts in prison as they also relate to similar factors that have been shown to reduce anxiety and depression and underpin cognitive behavioural treatment and other talking therapy approaches designed to improve general population wellbeing. Wellbeing is not the same as rehabilitation but is a requisite step for building the resilience needs for significant and long-term change.

The thinking skills programmes that have been developed to address offending behaviour are essentially designed to help an individual to develop a new narrative or 'redemptive' script and increase self-efficacy by means of the following:[4]

- A reduction of anxieties and barriers and resistance to change, recognising wellbeing is a prerequisite to engagement and fear and stress are an impediment to change;

- The introduction of a problem-solving framework and consequential thinking to identify risk and choose alternative outcomes;

- A demonstration that people have different perspectives, and healthy relationships are based on listening and respect, and learning to avoid jumping to conclusions.

- Offering techniques to overcome rigid thinking, which is in part about interpretation of events, but also has some parallels with growth and fixed mindset and the ability to learn from mistakes.

2   McGuire, 1995

3   The Treatment Paradigm is where the intensity of a behaviour change programme is assessed in relation to 'risk, needs and responsivity'. The objective being that the recipient should receive a 'dosage' that is proportionate to the level of risk presented and the assessed likelihood that the candidate is 'suitable' to respond

4   TSP (Thinking Skills Programme), Offender Behaviour Programmes OBPs

In prisons there is a danger of creating a gap between the message of the programme, regarding self-efficacy and identity, and the kind of environment, conditions and regime in which it is received.

- A post-programme consolidation of techniques that require practice to change from an entrenched and default 'stimulus-response' reaction to a 'reasoned' course of action.

The effective practice programme manuals[5] demand strict maintenance of programme integrity, that equate in some way to the clinical conditions in which talking therapies may be delivered by the health service. This includes a group space environment that conveys value and respect, is comfortable and supports learning. However, as the manual is only narrowly focused on the group work experience it does not take account of the learning that should extend beyond the group room. In prisons there is a danger of creating a gap between the message of the programme, regarding self-efficacy and identity, and the kind of environment, conditions and regime in which it is received.

Desistance theory

In criminology, desistance theory arises from a body of research, with a wider perspective than cognitive thinking, that informs much of our current understanding of the rehabilitative journey (see for example, IRISS publication, Insight 15, 2012: S.Maruna, F.McNeill, C.Lightowler, S.Farell). It incorporates the personal element of cognitive thinking skills but also includes interdependent relational and situational factors. It has helped the criminal justice system to identify potential ways of reducing reoffending by adopting measures that are more enduring in supporting individuals to make an active choice not to re-offend.

5   Offender Behaviour Programmes OBPs

The sustainability of rehabilitative behaviour change is dependant on an individual choice not to re-offend, and the incentives, trade-offs and supports that help maintain that choice.

Clinks, the national infrastructure organisation supporting the voluntary sector, usefully distinguishes between primary and secondary desistance: 'Primary desistance refers to the absence of offending behaviour, and any lull or gap in a person's offending can be considered desistance in this sense. However, this is distinct from secondary desistance, which refers to a much more deep-seated change in the person, reflected in their developing an identity and perception of themselves as a non-offender.'[6]

The point being made is that it is possible to achieve primary desistance by the use of external controls and barriers, which may hold criminal behaviour in check until the control is lifted. This is in contrast to an internal or self-imposed restraint arising from an active choice to become a law-abiding citizen. Understanding the process of change from external to internal control is key to isolating the variables that can help individual prisoners successfully transform their lives.

The specific variables of desistance are often described in variety of language and with different emphasis. They are broadly described below:

Age and maturation
In his 1995 study,[7] Farrington showed that most young offenders have learned to desist from crime by the age of 32. The peak age of offending can vary and in recent years has ranged between 17

A negative experience of the regime and environment could harden and further entrench criminogenic attitudes, whereas a positive and rehabilitative environment would be part of a virtuous cycle towards maturity.

years and 21 years. Advances in neurological science have shown that as a society we have over-estimated the pace of maturation in young adults and that the brain is not fully developed until around the age of 25 years.[8]

Many young people in the criminal justice system have experienced trauma from abuse and being a looked-after child in the care system, have a learning difficulty, mental illness or addiction problem, as well experience of poverty and poor outcomes from education and employment. The negative impact of these lived experiences will affect the maturing process and neurological development, which may then extend to nearer the 30 years cited in Farrington's study.

The Transition to Adulthood Alliance, a charitable foundation, was created to look at more effective arrangements for supporting safe learning and maturation, while helping vulnerability young people with skills to accelerate their ability to manage crises and the trauma they have encountered.

The implications of this for prison design is to assess what affect the environment will have on the learning and maturation of young people, who are still deemed vulnerable and impressionable. The risk is that a negative experience of the regime and environment could harden and further entrench criminogenic attitudes, whereas a positive and rehabilitative environment would be part of a virtuous cycle towards maturity.

6   McGuire, 1995

7   Farrington, 1995

8   Blakemore and Choudhary, 2006

Self-efficacy, agency and empowerment

However, simply having new pro-social thinking and attitudes that are part of personal choices does not mean a change in behaviour can occur. The individual has to have self-efficacy to support the change, which in turn requires empowerment to believe that change is possible. Self-efficacy derives from understanding and belief, (increasingly) confident practise and habitual application of new skills, where the experience is reinforced by direct and indirect rewards.

Being an agent of your own change gathers momentum as applied skills lead to 'mastery' and incremental success. Success can also be witnessed through role models and practised safely with the confidence of seeing other succeed. Peer and supervisor encouragement, support and feedback to help overcome fear will support prisoners take their own steps towards rehabilitation. Quality of relationships and empowerment are the positive ingredients to make this work but the reduction of fear is also key as emotional and physiological stress inhibit belief and suppress motivation to try new skills.

The allocation of space in a prison where communal and private conversations can be had, will provide the opportunity and potentially for forming good relationships with staff and peers, which are the daily reinforcers of positive change. Or – as we found at HMP Berwyn where the acoustics in association spaces make normal conversation impossible – they can act as a barrier

'Your beliefs become your thoughts. Your thoughts become your words. Your words become your actions. Your actions become your habits. Your habits become your values. Your values become your destiny. '

Mahatma Gandhi

Social capital (family and social support networks)

A released prisoner will not be able to access professional or peer support 24/7 in the community, and if they are isolated or relationships are fragile this means a risky resource gap on the rehabilitative journey. The mantle of support will need to be passed onto networks in the community and ideally those close to the prisoner. Professor David Best as Sheffield Hallam University has written extensively about 'recovery communities' in managing recovery from addiction, and the 2017 Lord Farmer Review shows that families are the 'golden thread' running through the reforms across the prison estate.

The evidence shows that those prisoners, who are able to develop and/or maintain social networks such as family, friends and community groups are far more likely to succeed.

As well as emotional support, these connections provide the mutual benefit of stability alongside a resource for problem-sharing and advocacy. In desistance terms, this is the social capital needed to provide a sense of belonging, community and acceptance, as well creating an obligation and incentive to keeping on the 'straight and narrow'. The strength of this protective factor is dependant on all parties being able to manage quality relationships in, often adverse conditions of poverty and instability. More broadly, others have highlighted the importance a person's sense of belonging within a 'moral, social and political society' and the role that prisons and the wider community can play enabling this.[9]

9   McNeill, F. and Schinkel, M., 2015

When helping prisoners to prepare for release, the prison will need to have an effective interface with community-based assets, in which family is included, which may (literally) provide the key to basic provision such as housing, debt support, community health services or similar provision to meet diverse needs. As the Farmer report makes explicit these are factors involved on both the rehabilitation of the serving prisoner and the prevention of intergeneration offending of the children in the family.

Levels of social capital are their nature the product of good relationships, and quality space for prisoners to be able to access and build this capital is a critical part of a rehabilitative culture. The design and allocation of visitor space is one area that can support the development of social capital. However, alongside this is the allocation of functional space to resettlement services, who are often the intermediary or broker of social or wider 'rehabilitative' capital, made up of other community assets.

A stakeholder in society

Being a stakeholder in society and being able to participate and be accepted as member of the community is critical both in building self-efficacy and stability, but also in developing a new identity. A job that provides regular income and a constructive daily routine of activity and responsibility are instrumental in preventing crisis, are a trade off against the benefits offending and a buffer against future risk. For example, links with employers while inside can be critical to developing both the behaviours and networks needed to secure employment on release. Likewise, having a home rather than simply accommodation can make the difference between

Maturation, self-efficacy, social capital and a sense of belonging and being a stakeholder in society will only reach a point of transformation when an individual can start to re-shape their own self-perception.

feeling that there is something to lose rather viewing a situation as transitory and therefore dispensable, or worth putting any risk. In some prisons there is ample space dedicated to educating and industry but to optimise the benefits of this activity, these need to be tied into the other design supports for desistance variables, such as agency and maturation. For example, the concept of 'normalisation' being used to drive change at HMP Berwyn, is intended to give prisoners the opportunity to live as closely to how they would in the community, by having to get work, shopping and socialising with less regulation. This is also now being explored as part of the category C estate with progression wings, trialled at HMP Warren Hill and now being rolled out to HMP Buckley Hall and other institutions.[10]

This development of more sophisticated zoning within a prison, allows the prisoners 'space' to consolidate skills and exercise choices they will have in the community after release. The development of work-orientated routines will mean that they are better equipped to use thinking skills in the workplace.

Relabelling - a new narrative

Maturation, self-efficacy, social capital and a sense of belonging and being a stakeholder in society will, in desistance terms only reach a point of transformation when an individual can start to re-shape their own self-perception. An essential element of this is apparent acceptance by a community, and a shift to a 'redemptive' script where the label of offender is neither applied by third parties not by the individual. The transition from the automatic stigma of being termed 'offender' to being seen as a law-abiding citizenship

10   HMIP, 2014

means change can be more confidently sustained. However, as with recovery from addiction there is risk of relapse.

In Prochaska and Di Clemente's 'cycle of change'[11] they are clear that relapse can occur at any point, and it is only at the point that not offending or avoidance of addictive/habitual behaviour becomes the new 'normal', can rehabilitation or recovery be deemed to have a occurred. The maintenance of this state will come from the greater level of self-efficacy, the continued support available when challenges arise, the recognition that there is too much to lose to go back, and a new narrative that is about a different set of believed and values.

This final outcome is not likely to occur in prison for many prisoners but their experience inside will be a strong factor in how quickly this process can get going. When exploring how prison-design and the environment in which prisoners live may affect their journey towards rehabilitation, we are looking at the inhibitors and boosters of change in thinking, learning and behaviour.

Conclusion

Rehabilitation is a process by which individuals begin to shift values, thinking and behaviour to desist from committing crime. The endeavour is significant and the re-evaluation can be difficult and easily undermined. New skills are required and these need to be adopted and practised. It is not an isolated activity and needs the support of others, who are on-message consistent in their feedback and support. For progress to be sustained after a prisoner is released, he or she must be prepared for that

Rehabilitation is a process by which individuals begin to shift values, thinking and behaviour to desist from committing crime.

eventuality so that the contrast between the complex challenges of the community and the constraints of life in a secure and institutional setting do not result in a rapidly unravelling of the fragile threads that lead positive change.

Building design can either support or restrict this process. It can add value to this process by being adaptable, by aiding coherence and by giving reinforcing positive messages through its symbolism. A reduction of fear and stress is a basic requirement in a 'healthy' prison but it is also a basic requirement in a 'rehabilitative' prison, to support motivation and the creation of opportunity for a prisoner to become an agent of their own change, and practice the skill and develop the relationships that will be essential to a sustainable reduction in reoffending. A 'whole prison' approach to prisons would be one that approaches design as something that not just makes environments better for those who live there but also about providing the right conditions for all those working within and visiting them.

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11   Prochaska and DiClemente, 1983

3.2 Fieldwork outcomes

In order to 'ground' the academic research in the specific circumstances of prisons and to gain from the knowledge and perspectives of their users, field study visits were made to two recently opened establishments. These visits are considered as case-studies and are not broadly representative of prisons in general, but do give insights at a particular point in time in the new prison building programme. The aim is not to be directly reactive to specific circumstances encountered in these cases, but to sense-check the theoretical work and to open up the process to the building users and benefit from their experiences.

HMP Low Moss

A visit was made to HMP Low Moss, near Glasgow, in 2017 where a tour was given by representatives of the Scottish Prison Service commissioners, the architects responsible for the design and the construction contractor. No formal survey work was undertaken, but the visit provided a useful case-study in demonstrating the potential for design innovation in the UK context. The relatively high quality environments of the exterior of the building, the landscaping, reception, staff facilities, visitors centre and education block are readily apparent. The impacts and effects of this on the psychology of the building users and the subsequent contribution to rehabilitation outcomes have not been studied. Whilst potentially worthwhile, this is extremely difficult (maybe impossible) to disentangle from other aspects of the operational regime, the different scale of the estate in Scotland from England and Wales and other external factors.

Education and visits
spaces in HMP Low Moss
Photos by Andrew Lee
Architecture Holmes Miller

Top: large-format
image of landscape in a
houseblock, HMP Berwyn
Above: picnic tables
overlooking the sports
pitch, HMP Berwyn
Photos courtesy HMP
Berwyn

HMP Berwyn

More formal, planned survey work was carried out at HMP Berwyn in north Wales during 2017. As noted, this work is supplementary and informative to the desktop research on which the design guidance is based, but has been useful in highlighting specific areas of the latest, completed prison design and specification that impinge very directly on the prison environment and its operations. In some cases, these effects are felt at the more basic, functional level rather than at a purely psychological level. That is to say, some current design measures have negative effects on the basic, practical and physical functioning of the prison on a day-to-day level. The purpose of the *Wellbeing and Prison Design* project is not to define functional requirements; they can and should be addressed through improvements in commissioning and procurement. Such issues do have consequential effects in environmental psychology and are therefore partially addressed in the pilot design guidance.

The survey work was undertaken over three separate visits:

- An introduction to the establishment prior to its opening where the format of the surveys was agreed and the spaces viewed prior to occupation.

- A visit once the prison had been open for a few months and was approximately 25% full. A structured meeting with a selection of staff with different roles was conducted, escorted 'walking audits' with officers and peer mentors from amongst the men and some acoustic testing was conducted in an unoccupied houseblock.

- A follow-up visit shortly after to design the electronic survey with the staff and peer mentors.

HMP Berwyn is striking in that significant efforts have been made to turn a mostly conventional category B prison design into a more inspirational and uplifting environment suitable for category C through relatively minor physical interventions. The management regime has publicised its desire to put in place a holistic approach to rehabilitation through supporting the men in custody to maintain a sense of dignity and identity within the UK's largest prison. Walls have been painted brighter than usual and large-scale, high quality prints of landscapes have been fixed to the walls. Positive landscaping of the grass areas between the buildings is beginning to emerge with flower beds and trees. 'In room technology' consists of laptops issued to the men with a hardwired link to the internal network. These physical measures are matched with the operational philosophy and terminology: those in custody are referred to simply as 'men' and the cells are 'rooms'. The guiding principle is that officers and staff are enablers of rehabilitation first and foremost.

It deserves re-iterating here the extreme difficulty of separating out individual measures in terms of their contribution to rehabilitation potential. The scale of HMP Berwyn (2,106 capacity) means it is an exceptional prison, a decision that was widely criticised at the time as detrimental to rehabilitation. The compactness of the site has advantages, but neither facilities nor outdoor space appear adequate for the future population. A large proportion of officers are new recruits and there are some basic functional shortcomings in the building design. The prison has opened during the early period of the changes to the probation system, with initial data indicating generally poor performance across the country; all prisons are part of a larger system from which outcomes are assessed.

HMP Berwyn, from top:
Internal fencing and gates,
planting beds, GP waiting
area with rooflight

Key findings

The visits centre at HMP Berwyn is designed quite differently from any other part of the prison - it is the only space with indirect lighting, to give one example - and was consistently commented on positively by both the men and staff in our survey work. Other key findings were:

Environmental design

The environmental performance of Berwyn was amongst the first issues raised by both staff and men. Normally, users of buildings are mostly oblivious to environmental performance and only mention it when it is failing, so this clearly indicates a significant issue. There are areas being used by staff that have no openable windows, no air-conditioning and only limited mechanical ventilation. There appear to be no background ventilators on the windows and some spaces had no external windows. Elsewhere, the form of the buildings and the windows are not adjusted to respond to their solar orientation. In many cases, these shortcomings appear to arise from the spaces being used differently to that originally planned, however this serves to highlight the need for flexibility and adaptability in the design of prisons. The houseblocks are not mechanically ventilated but neither do they provide clear, natural cross-ventilation routes and so are only ventilated by the movement of people in and out of the space, which may not be sufficient. Security constraints have clearly played a role in these decisions and the building apparently complies with relevant standards, however post-occupancy survey work is an important means of idenitfying such issues.

HMP Berwyn, from top:
Meeting room with fixed
windows, visits area,
typical light fittings

Staff facilities and welfare

This was another area that was raised consistently by members of staff who found basic facilities such as toilets, showers and drinking water points to be inadequate, even while the prison is some way from being at full capacity.

External spaces and the sense of open-ness

There were positive responses to the general sense of open-ness within the walled perimeter, in spite of the density of buildings. Taller buildings mean there are views from inside, out beyond the walls and the pathways between buildings are not covered. However, the team were concerned that this could change over time if more facilities have to be built within the perimeter. The layout of the buildings means the external spaces are 'fragmented' meaning many are unusable, or too small whilst being difficult and costly to maintain. The internal fences and gates were cited as a heavy burden on staff time and staff questioned their necessity in a category C prison. They severely limit the potential for the men to have a degree of autonomy, or free movement, which is currently regulated via a system of hand-written paper notes.

Lighting, materials, acoustics

Daylighting in many spaces was poor and most spaces were artificially lit throughout the day. In some areas, rooflights were used to good effect and these spaces were notable as feeling different and more uplifting.

Apart from the visitors' centre, artificial lighting throughout the prison is consistently high in colour-temperature, high in lux-level

HMP Berwyn
Above: houseblock entrance
Right: typical single room (cell)
All photos of Berwyn courtesy HMP Berwyn
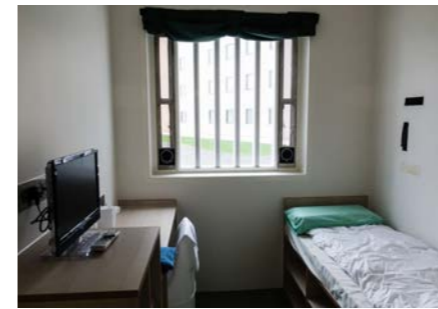
and direct only. Combined with the relatively low daylighting levels in most spaces this makes for a stress-inducing environment that does not meet best practice for residential, work or education facilities. In the houseblocks, the solid concrete construction is used throughout as a final, painted finish. This has various impacts on the environment, but the most quantifiable is the acoustic performance. Measurements taken in vacant houseblocks indicated reverberation times two to three times the limit for intelligible speech were recorded. The houseblock association spaces cannot be used for one-to-one discussions either between the men or between the men and officers. The difficulty of being understood tends to lead to a 'shouting' culture, which makes for a highly stressful environment.

Houseblock configuration and rooms

Generally the men interviewed liked their rooms and felt them to be adequate, though lacking storage space and ability to personalise. It should be noted that all these men had transferred from older establishments and they reported that their previous rooms had been much poorer. Within the rooms, windows have openable ventilation grilles on either side. These did allow a degree of ventilation, but due to their design were dependent on wind direction.

HMP Berwyn incorporates a high proportion of twin, sharing rooms which both officers and staff stated as a negative. It should be noted that some shared room provision is advocated by officers, something that is supported by evidence, but that the majority of people in custody should have their own room.

The three-dimensional configuration of the wings and the cores that serve them was reported as both positive and negative during the surveys and has been discussed at length with the PETP team. Overall, the configuration does not adequately support the different, more supportive type of relationship that the prison reform agenda envisages between officers and people in custody. This has been considered in more detail in the design guidance.

Summary and relevance

Whilst the relevance of specific case-studies is limited, there are both positive and negative measures that stand out as being particularly pertinent and have informed the focus of the design guidance. In the case of HMP Berwyn, at least some of the shortcomings appear to have arisen as a result of either changes to the originally intended use and security requirements of the building, or from adjustments to the design and specification late in the delivery process. All of these issues point to a requirement for improvements in procurement, as well as in the design itself.

A further note of caution is that both case-studies are recent buildings which will continue to be adapted over time and be subject to different regimes and demands. Experience from other establishments suggests that prisons do not stand up well to these rigours. A broader issue of the adaptability of prison buildings as well as the process of adapting them over time is touched on in the design guidance but merits further work.

A further useful comparison between the two case-studies is the different commissioning contexts. The much smaller scale of the Scottish Prison Service means that all parties involved in commissioning, operation, design and construction can all meet together in a single room and debate issues in the round. The larger scale of the service in England and Wales makes this difficult and means that challenging design assumptions is more complex and time-consuming. This suggests that the commissioning process itself should be pro-actively designed as part of the reform agenda.

Industries and employment

At the time of the field work at HMP Berwyn the Prison Industries arrangements were not in place and therefore, the purposeful activity that is now available was extremely limited. This means that the prisoner experience of purposeful activity was not picked up in the interviews or the questionnaire.

What we know is that prisons industries aim to create purposeful activity for prisoners, so they can gain work experience, learn new skills which includes technical and thinking skills in the workplace, and generate income for the prison that can be reinvested to add value. It is an arrangement where private companies can contract with a prison to either receive goods produced by the prison team as part of their supply chain, or directly access labour and space to run a business from within the prison.

The alternative to having prisoners involved in prison industries is to release people on temporary licence so they can attend suitable employment in the community. This is successfully applied in the open estate but is more susceptible to policy shifts in more secure institutions. For this reason an employer may be uncertainty as to whether a full staff compliment will be available when planning recruitment from a prison.

To optimise the benefits of the prison industries policy, a prison will need to have factored in design features that support the running of a business. Whether employers are in the community or based in the prison, they will be looking for a high level of productivity as a return on their investment.

For this to be achieved the following features will need to be consistently delivered:

- A reliable workforce, where attendance is not dependent on the availability of prison officer escorts, is minimally impacted by lock downs, and able to operate outside of regime hours.

- A work force recruitment pool and succession planning capability, where the prison routinely assesses motivation and skill to achieve best employment fit and create a skills development pipeline. This may require that prisoners be in multiple activity sites throughout the day; it will depend on whether they are employed full time or part-time, with training and other interventions in their schedule.

- A work force recruitment pool and succession planning capability, supported by efficient core services i.e kitchens, cleaning and laundry. Employment targets should not be met by having over-inflated numbers working in the 'hotel' functions of the prison. The effect of this is to limit the talent pool and undermine the 'normalised' work experience.

- Deliveries and distribution of products at the gate need to be as easy and fast as possible, without compromising security.

3.3 Online survey

Following the fieldwork at HMP Berwyn, a survey was developed for distribution amongst the entire population of the establishment, including staff and men in custody. The survey was designed together with the peer mentors that the team met, to be delivered via the *In-Room Technology* and the peer mentors were prepped to advertise it and assist others with completing it. The objective is to gain similar insights to the fieldwork from a more representative number of participants, at least of this particular establishment at a point in time, to further inform the design guide. The questionnaire was based on the walking interviews the team undertook with the peer mentors and used plain English to ask a series of 'baseline' questions, before proceeding to subjective responses to different spaces within the prison. Most of these questions were alternative multiple choice, asking about the best and worst aspects of spaces. Technical limitations did not allow a more sophisticated ranking system, however space was given for extended written answers to add further detail. Technical constraints also meant that only men in custody have been able to respond thus far, but a total of 309 responses, representing 45% were received. These were only recently received at the time of publication and still require full analysis, however some partial summary information is provided here. Some headline findings are: a strong consensus that noise is a problem and that the ability to move around is important.

The aim is for the survey to be repeated on an annual basis, tracking changes over time, beyond the 'bedding in' period of the establishment and to give feedback on how adjustments to the environment are affecting users of the building. As with any qualitative data, interpretation is not simple nor straightforward and will require careful consideration amongst other potential factors affecting individual responses. The survey design methodology is not covered here, but has been explained as part of the approved research application to the MoJ and this will be reviewed during the interpretation of feedback. A supplementary report will be published in 2018 with full survey analysis.

- Number of years served?

■ 0-1　■ 2-5　■ 5-10　■ Over 10
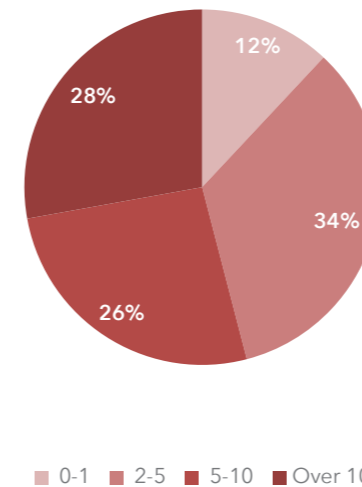
- First time in prison?

■ Yes　■ No
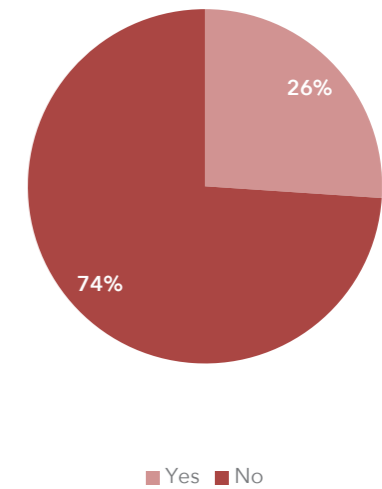
- Specific physical health needs?

■ No　■ Would rather not say　■ Yes
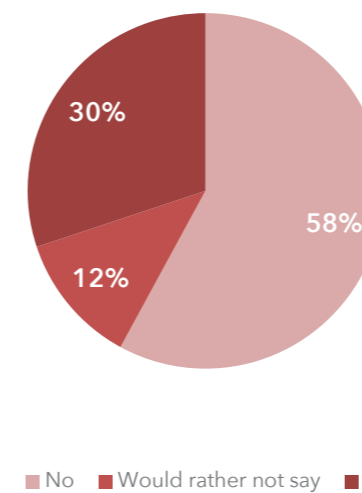
- Specific mental health needs?

■ No　■ Would rather not say　■ Yes
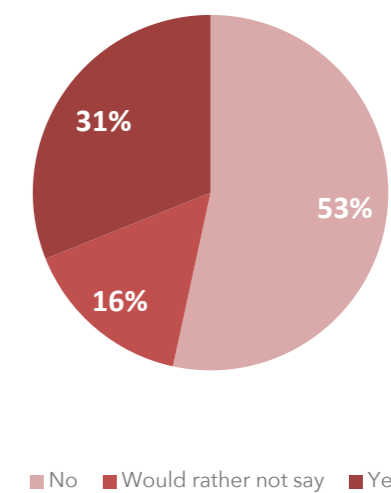
- How important are the following to your wellbeing…

Legend: Extremely important, Very important, Combined

X-axis: Being able to progress, Feeling safe, Being motivated, Being able to make some choices, Having the right amount to do, Being able to help others, Getting on with other people, Keeping physically active

- Type of room?

1%
22%
43%
34%
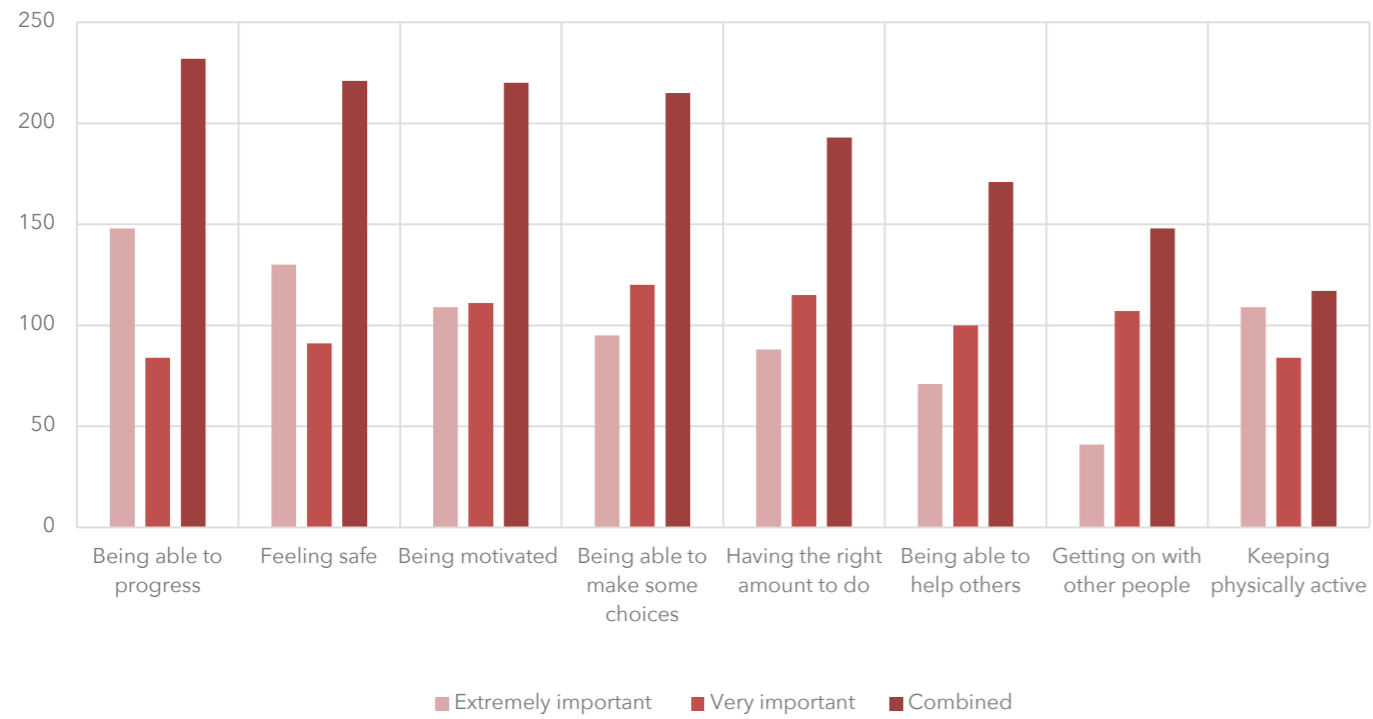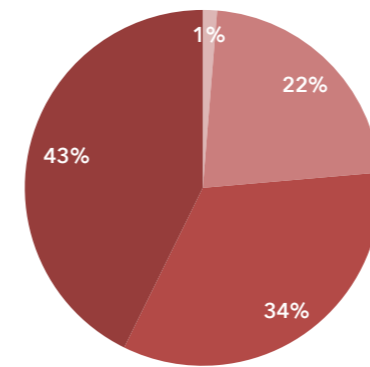
- Accessible room
- Double and sharing
- Double and not sharing
- Single

- To what extent does your room make you feel…

Legend: Extremely, A lot, Moderately, A little, Not at all

X-axis: Safe, Happy, Sociable

- Best things

TV	17
New/clean	18
Phone	75
Privacy/single room	90
Shower	108

- Worst things

Bed/pillow	18
Storage space	18
Toilet/shower/sink	20
Sharing	31
Ventilation/heating	60
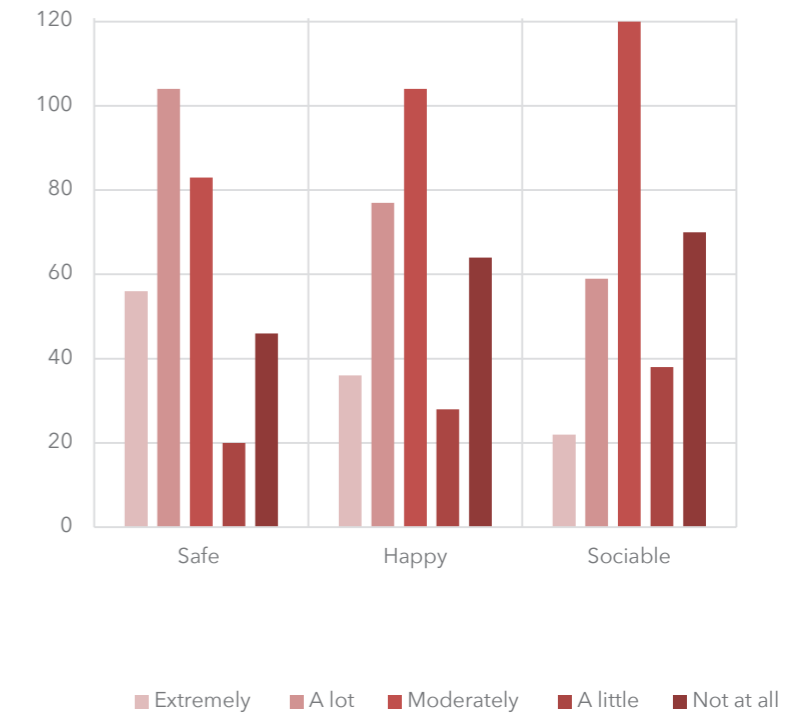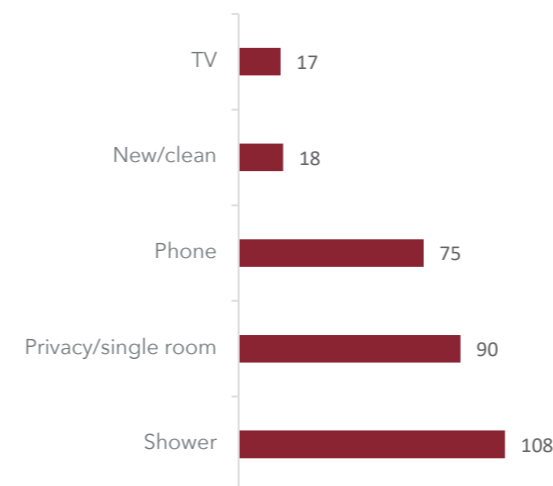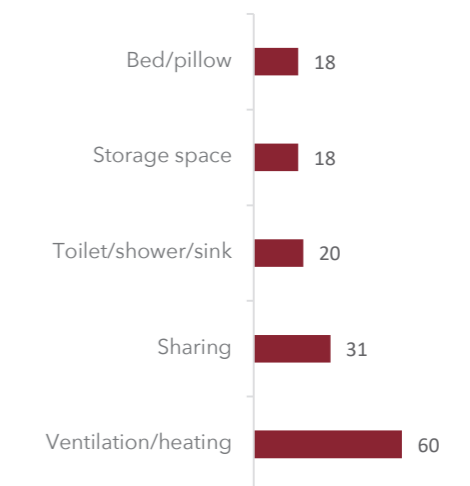
- To what extent do the block landings make you feel…

■ Extremely ■ A lot ■ Moderately ■ A little ■ Not at all

- Best things

Sofas/seating	29
Openess	31
Clean	34
Ability to socialise	38
Nothing	50

- Worst things

Mess/dust	9
Narrow/space	13
Not enough to do	35
Ventilation	16
Noise	29
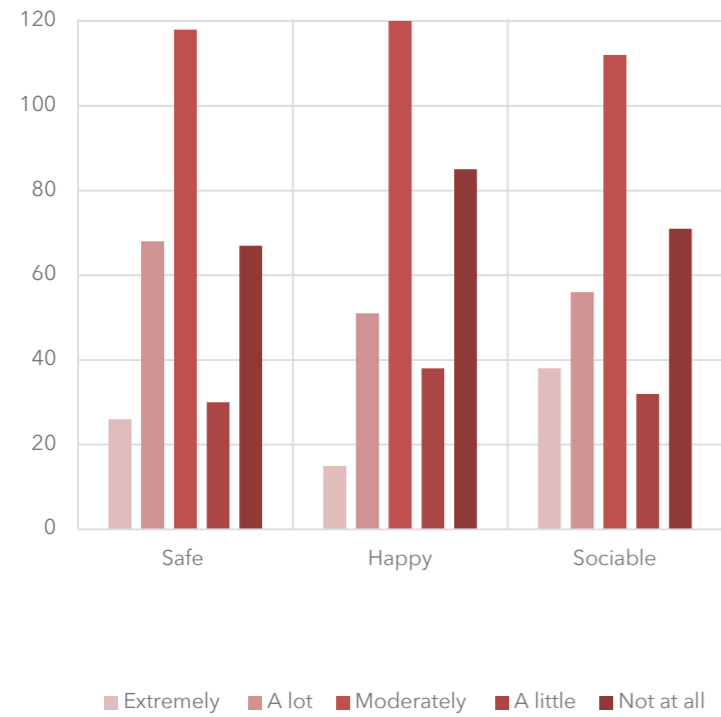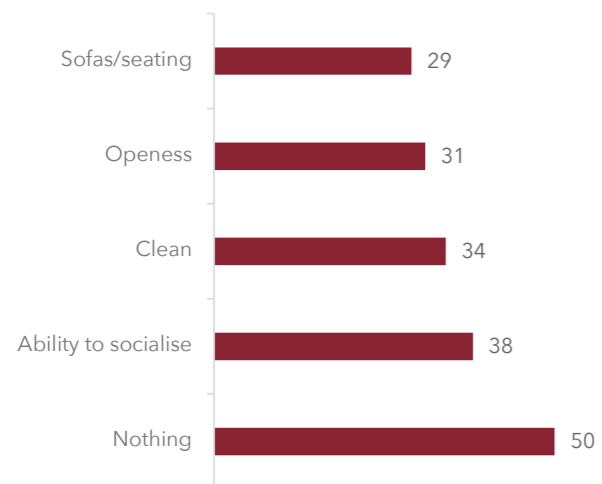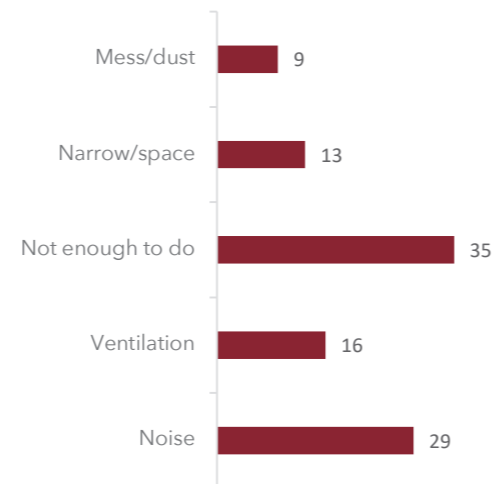
- To what extent do the outside spaces make you feel…

■ Extremely ■ A lot ■ Moderately ■ A little ■ Not a lot

- Best things

Sofas/seating	29
Openess	31
Clean	34
Ability to socialise	38
Nothing	50
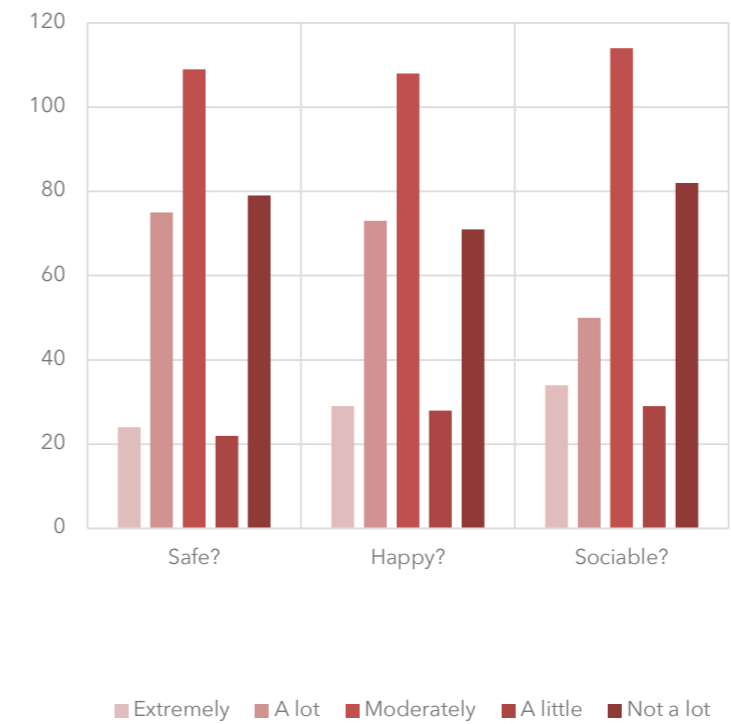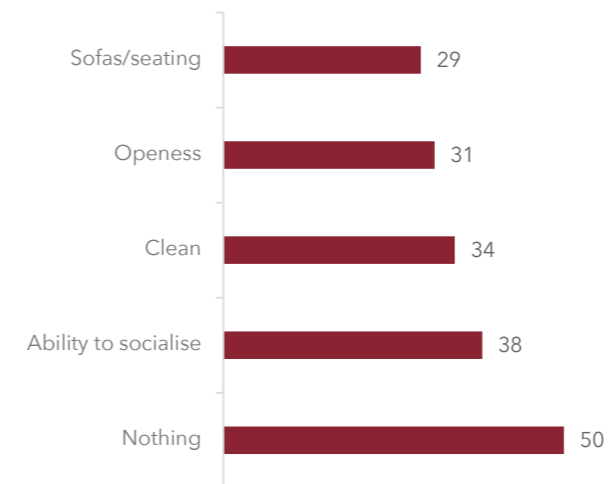
- Worst things

Negatives were relatively few and sometimes contradicted. If there was any consensus (other than general positive feedback) this included:

- Not being allowed to use the benches and some of green space supplied.

- Too many fences breaking up the space.

matter

- Thinking about the building and design of HMP Berwyn please pick what you believe has the most…

… positive impact on people's wellbeing?

Ability to move around	95
Amount of daylight	59
Circulation of fresh air	19
Levels of noise	15
See what is happening	38
Spaces for privacy	49
Spaces to socialise	30
Type of artificial light	4

… negative impact on people's wellbeing?

Ability to move around	51
Amount of daylight	43
Circulation of fresh air	36
Levels of noise	70
See what is happening	20
Spaces for privacy	48
Spaces to socialise	21
Type of artificial light	20

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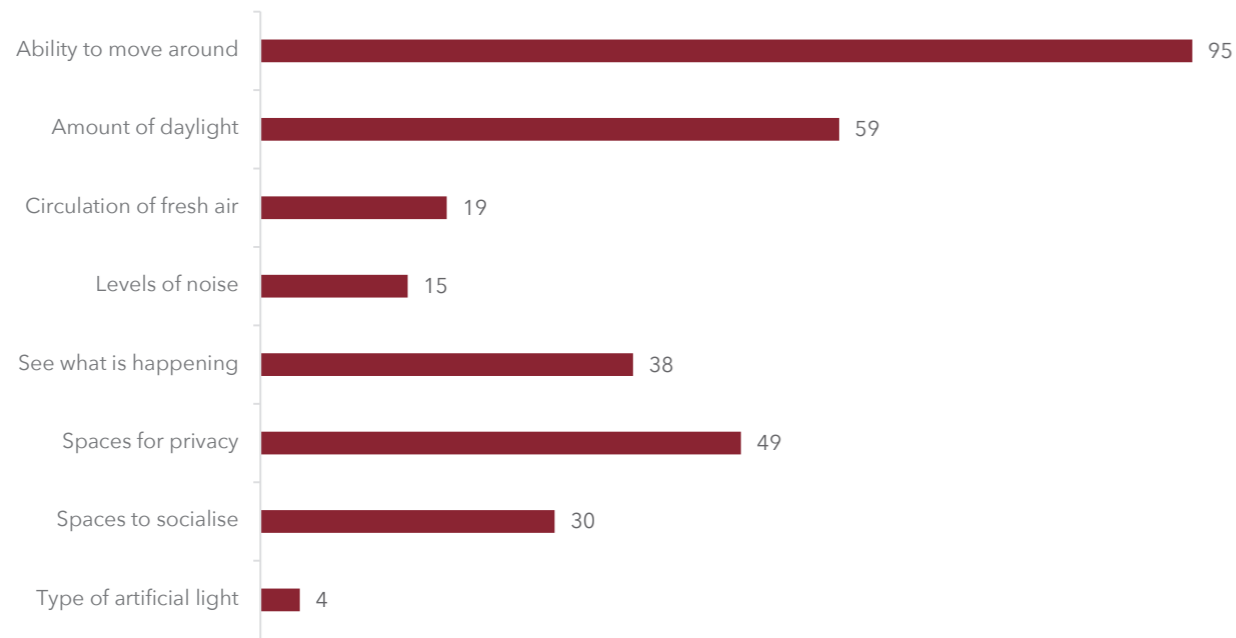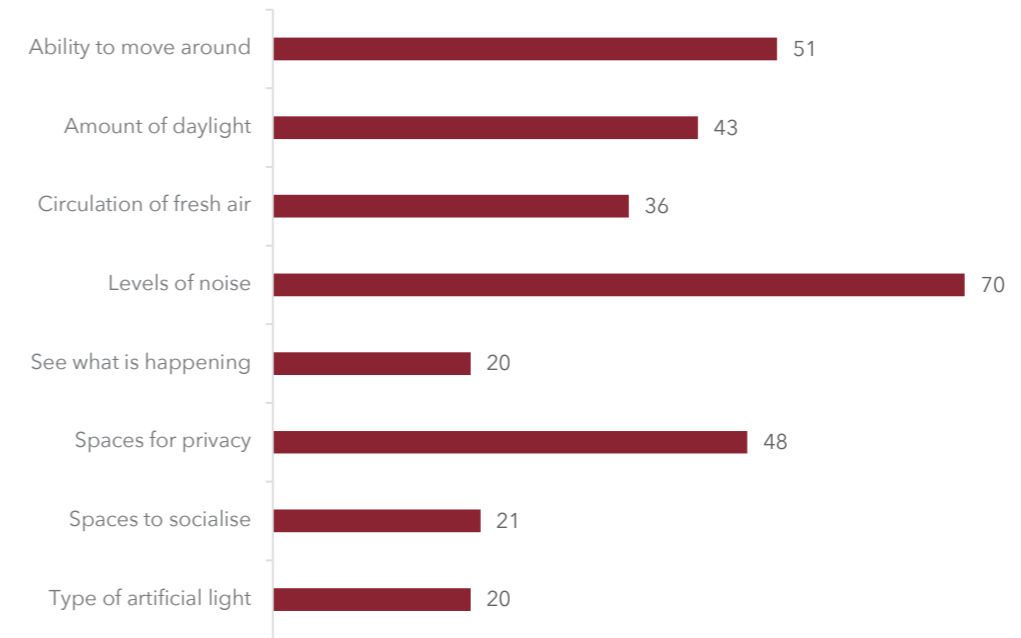
3.4 Interim conclusions

Proof of concept

In this first incarnation, the design guide has been developed as a 'proof of concept'. By establishing a framework for linking broader academic evidence with specific design measures in the context of current prison design practice, the goal is to demonstrate the value and effectiveness of people-centred design within this most constrained of building types. The methodology has been to deliver practical recommendations, as part of a more open, broadly engaged and iterative commissioning process that is currently underway. The work is therefore considered as a first step and only through iterative testing and development of both the content and the process, will better prison environments be achieved.

Evidencing benefits

Part of that process is necessarily the evidencing of benefits and outcomes that arise from these measures. This is beyond the current project scope but is an important next step and the establishment of a user survey within HMP Berwyn provides a potential vehicle to track this over time from our benchmark case study. The current user surveys undertaken across the prison estate are the SQL (Staff Quality of Life) and MQPL (Managing Quality of Prison Life), designed and administered by the University of Cambridge. Whilst these are valuable in monitoring user's experiences, they do not specifically seek to elicit the contribution of the built environment to quality of life in prisons. Our survey can therefore become a potentially complementary and hopefully equally useful tool. The survey itself will require further design

The methodology has been to deliver practical recommendations, as part of a more open, broadly engaged and iterative commissioning process

development before it can be applied more widely. At this stage, the design guide is reliant on existing, broader evidence to link specific measures with contributions to benefits in rehabilitation terms. The links in this chain are many and interconnected with broader factors, as previously noted. Over time, it is anticipated that these links can be reinforced through more direct evidence from user surveys.

Testing

The project is intentionally designed to deliver useful information into the current commissioning process and it is anticipated that this will continue in the next stage. Dialogue with construction contractors should enable the design principles to be tested. It is also anticipated that there are numerous opportunities for innovation in the design of specialist construction products that can directly address some of the detailed principles and that these could have a strong commercial basis. The team is keen to engage in such research and development processes.

Soft landings, post-occupancy evaluation, BIM

The link between the user experience of prisons (both from a staff and prisoner/visitors' perspective) and their design has historically been extremely weak. Commissioning teams have made important strides forward in joining up the operational and physical design of prisons, as witnessed during this project, however there remains much greater potential to design in post-occupancy evaluation in a way that can feed into the commissioning process. A further,

more radical step is to enable senior management teams in each prison establishment to access the BIM (Building Information Model) of their buildings in order to fully understand how it works, to feedback their operational concerns and to input into the design of adaptation, expansion and re-rolling. Even in non-secure environments, this potential of BIM has yet to be fully realised and the additional constraints of the prison regime make this much more demanding. Nonetheless, the current commissioning process is putting these pieces in place and the potential for it should not be overlooked.

Design Review

A key step in the commissioning and design process that is recommend is the inclusion of Design Review. This is a well-established protocol within the wider built environment, whereby a panel of design experts, with some expertise in the building type provide a critique of the proposals during the design development. The intention is to focus purely on design, to be entirely constructive and to act as a 'critical friend' to the commissioners and designers. Design Review has pushed up the level of design in many other types of buildings, not least in schools, hospitals and other institutions. Unlike these other building types there is a very limited pool of design expertise on prisons and in the first instance, it is recommended that wider design expertise be considered. Acting as a critical friend requires expertise in the skill of design more than knowledge of the specifics of the building type and this is particularly true in the prison estate where the quality of design that exists is relatively

It is recommended that a Design Review Panel for new prisons be established and that architects of the highest design calibre, with even limited knowledge of prison design be recruited.

low. Design Reviews are normally conducted in confidence, but the security restrictions of prison design certainly create additional challenges to a design review process. Notwithstanding this, it is recommended that a Design Review Panel for new prisons be established and that architects of the highest design calibre, with even limited knowledge of prison design be recruited. This will no doubt take time and may well not be able to assist the initial phases of the estate transformation programme, but it will nonetheless be highly pertinent and worthwhile. In other areas, objections to design review have often been based on the assumption that increasing design ambitions would simply increase costs, but this is unfounded. Whilst design review panels may call out budgets that are too low for the objectives to be delivered, good design rests on the skilful allocation of the available resources. In the context of prisons, security issues would appear to be the greatest obstacle, but in such demanding environments, the benefits of even modest changes can be transformatory and so should be pursued. Much good practice has been published on Design Review.[1]

Existing prison establishments

This design guide has been developed with a view to informing the design of new prison establishments, but it has an equally, if not greater potential to be applied to existing prisons. Through the identification of typical situations and possible responses, the design guide can be applied in reverse, to identify existing areas of opportunity for adjustments in existing environments. Some of these may be modest, whilst others requiring more significant investment, but if undertaken as part of any adaptation,

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1   Design Review, principles and practice, http://www.designcouncil.org.uk/sites/default/files/asset/document/DC%20Cabe%20Design%20Review%2013_W_0.pdf

maintenance, upgrading or similar project, judgments as to where money can best be spent can be informed by the design guide's evidence base. The team are in discussion with some existing establishments to test this facility of the design guide.

Beyond the walls

The preceding project _RSA Transitions_, undertaken by some members of this team and published in 2014 began by looking at disused land surrounding prisons as a latent asset for rehabilitation activities. Through the project, it became clear that capacity building within the prison walls, of the people in custody and of the workforce, together with adjustments to the prison building were a fundamental part of releasing this latent value. This current project has focused mainly on the internal design of prisons, but the potential to connect with the immediate surroundings, physically, socially and economically remains underexplored and offers a further area of future expansion for the project.

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Wellbeing
in prison design

Design guide

4

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matter
A R C H I T E C T U R E

Contents

Abstract

This chapter forms part of Matter's *Wellbeing in Prison Design* project that seeks to develop an evidence base for improving prison design through the application of environmental psychology.

The first version design guide is set out in the following pages, which can also be navigated directly from the main contents page by topic as a reference document. Links on each page connect the guidance to areas of the environmental psychology evidence.

The views in this report are those of the authors.

matter

4.1 Purpose and application

Overview

The purpose of the design guide is to give qualitative, supplementary guidance in the design process of prisons. It provides some key issues for design consideration that will significantly affect the health and wellbeing of all people in the prison environment. It is important to emphasise that design solutions should address all design parameters holistically. This design guide outlines some of the complexities that are present in prison environments and asks the designer to critically consider alternative solutions. This first edition of the guide is in no way comprehensive; rather it provides a range of examples that can be extrapolated from.

The design guide is organised into three tiers:

At the **high level**, there are overall objectives in three core areas that outline the issues affecting the whole prison. These form design principles that should be the starting point in the planning and site layout process. These principles are derived from both direct environmental psychology evidences and a much broader base of evidence of comparable settings.

At the **intermediate level,** these are more concerned with general provisions related to specific buildings and functions in the prison. The prison environment comprises many different functions that must work together and independently to be fit for purpose; that is to protect those that are outside prisons and rehabilitate those within. These general provisions are aimed at improving the health and wellbeing in these different building typologies.

Finally, the **detail level** looks at specific design issues, starting with typical current situations and suggesting possible design responses that incorporate the principles previously outlined. These are aimed at encouraging design innovation through drawing out the complexities of the requirements that have to be met.

Evidence base from environmental psychology and literature review

MASTERPLAN

HIGH LEVEL
Overall design objectives

BUILDING

INTERMEDIATE LEVEL
General provisions

SPECIFICATIONS

DETAIL
Specific design measures

High Level

MASTERPLAN

Evidence base from environmental psychology and literature review

HIGH LEVEL
Overall design objectives

- Location and scale
- Principles
- Relationship with outside
- Adaptability and flexibility
- Prefab and modular components
- Accessibility
- Layout, legibility, diversity
- Diverse, multiple needs
- Exterior space

Guidance on the following pages highlights areas of process and design where strategic objectives should be clarified and improved.

BENEFITS

Positive effects on wellbeing of people in custody, visitors and staff

Improved efficiency of prison environment

Increased support for rehabilitation

BRIEFING AND STAKEHOLDER ENGAGEMENT
Development of strategic benefits
Contraints and opportunities

DESIGNING FOR PROCUREMENT AND CONSTRUCTION
Creative use of modern construction methods and processes

DESIGN REVIEW
Iterative design process with independent review, through to construction

MULTIPLE NEEDS
Understanding of diverse and multiple needs and responding to them.

ACCESSIBILITY
Prisons designed to be fully accessible and accommodating

HUMAN
Prison facilities adequate for both prisoners and staff
Personalisable prison environments
Appropriate atmospheric conditions, levels of privacy
Aesthetic design considerations

LEGIBILITY
Legible easy to navigate prison layout

DIVERSITY
Variety within the overall plan

OUTLOOK
Good prospects and view of green spaces

EXTERIOR SPACE
Purposeful exterior spaces designed for a range of functions and easy maintenance

ADAPTABILITY
Flexible prison layout designed to be adaptable over lifecycle

AUTONOMY
Appropriate degree of free movement and choice

PROCESS

CONFIGURATION

DESIGN

Process

Local context

Site specifics

Local economies and communities

Broader input

DESIGN REVIEW

BRIEF

PROCESS

ENGAGED STAKEHOLDER

Engagement with other participants

PROCUREMENT and CONSTRUCTION

Creative use of modern Methods of Construction (MMC)

Designing for procurement, construction and operation

Principle 1.3: Designs should creatively explore the use of Modern Methods of Construction (MMC) to its full potential

Principle 1.4: New developments should make effective use of Building Information Modelling (BIM), Building Assembly Modelling (BAM) and Building Owner Operator Model (BOOM)

As structures with repeating elements on cleared sites, new prisons are ideally placed to benefit from MMC including prefabrication and systematised components. The special requirements of prisons mean that the benefits of integrated design of structure, services and other building fabric via MMC has not yet advanced to the same degree as other building types. An integrated approach to design should be used to develop repeatable components and systems for the prison sector as a means to deliver better environmental performance and building quality cost-efficiently. Some specific opportunities are highlighted in the detailed design section of this design guide.

Value Engineering should be incorporated into this design process and not applied later to completed, integrated design packages, where the implications and therefore full value of cost-savings are difficult to fully assess.

Use of BIM allows the design to be interrogated and performance tested at an early stage. This information can be used to streamline the construction process and potentially reduce costs (BAM). Finally, the model can be passed onto the operations to manage the building over time and optimise its performance (BOOM).

Briefing and stakeholder engagement

Principle 1.1: Briefing processes should engage stakeholders and operations

Principle 1.2: Planning processes should engage local stakeholders

Whilst the brief for a new prison is established centrally by the MoJ, a successful building will respond to local circumstances in order to maximise opportunities for formal rehabilitation partnerships, as well as more informal relationships with local communities. Early engagement of stakeholders and a wide range of local interests such as Police and Crime Commissioner, Community Rehabilitation Company, NHS, employment representatives and other regional and local service providers, as well as local industries, community groups and organisations enables potential rehabilitation opportunities to be supported at the strategic level. This engagement will likely result in modest adjustments to the brief, but without this involvement the brief is likely to permanently exclude opportunities to support rehabilitation.

New prisons require planning consent, a process that involves statutory consultations. By this stage in the process, the design will be fixed, but planning presents a further opportunity to engage local stakeholders with a new establishment and build local support networks. More detailed aspects of the design, such as external landscaping and visitor facilities may still be adjusted through this process.

The briefing, design and planning process involves multiple organisations, contractors and subcontractors and a clarity of engagement requirements throughout this process is crucial to implementation.

Design review

Principle 1.5: Design review should form part of the design process

http://www.designcouncil.org.uk/sites/default/files/asset/document/DC%20Cabe%20Design%20Review%2013_W_0.pdf

Design review is an established process, where independent experts are appointed to a panel, to provide critical, constructive advice on emerging schemes, by reviewing against the original brief and objectives.

Configuration

EXTERIOR SPACE

Sufficient spaces for outdoor activities

Well considered landscaping

Easily accessible

Ease of maintenance

OUTLOOK

Views to surroundings

Views of nature

Encouraging positive interactions

RELATIONSHIPS

CONFIGURATION

LEGIBILITY

Easy navigation

Orientation

AUTONOMY

Good use of technology

Appropriate internal security barriers
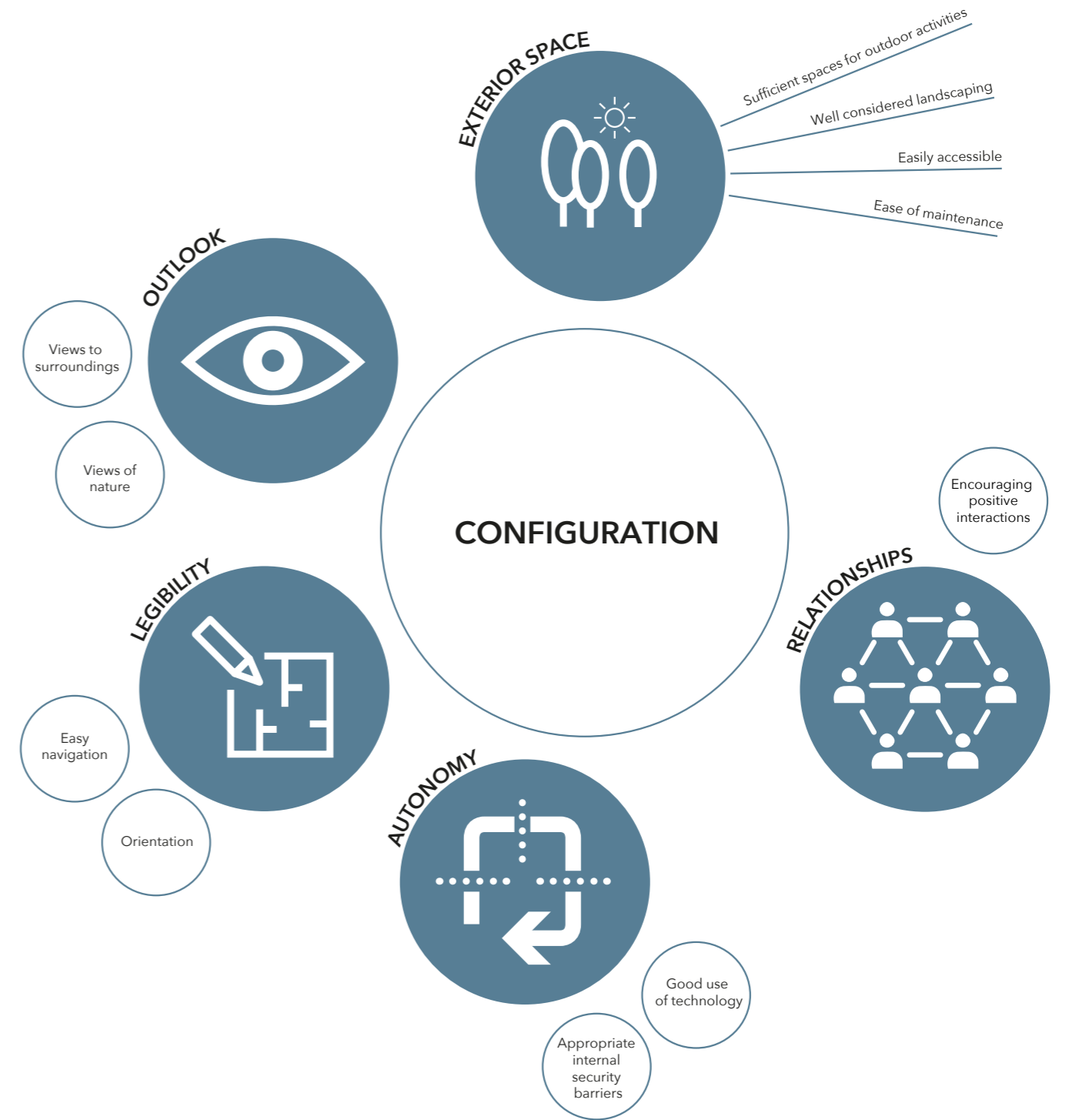
Legibility

Principle 2.1: Prison layout should be legible and easy to navigate

Disorientating prison layouts can contribute to stress for all prison-users. Being able to easily navigate through a space with clear views of entrances and corridors has direct links to the perception of safety. Legible environments that enable orientation are less stressful.

3.4.3 Place factors / Design / Order and complexity

3.3.4 Place factors / Layout / Legibility

Diversity

Principle 2.2: Prison designs should incorporate diversity to enable a sense of identity within the institution

Whilst spatial familiarity is linked to way-finding and orientation, diversity is important in allowing people to identify different areas within the prison and to support their own identity in relation to their environment. Legibility and diversity are related, but can also be contradictory and a balance needs to be struck to generate identifiable, diverse and legible environments within an institutional setting.

3.4.3 Place factors / Design / Order and complexity

3.3.4 Place factors / Layout / Legibility

3.4.4 Place factors / Design / Comfort and awe

Autonomy

Principle 2.3: Degrees of free movement should be enabled through use of electronic control devices and other measures
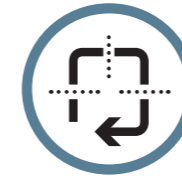
Principle 2.4: Interaction between people should be promoted by excluding unnecessary fences, gates, bars and other barriers

2.2.2 Purpose factors / Group level control / Collective efficacy

2.1.4 Purpose factors / Individual control / Autonomous movement

People in custody should be given a greater autonomy to promote collective efficacy and self-efficacy. The possibility of achieving this should be explored through removal of barriers and use of electronic tracking devices and other forms of security technology. Such measures also support better relationships between staff, officers, visitors and people in custody.

Relationships

Principle 2.5: Design configurations and layouts should encourage positive interactions and relationship building

2.2.2 Purpose factors / Group level control / Collective efficacy

Interpersonal relationships are vital to an individual's wellbeing. In an exceptionally confined environment, negative relationships can be especially harmful. The design of the layout and configuration should aim to be conducive to positive relationships, in particular by allowing sufficient amount and types of different spaces.

Barriers and thresholds should be carefully considered so as to not inhibit interactions and prevent relationship building, whilst enabling individual privacy and security.

Outlook

Principle 2.6: Habitable spaces should have views to natural elements

Principle 2.7: Habitable spaces should have good prospects

Prisons are isolating environments, which can contribute to poor health and wellbeing.

Where possible, habitable spaces should have views of natural elements (landscapes, trees etc), either within, or beyond the walls of the prison.

Habitable spaces should have views that enable orientation within the wider prison and where appropriate, beyond the prison walls.
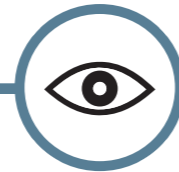
Location

Principle 2.8: The prison should be located and configured to make best use of the available land and engagement with the local context

Engagement during the briefing and design process should be worked through the design to ensure that the building supports relationship-building with local communities, external providers, local employers, visitors etc. The approach, entry sequence and visitor facilities are particularly important, as are training, health, education and other facilities.
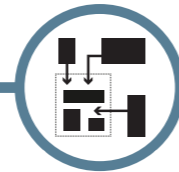
Exterior space

Principle 2.9: Exterior spaces should be cultivated with plants and landscaping

Principle 2.10: External spaces should be designed to be easily maintained

Principle 2.11: External spaces should be easily accessible

Principle 2.12: There should be sufficient space for a range of purposeful outdoor activities and recreation

Planted recreational spaces are a great asset to environmental psychology, providing a wide range of health and wellbeing benefits. Spaces should be cultivated and abundant, to provide for sufficient outdoor physical activity. The scale and form should suit its function and should be located for ease of access and maintenance.
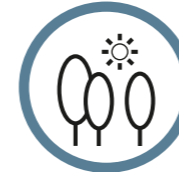
Adaptability

Principle 2.13: Prison buildings and masterplans should be adaptable to changing future needs

Most prisons have been expanded and adapted since they were originally built and consideration should be given to enabling future expansion and adaptation within the secure perimeter without compromising the external spaces and facilities. The potential for re-rolling should be considered, but should not compromise the environment for the originally intended use, through inappropriate levels of security.

Design

Designing for multiple needs

Understanding of multiple needs

Identifying needs

DIVERSE MULTIPLE NEEDS

Personalised environment

HUMAN NEEDS

Privacy

Personal space

Improved aesthetics

Sufficient facilities

Good environmental conditions

Leisure zones in common areas

DESIGN

ACCESSIBILITY

Accessible facilities
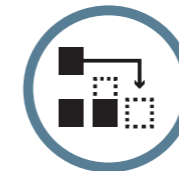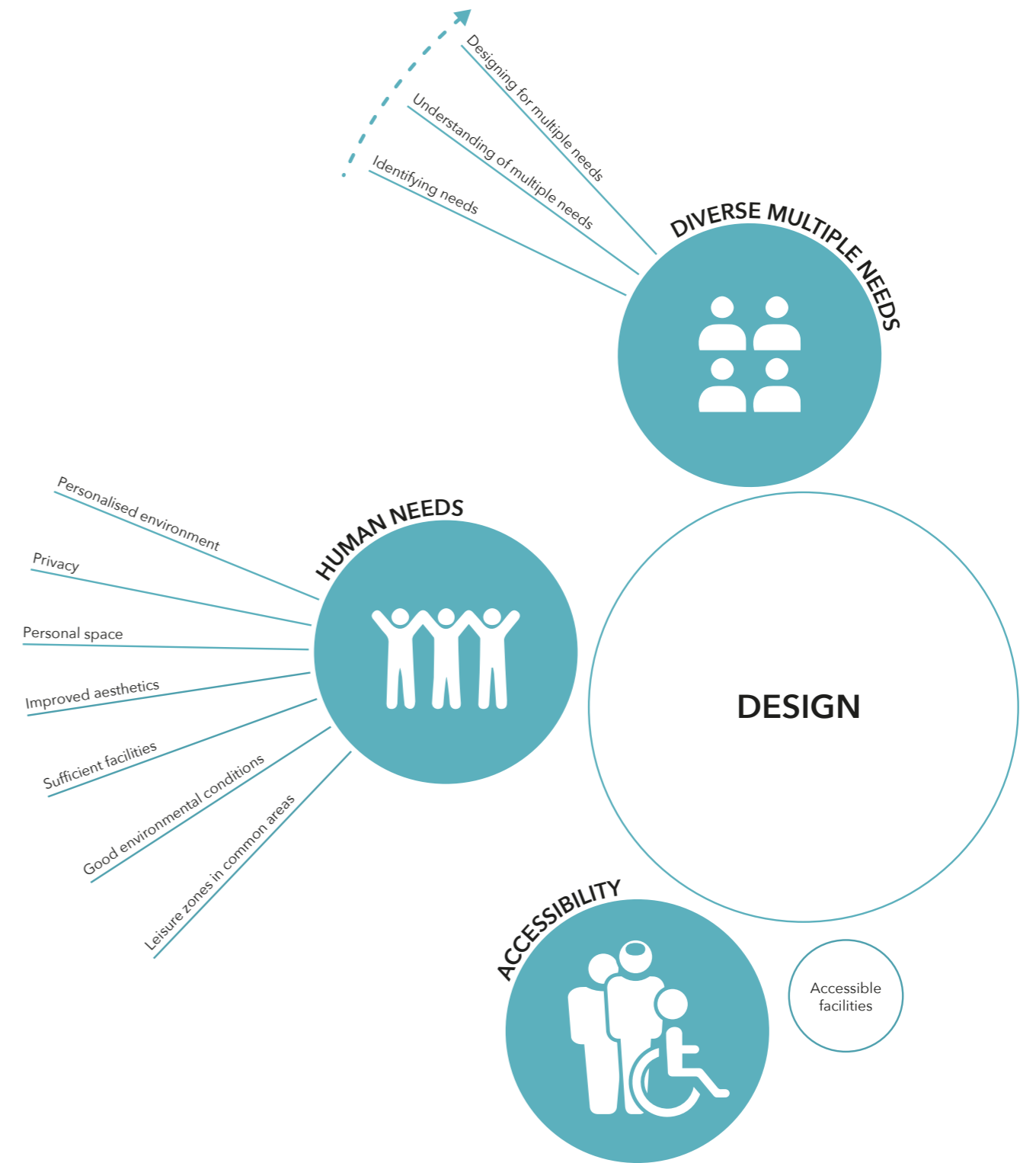
Atmosphere

Principle 3.1: Prison environments should have comfortable atmospheric conditions.
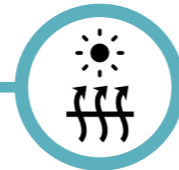
Ventilation, heating, lighting and acoustics are important preconditions for health and wellbeing conducive environments, but are frequently very poor in prisons. The environmental strategy for ensuring decent atmospheric conditions should be established early in the design process, with measurable performance targets and then followed through the detailed design and delivery. 'Soft landings' and post-occupancy processes should incorporate testing against these targets.

3.2.1 Place factors / Atmosphere / lighting

3.2.2 Place factors / Atmosphere / Acoustics

3.2.3 Place factors / Atmosphere / Air quality, smell and temperature

Privacy and personal space

Principle 3.2: Prison design should accommodate adequate personal space.

Privacy and personal space are both important functional factors for creating comfortable environments. Having adequate interpersonal distances is important to wellbeing especially in the confined environment of prisons. Design should seek to give both people in custody and people working in prisons and other users privacy and adequate personal space. Overcrowding is highly likely to be a strong impediment to rehabilitation.

1.2.1 People factors / Spatial Functional / Personal space

2.1.2 Purpose factors / Individual control / Privacy

2.2.1 Purpose factors / Group level control / Territory

Aesthetics

Principle 3.3: Uses of colour, shapes, materials and variability in design should be considered.

3.4.1 Place factors / Design / Colour

3.4.2 Place factors / Design / Shapes and materials

3.4.4 Place factors / Design / Comfort and awe

Aesthetic design of prisons can have a strong effect on the health and wellbeing of all prison-users as they are exposed to the same environments for long periods of time. The use of colour, shapes, materials and variety can provide positive enhancements to the environment and can alleviate the effect of a large-scale institution.

Facilities

Principle 3.4: Prison facilities should be appropriate for all prison users.

Establishment-wide facilities such as toilets, showers, drinking fountains, kitchenettes and rest areas are basic requirements for decent conditions for all prison users and their lack or inadequacy can be detrimental to morale in the longer term. Whilst levels of provision are generally specified for predicted populations in custody, they are often inadequate for officers, staff and external service-providers, limiting their effective ability to support rehabilitation. Standards for the provision of basic facilities for workers in the prison environment should be established and implemented.

Personalisation and control

Principle 3.5: Cells should be personalisable where possible.

Principle 3.6: People in custody should have some control over atmospheric conditions within cells.

Being given the possibility to personalise their own environments has a wide range of benefits for the health and wellbeing of people in custody, helping to create a sense of place and identity within the wider authority of an institution. Allowing men in custody to control atmospheric conditions like opening windows or ventilators, controlling heating, dimming lights or changing their colour, mounting pictures on their walls, choosing the colour of curtains and bedding can alleviate negative wellbeing impacts of poor atmospheric conditions and generate a sense of self-efficacy.

For example, in HMP Berwyn, some men are given their own door key and officers are required to knock on their doors. A further measure could be to enable people's names to be displayed on their cell door. Observational evidence from Berwyn supports the concept that giving people in custody control over their spaces also results in them taking care of and respecting their space. This is a key example of how physical design and operational philosophy should be aligned.

1.3.1 People factors / Psychological / Identity

2.1.1 Purpose factors / Individual control / Atmospheric conditions

2.1.3 Purpose factors / Individual control / Personalisation

Multiple needs

Principle 3.7: Identify, anticipate and accommodate for multiple needs.

http://dementia.stir.ac.uk/blogs/dsdc-news/2017-06-05/iridis

Prisons accommodate people with a range of special needs, often multiple needs per individual and at a much higher rate than in the general population. These include multiple mental health issues, disabilities, physical health issues and substance-addiction histories. Additionally, the prison population is ageing, meaning that dementia and physical disabilities are becoming more prevalent.

Designers should seek to identify and understand these complex and multiple needs in order to arrive at responses that improve the current circumstances. Currently, prisons are designed without sufficient accommodation for mental health issues and dementia.

Accessibility

Principle 3.8: Prison environments should be accessible to all prison-users.

The prison environment should be non-discriminatory where possible and should be equally accessible to all users. There is a growing population of older men in custody in the UK which reflects a greater need for accessible living units, facilities and access. Current accessibility standards should be reviewed in prisons to ensure that future needs can be met.

Intermediate level

4.3 Intermediate level - general provisions

Evidence base from environmental psychology and literature review

BUILDING

INTERMEDIATE LEVEL
General provisions

- Visitor and entrance facilities
- Admin and staff facilities
- Wellbeing
- Exterior spaces
- Education
- Workshops
- Houseblock
- Energy centre
- Kitchens
- CASU
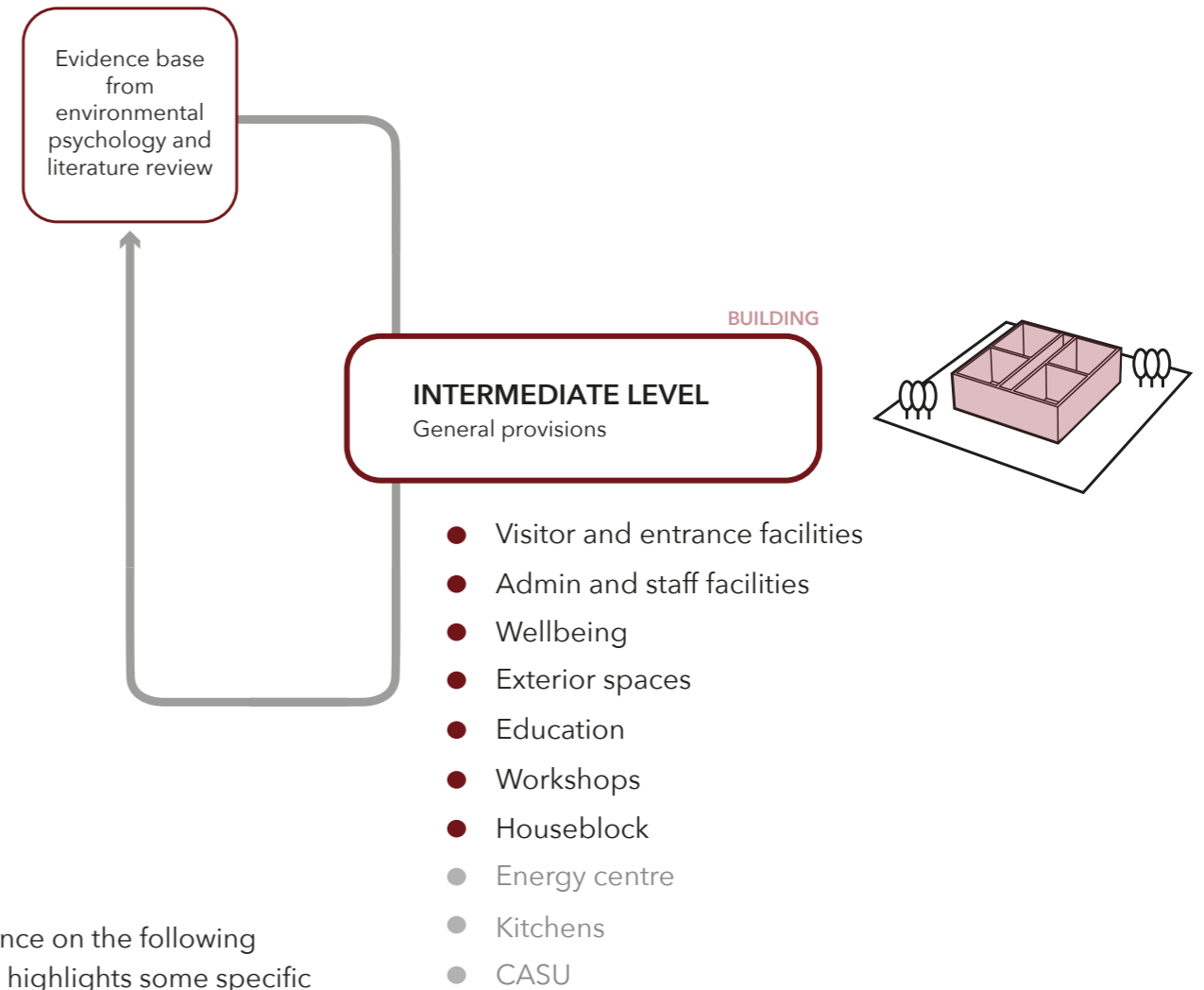
Guidance on the following pages highlights some specific aspects of design in the typical building types indicated in black to the right. The spaces in grey have yet to be considered.

Outlook

> **Principle 2.6:** Habitable spaces should have views to natural elements

> **Principle 2.7:** Habitable spaces should have good prospects
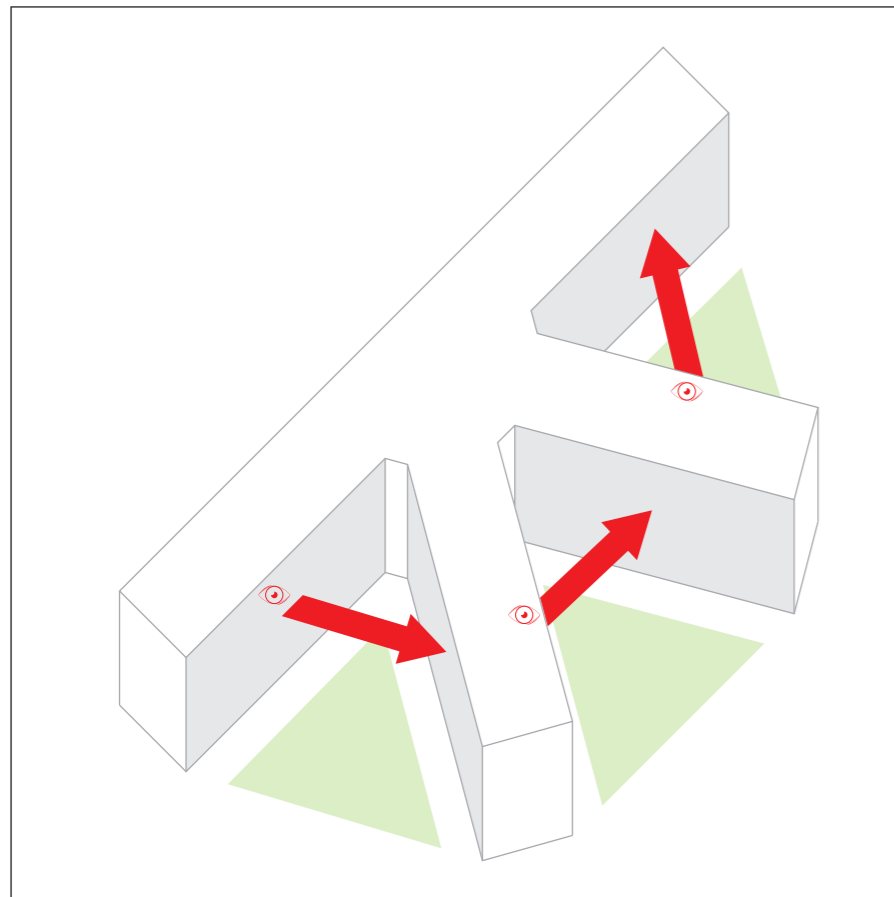
Typical situation

• Cell windows that have limited or no views beyond the exercise yard are common

• Windows that do not provide good prospect reduces the perceived safety and heightens the sense of being trapped

• Cell windows looking into one another do not allow adequate privacy

Possible design response

• Windows from house blocks that have views to natural elements and offer good prospect have multiple health and wellbeing benefits

• Non-facing windows that are at least perpendicular as required in typical housing standards

• Greater privacy reduces use of curtains allowing more daylighting

matter
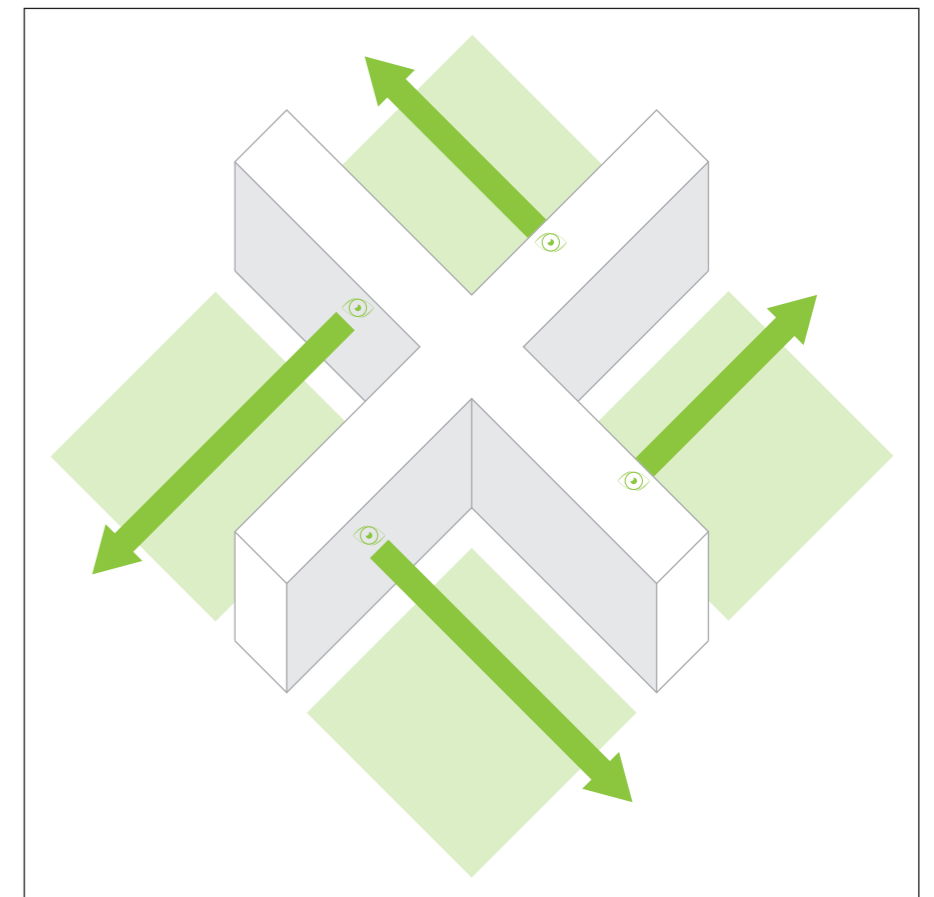
Outdoor spaces

> **Principle 2.9:** Exterior spaces should be cultivated with plants and landscaping

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> **Principle 2.12:** There should be sufficient space for a range of purposeful outdoor activities and recreation
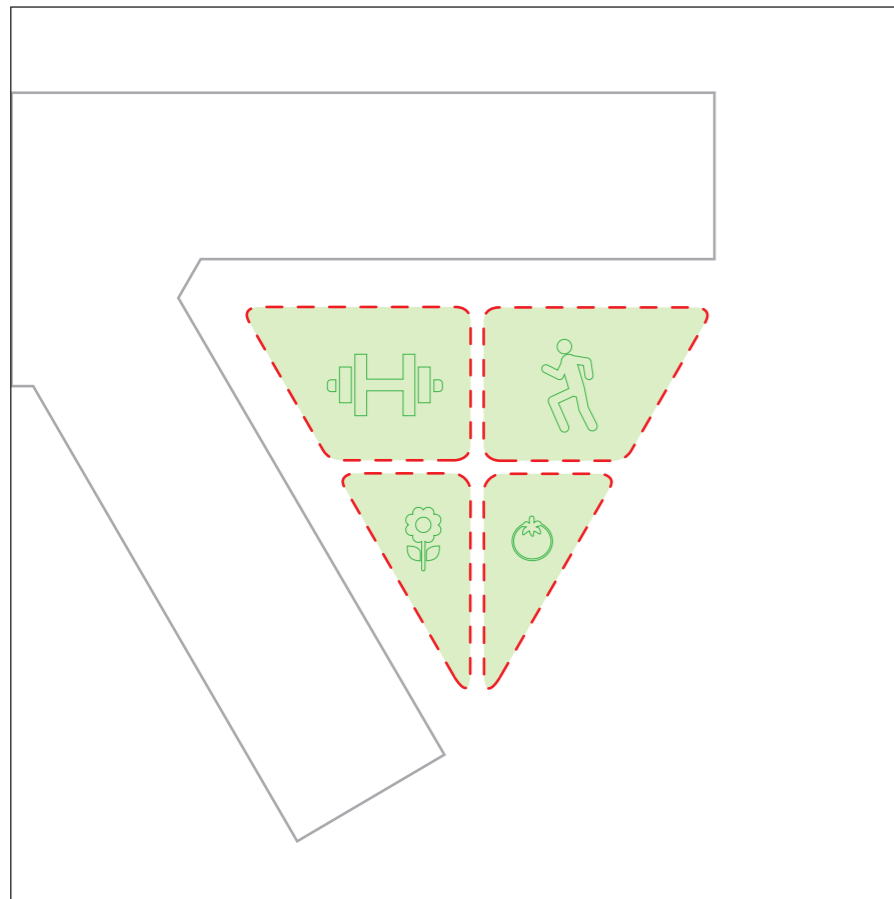
Typical situation

• Exterior recreation spaces are determined by plan of house blocks, rather than positively designed

• Scale often inadequate, configuration does not facilitate use nor maintenance

• Degree of enclosure and overlooking inhibits free activity
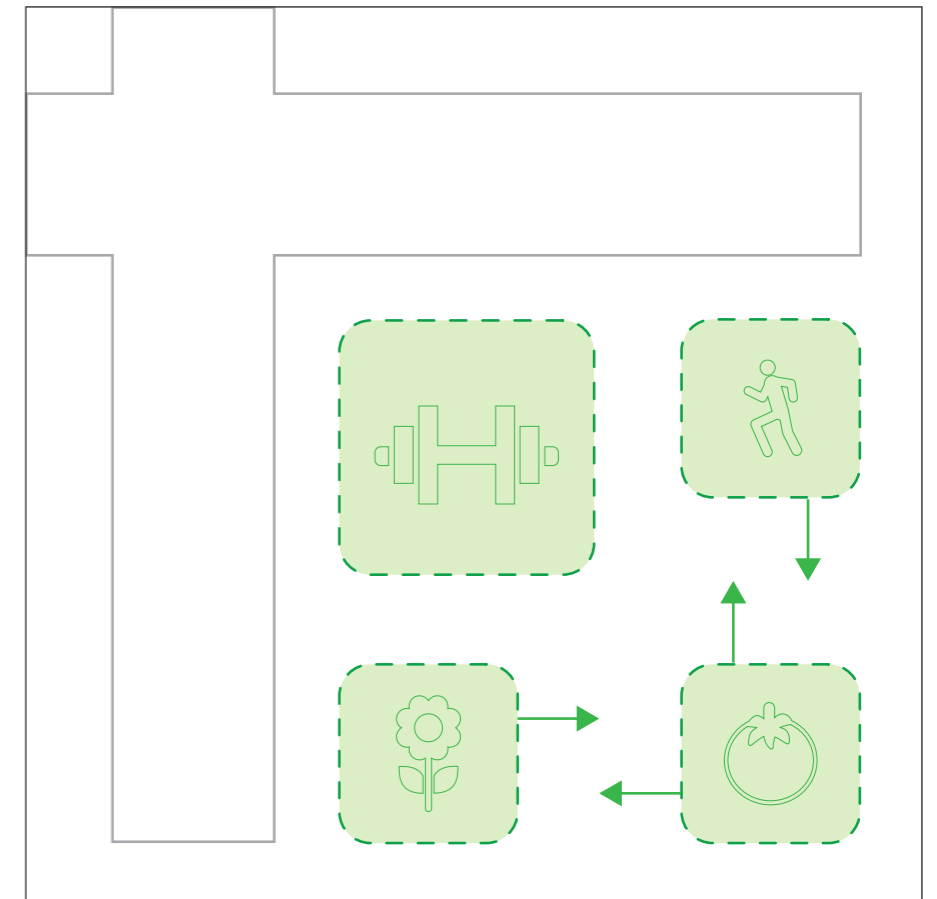
Possible design response

• Positive and clearly defined external spaces with good prospects, that can be easily maintained

• Spaces that are sized and proportioned according to the number of users and types of activities

Autonomy

> **Principle 2.3:** Degrees of free movement should be enabled through use of electronic control devices and other measures

> **Principle 2.4:** Interaction between people should be promoted by removing unnecessary fences, gates and barriers
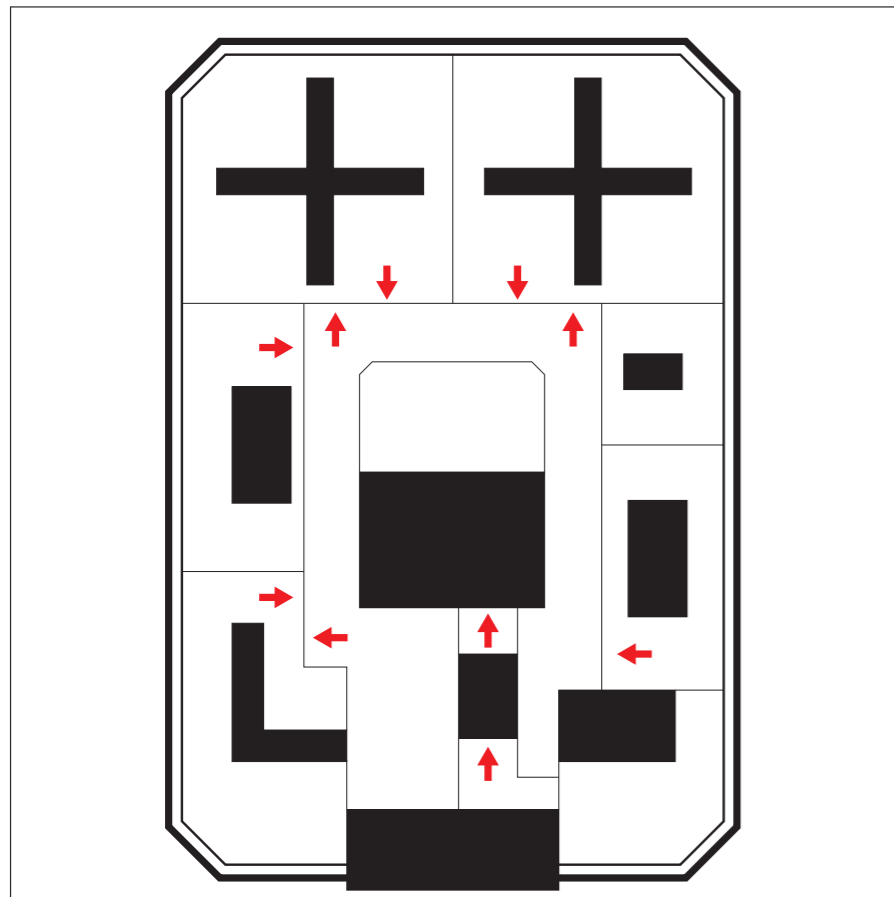
Typical situation

• Restricted access to facilities adds to day-to-day frustrations

• Barriers to movement inhibit self-efficacy and hamper trust relationships, cohesion and informal social control

• Increased resources on escorting men in custody from location to location, reducing potential time for other relationship building activities

• Aesthetics of control and enclosure are not conducive to health and wellbeing

Possible design response

• Flexibly controlled freedom to move between facilities and house blocks enables best use of time and resources.

• Enabled through appropriate use of technology

• Reduced cost of physical barriers

• Removal of barriers gives men in custody more trust to develop self-efficacy.

• Enhances the legibility of the prison layout and makes it easier to navigate between buildings
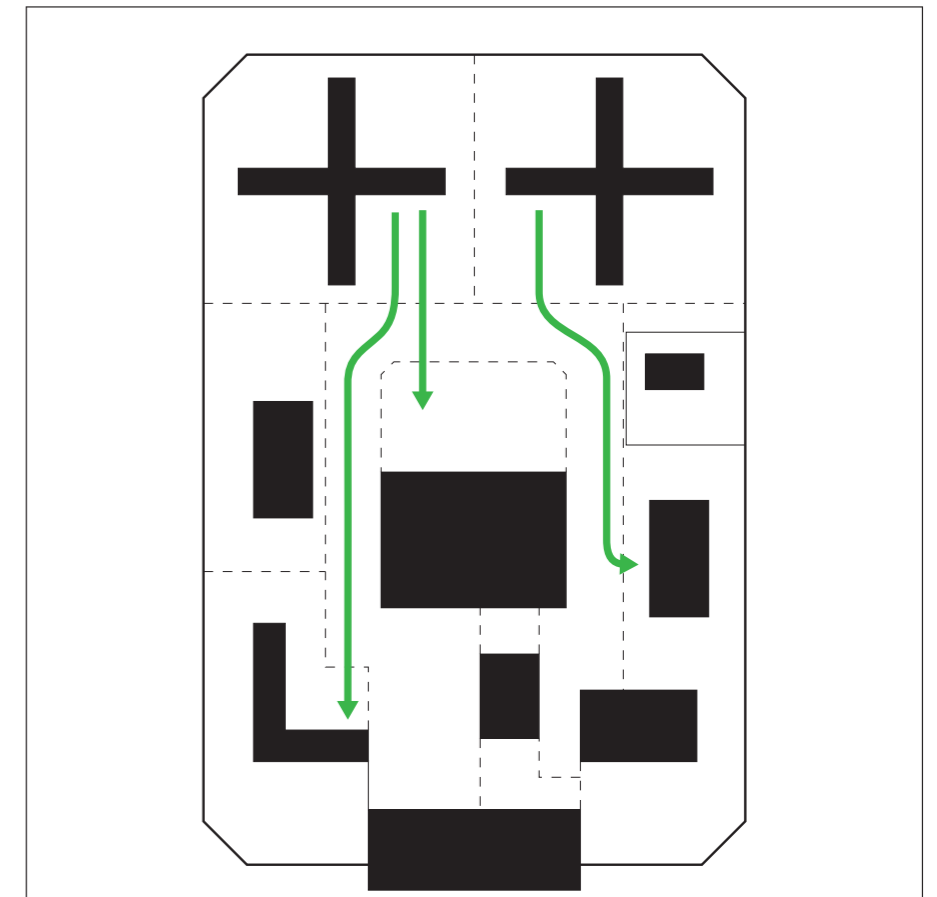
Three dimensional form

Principle 3.1: Prison environments should have decent atmospheric conditions
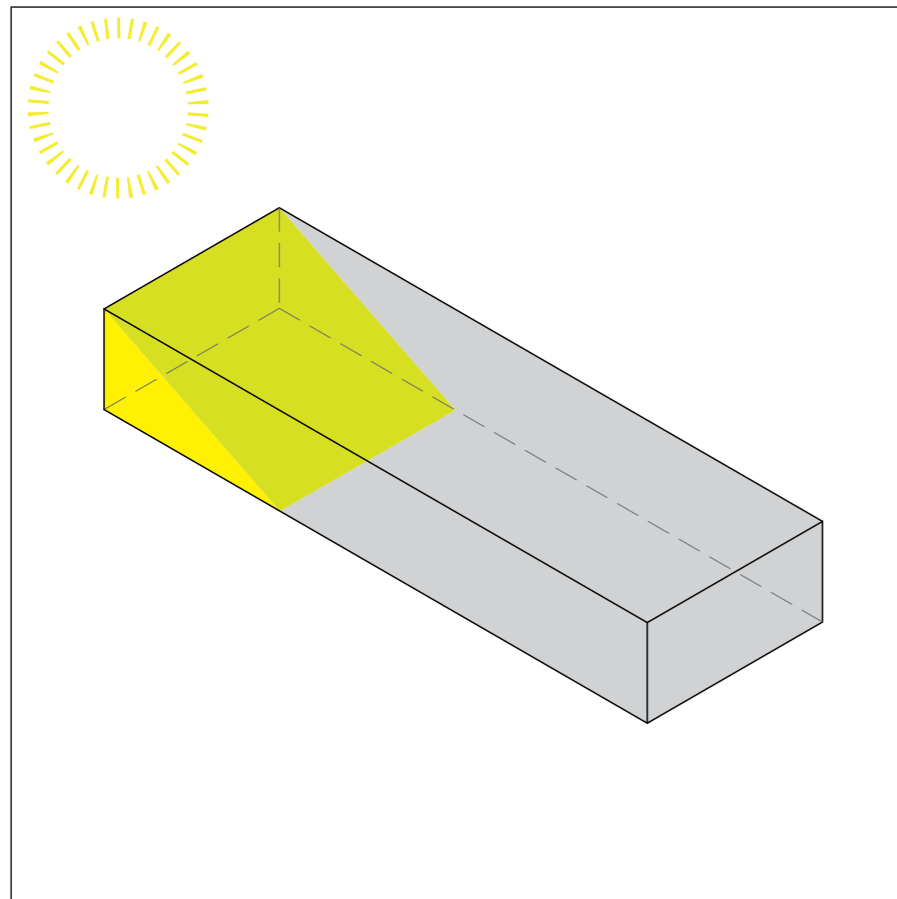
Typical situation

• Long, narrow corridors that have limited natural daylight penetration mean heavy reliance on artificial lighting.

• Lack of variation in lighting reduces the level of visual comfort and can result in physical symptoms of stress.

• Lack of dynamic lighting experienced throughout the day and prolonged exposure to direct artificial lighting upsets human circadian rhythms, leading to sleep loss, increased stress and other negative effects.

• Artificially-lit corridors with infrequent natural lighting result in high contrast situations and silhouettes, making observation and supervision more difficult.

Possible design response

• Staggered and varied plan forms can increase the opportunities for natural daylight penetration.

• Reduces the need for artificial lighting.

• Dynamic and diffused natural light supports health and wellbeing.

3.2.1 Place factors / Atmosphere / Lighting

1.1.1 People factors / Physical / Sleep
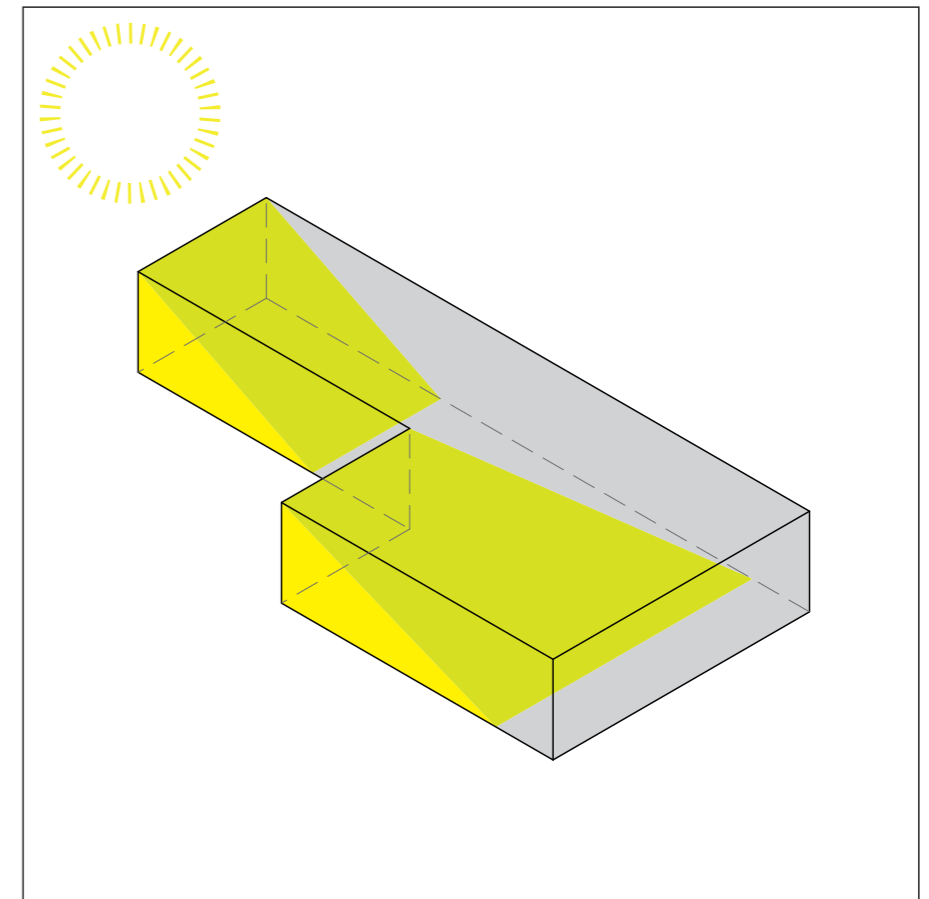
Three dimensional form - Personal space

> **Principle 3.2:** Prison design should accommodate adequate personal space
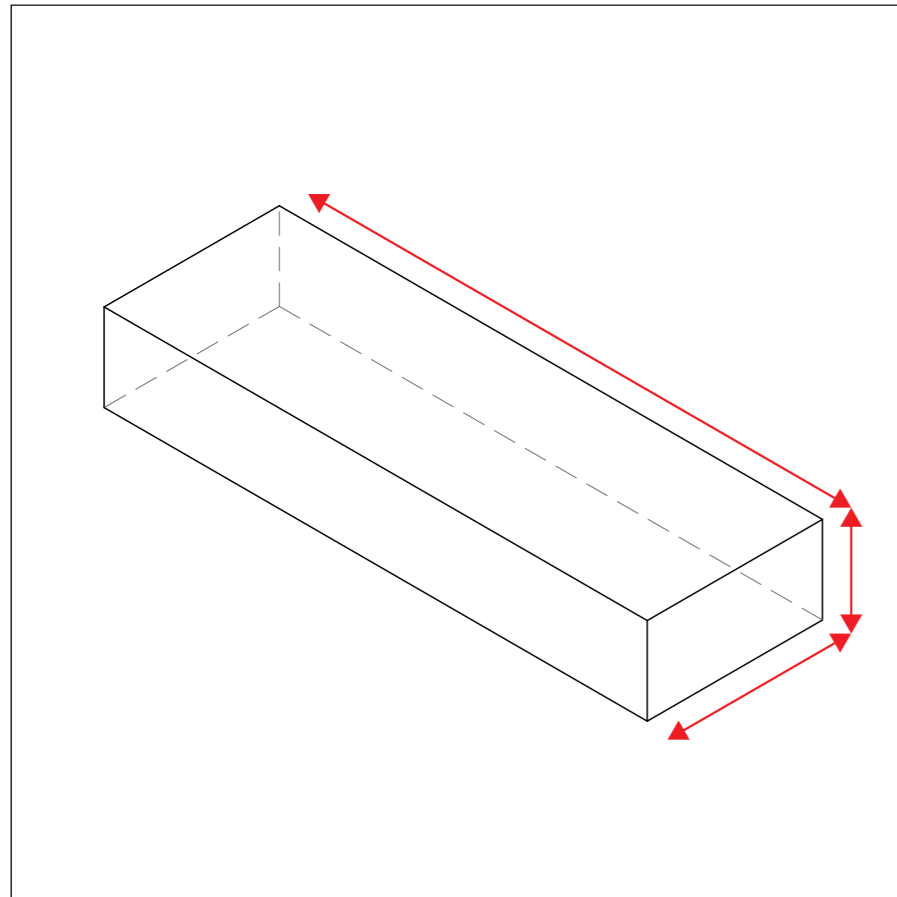
Typical situation

• Long corridors reduce ability to achieve facial recognition, increasing 'dissociation' between people. This depends on eyesight and lighting but becomes a significant issue above 18-20m

• Low ceiling heights impact on personal space bubbles. If not compensated for in other dimensions will heighten the sense of crowding

• Narrow corridors / landings increases tensions and compromise personal space bubbles

Possible design response

• Considering all aspects of the three-dimensional form can create varied environments that ease personal space bubbles

• Minimum floor finish to ceiling finish for habitable spaces should meet housing standards (2.5m)

• Varied corridor widths provide varied association spaces

• Varied corridor widths add diversity reduce the institutional effects of repetition

1.2.1 People factors / Spatial Functional / Personal space
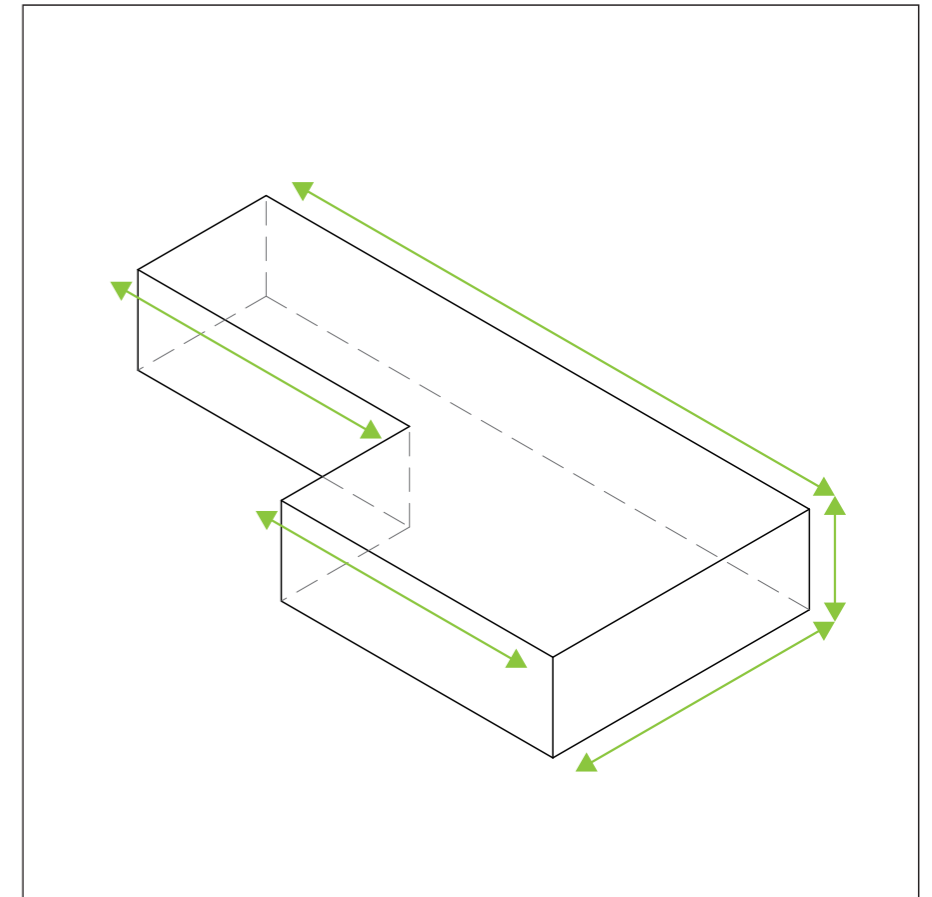
Three dimensional form - Interactions

Principle 2.5: Design configurations and layouts should encourage positive interactions and relationship-building
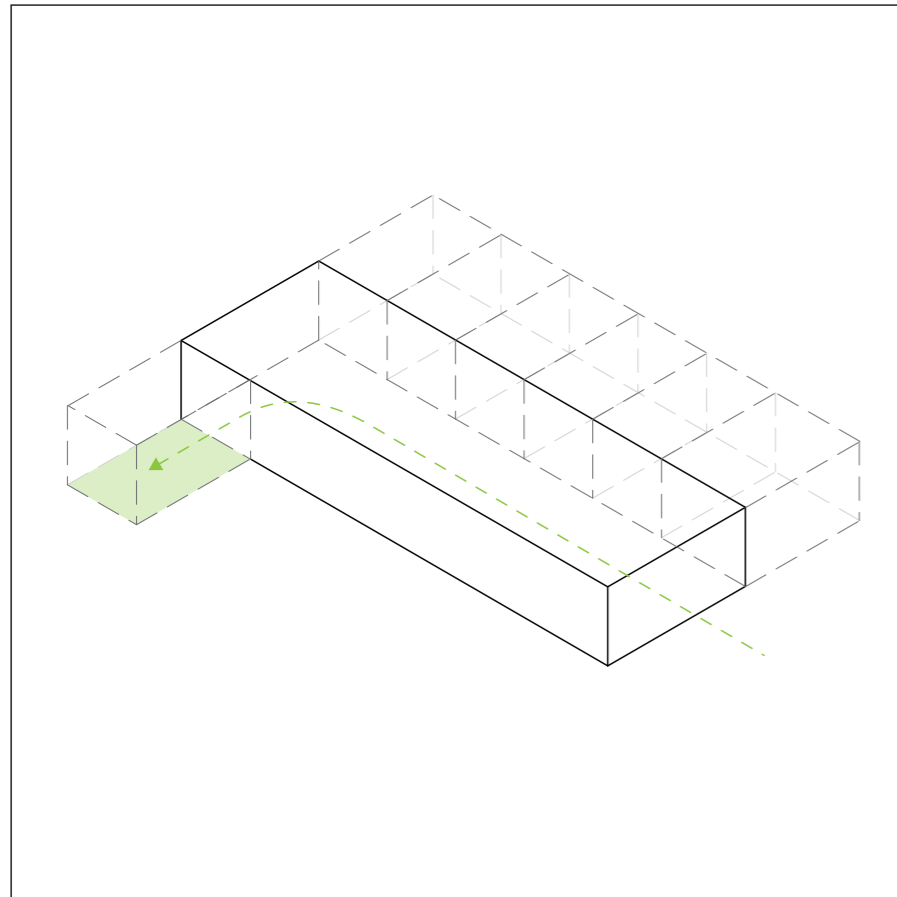
Possible design response

• Dead-end corridors discourage circulation and can lead to territorial, defensive behaviours. Ensuring that all corridors have a multi-purpose use at the end encourages circulation and reduces 'no-go' territories, especially in houseblocks

Possible design response

• 2-tier wings can enable round trips, encouraging spontaneous interactions

• 2-tier wings have a layout that induces more physical activity, increasing general fitness levels

• Similar outcomes can be achieved in flat layouts, through variation in plan
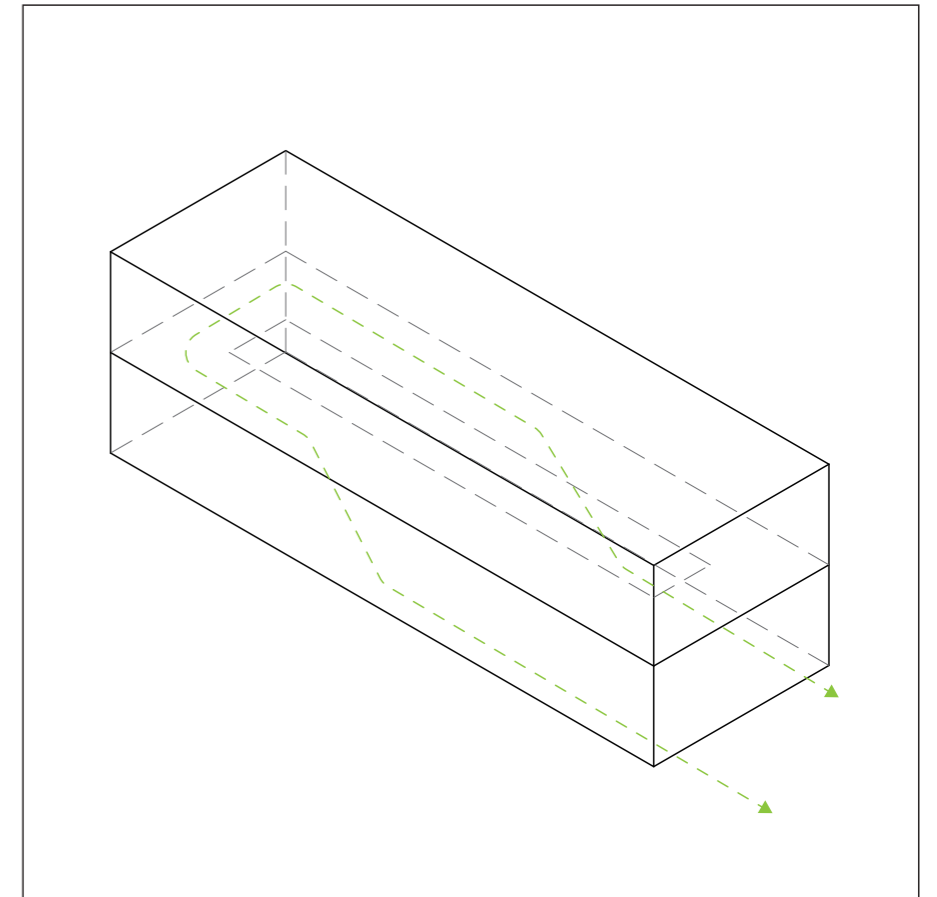
Relationships

> **Principle 2.5:** Design configurations and layouts should encourage positive interactions and relationship building
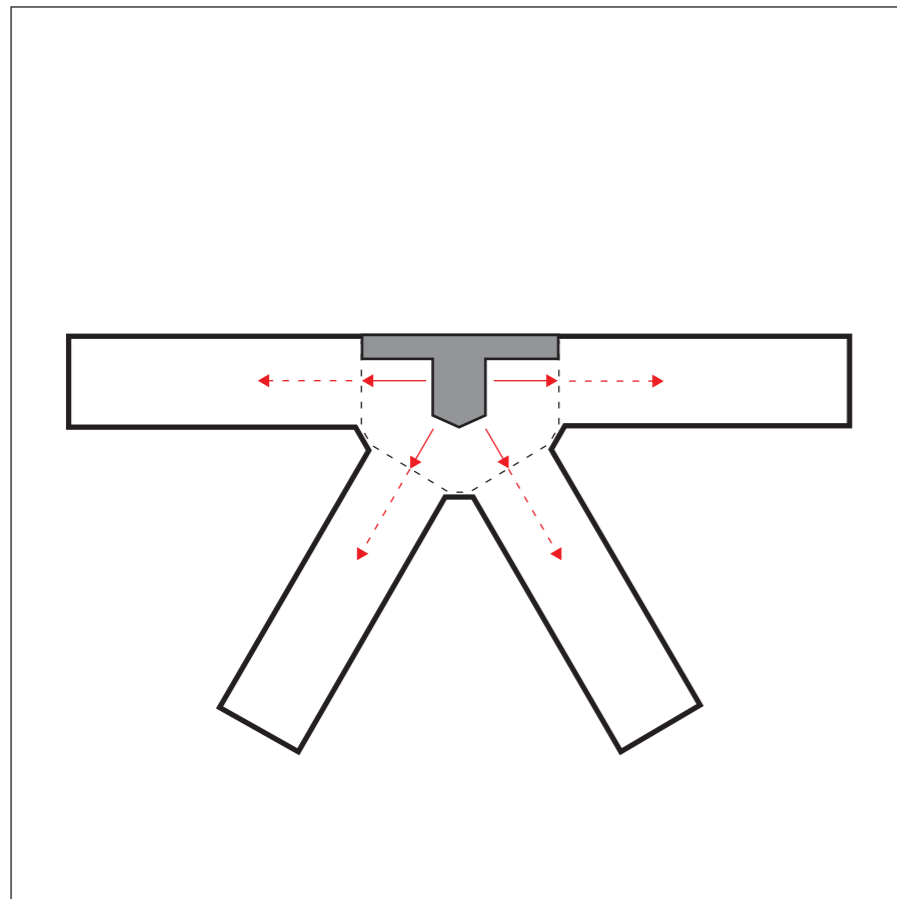
Typical situation

• Separation between officer 'base' and wings leads to dissociation and an 'us and them' atmosphere

• Poorly positioned observation points create blind spots.

Possible design response

• Reduced buffer zone creates closer relationships. Security barriers that are kept out of the way during normal use encourage more interactions

• Lines of sight remain important for safety and security. 'Panoptican' style observation can be mitigated through plan configuration
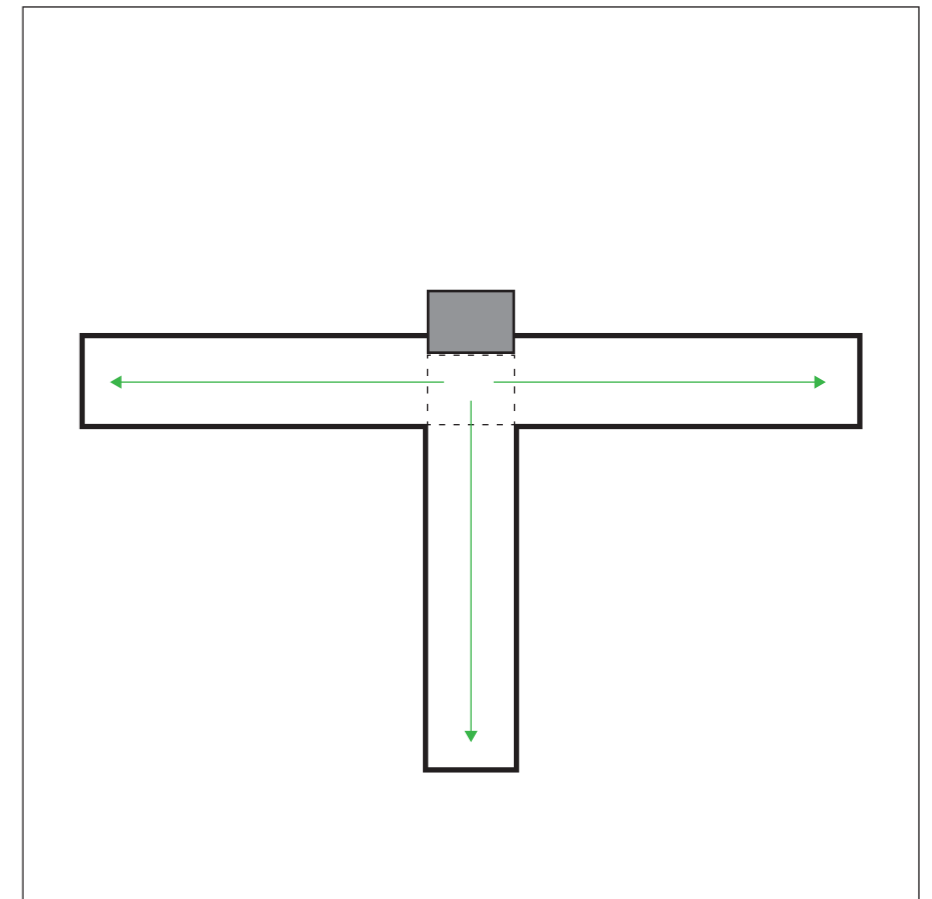
Adaptability   Diversity

> **Principle 3.7:** Identify, anticipate and accommodate for multiple needs

> **Principle 2.13:** Prison buildings and masterplans should be adaptable to changing future needs

> **Principle 2.2:** Prison designs should incorporate diversity to enable a sense of identity within the institution
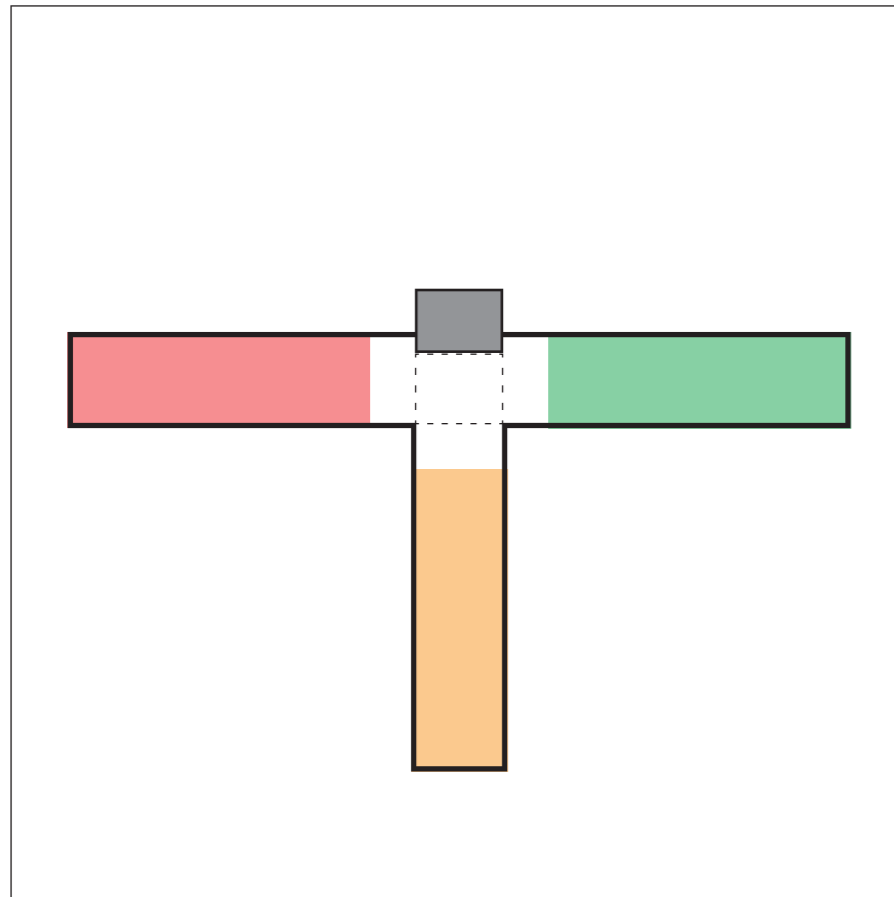
Possible design response

• Houseblocks should be adaptable for use as 'progressional' wings, where increasing degrees of autonomy and normalisation can be enabled for those people in custody at the appropriate point on their rehabilitation journey. One 'loose fit' space should be included in each wing that can be adapted for more 'normalised' uses such as a kitchenette
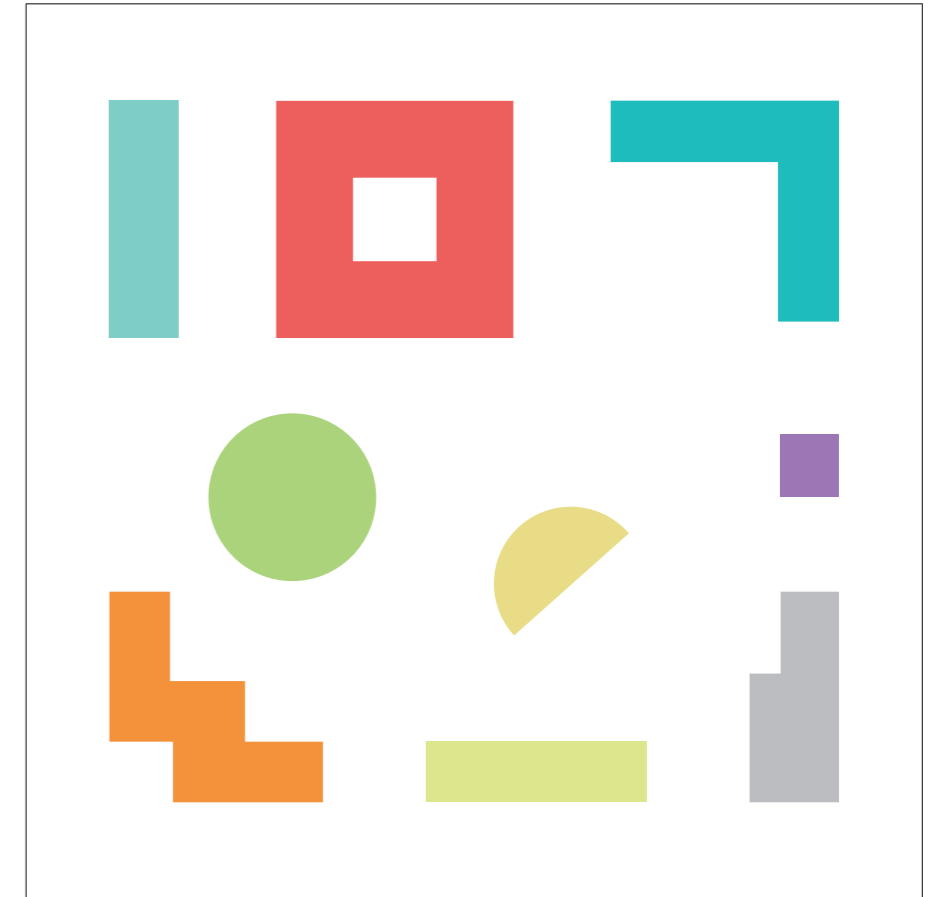
Possible design response

• A variety of forms and colours helps to create diverse and interesting environments that increase legibility and give a sense of identity to the built environment. Forms and colours should be carefully chosen to work together, whilst avoiding institutional aesthetic

• Custodial Property Colour design guide (Issue 01: March 07) provides useful guidance on the effects of colour on spatial legibility

• Within a coherent set, individual colours and forms can support identity within a larger institutional environment

• Colour palettes should be designed carefully to achieve a high aesthetic quality that is not institutional in nature. Many colour palettes are available, including that designed by the architect Le Corbusier

3.4.3 Place factors / Design / Order and complexity

3.4.4 Place factors / Design / Comfort and awe

Ventilation

> **Principle 3.1:** Prison environments should have decent atmospheric conditions

> **Principle 3.6:** People in custody should have some control over atmospheric conditions within cells
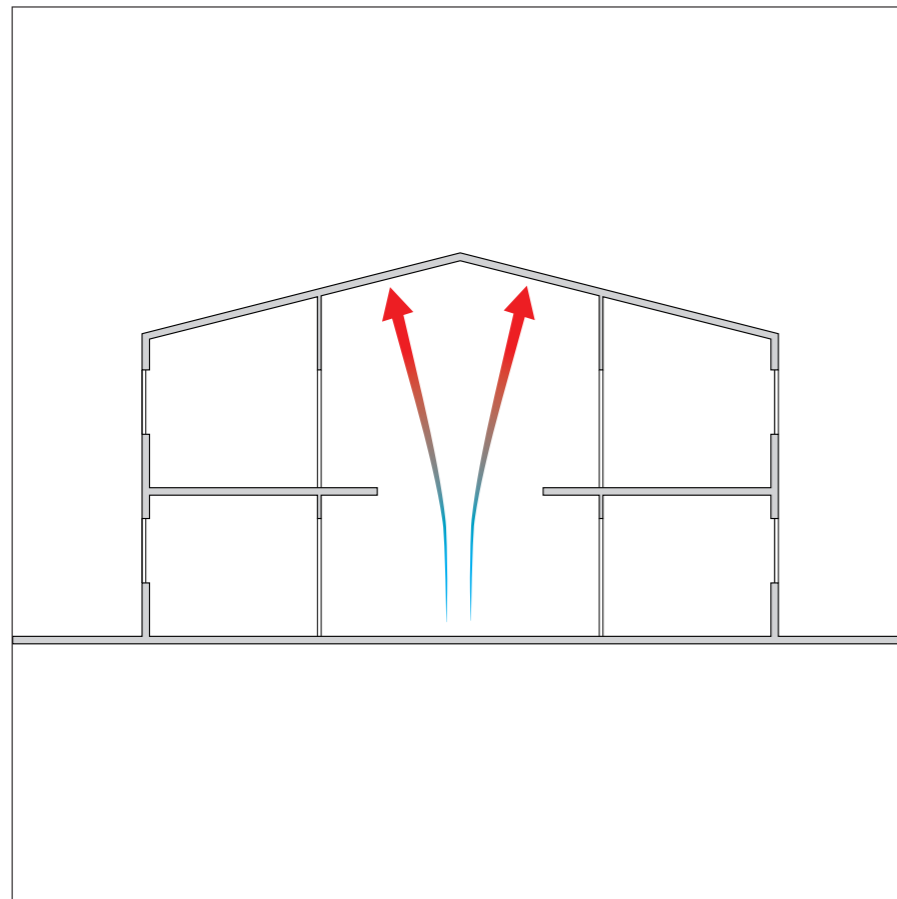
Typical situation

• Inadequate ventilation is common in prisons. Mechanical systems are often not maintained correctly, or disabled for security reasons

• Inadequate ventilation increases stress levels and discomfort as well as cognitive abilities

• Exposure to higher CO_2 levels can lead to many negative effects including fatigue and nausea

• Inadequate ventilation increases stress levels and discomfort

• Inability to control ventilation amplifies this effect and gives sense of disempowerment

Possible design response

• Providing good level of temperature and air quality is a basic need for facilitating wellbeing

• Natural ventilation should be provided to all habitable spaces and individually controllable where possible

• Environmental design of buildings should be thoroughly integrated in the design process to ensure effectiveness and robustness in a prison environment Environmental performance standards, equivalent to other institutions such as schools should be adopted

• Periodic monitoring of CO_2 levels should be undertaken to ensure systems are working and standards are met

3.2.3 Place factors / Atmosphere / Air quality, smell and temperature
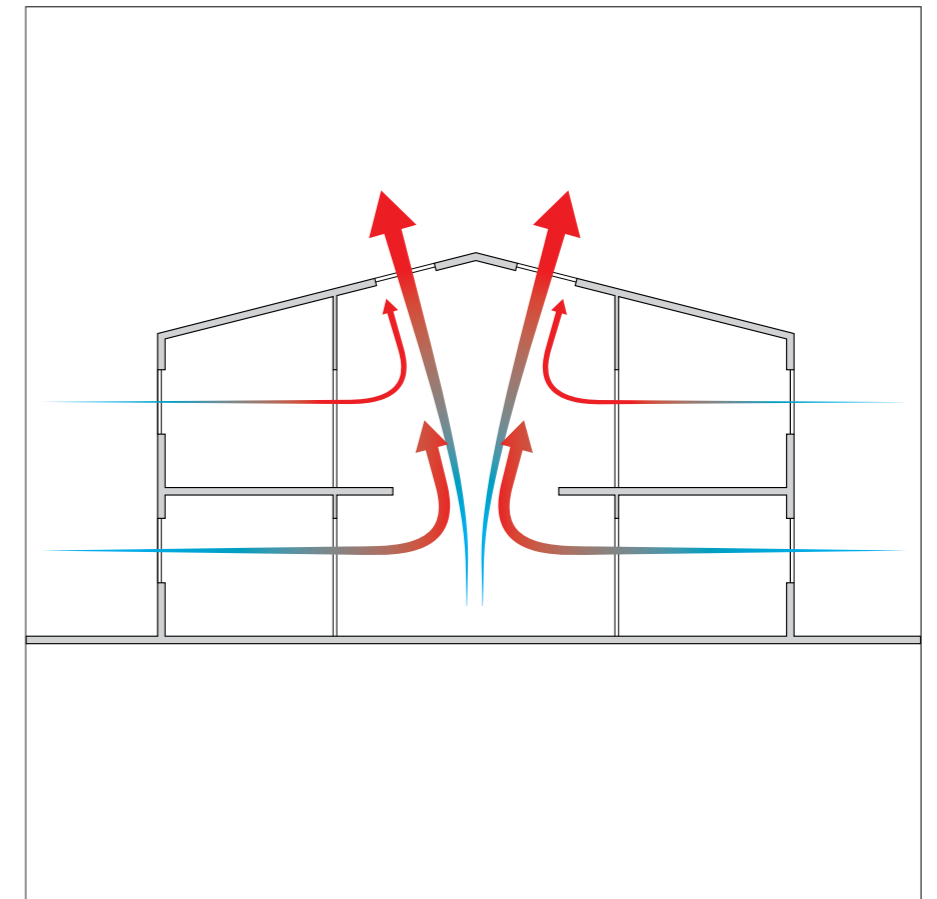
Environmental strategy

Principle 3.1: Prison environments should have decent atmospheric conditions

Principle 3.6: People in custody should have some control over atmospheric conditions within cells
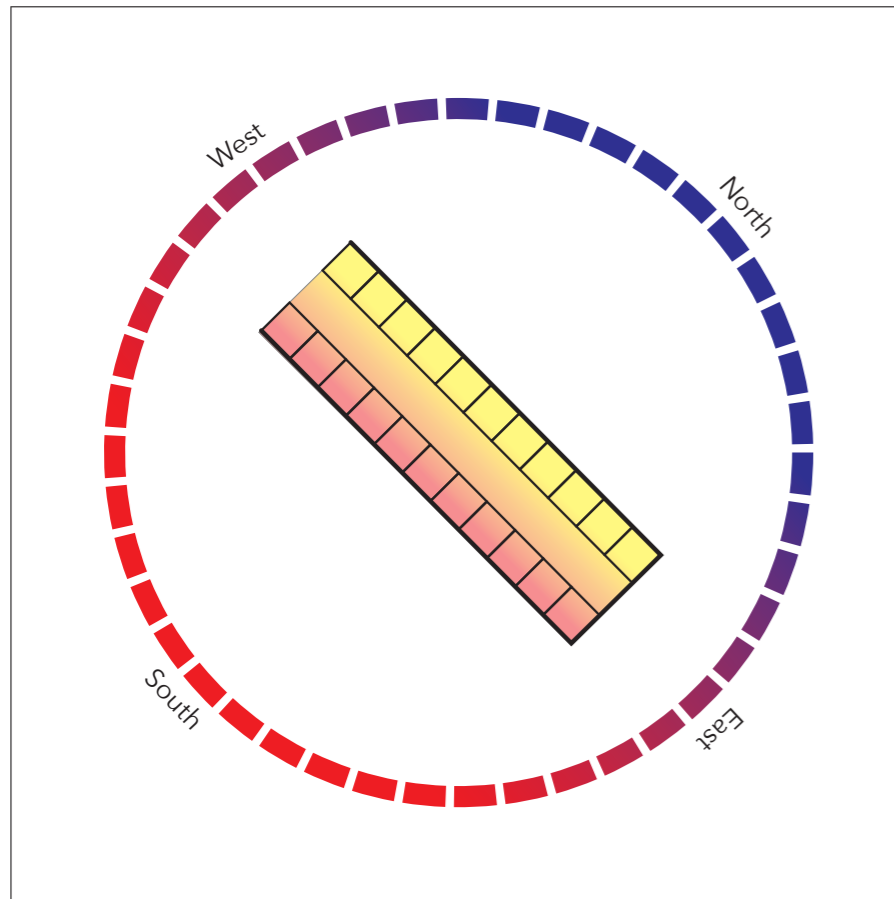
Typical situation

• Lack of design for solar orientation results in overheating in some areas and high heating requirements in others

• This effect is amplified by inadequate ventilation and lack of ability for individuals to adjust their environments.

Possible design response

• An environmental strategy that considers natural ventilation, overheating and cooling at the layout stage of the design will help to make the habitable spaces more comfortable

• Shading devices can alleviate issues with solar gain and glare

3.2.3 Place factors / Atmosphere / Air quality, smell and temperature
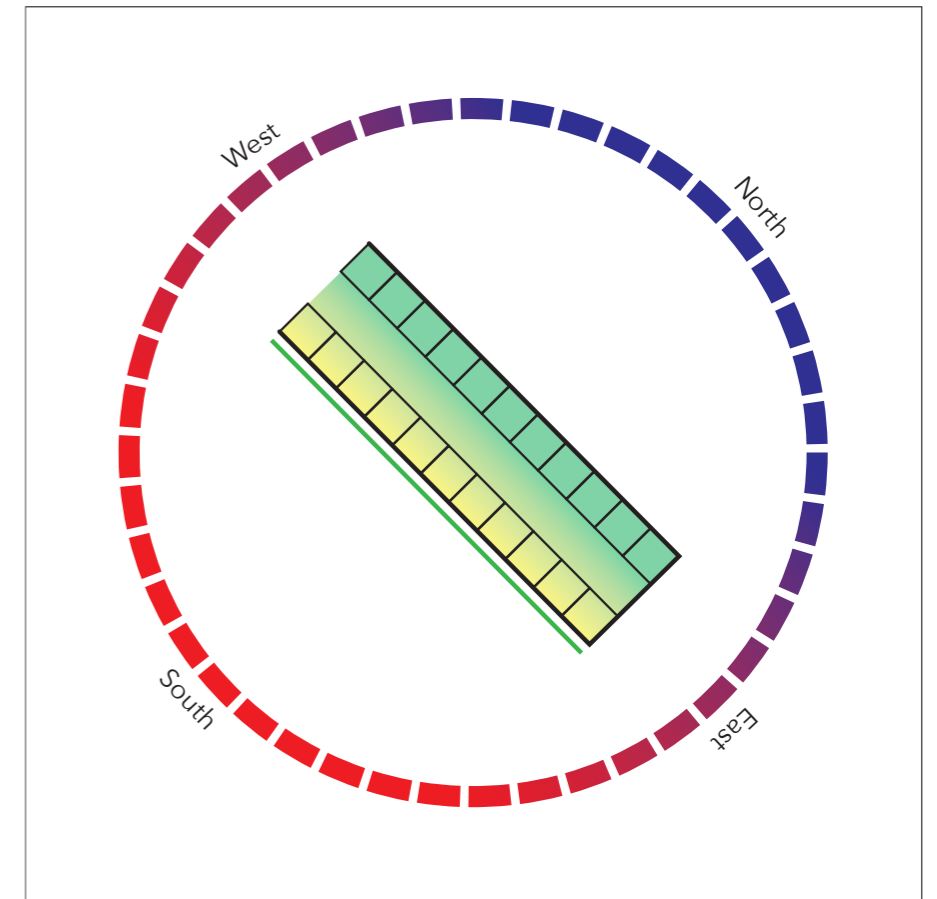
Artificial lighting

Principle 3.1: Prison environments should have decent atmospheric conditions
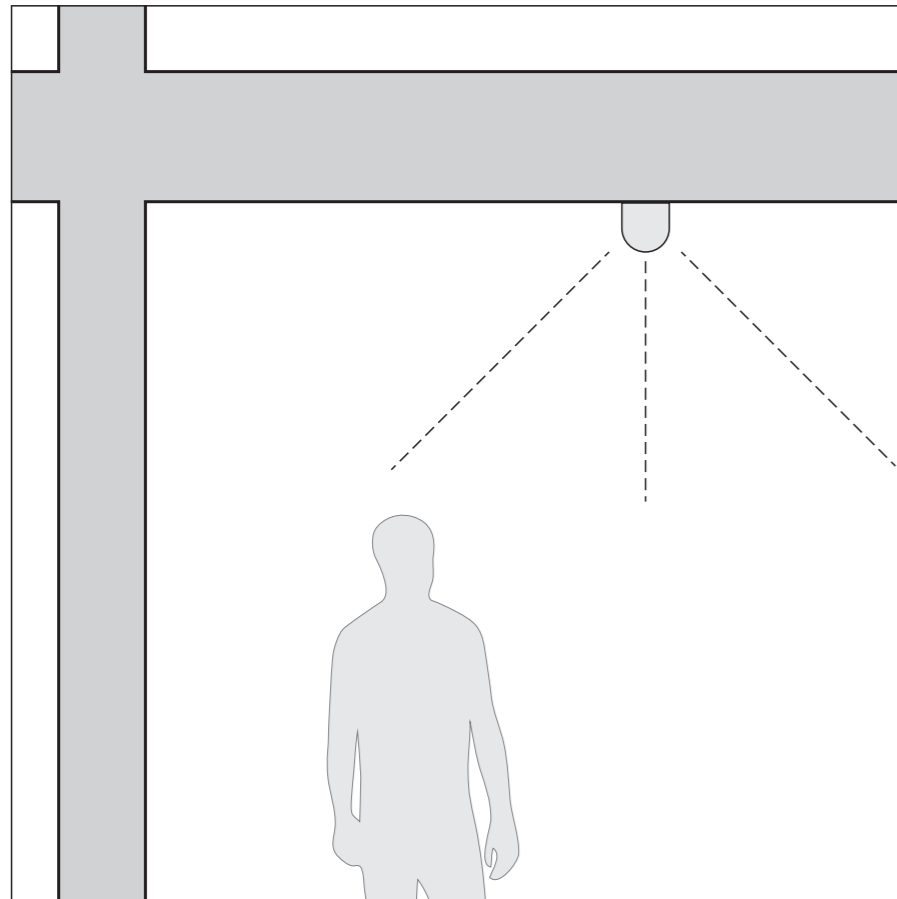
Typical situation

• Direct, undimmable and consistent colour artificial lighting can be straining when exposed to for long periods of time, creating stressful environments for all building users

• Consistent, unvaried lighting of spaces reinforces the sense of institutionalisation and monotony

3.2.1 Place factors / Atmosphere / Lighting

Possible design response

• Diffused, indirect, varied colour temperature lighting is generally considered as good design practice across different building types. In areas requiring high lighting levels for undertaking tasks, this should be in addition to, not instead of other sources of light

• Industry standards should be applied within prisons, such as the Society of Light and Lighting standards (CIBSE)

• Modern LED light fittings should be used for energy efficiency and low maintenance reasons. These can provide variable colours and can readily be used to provide task lighting, ambient lighting and wall and ceiling lighting to achieve variation between spaces
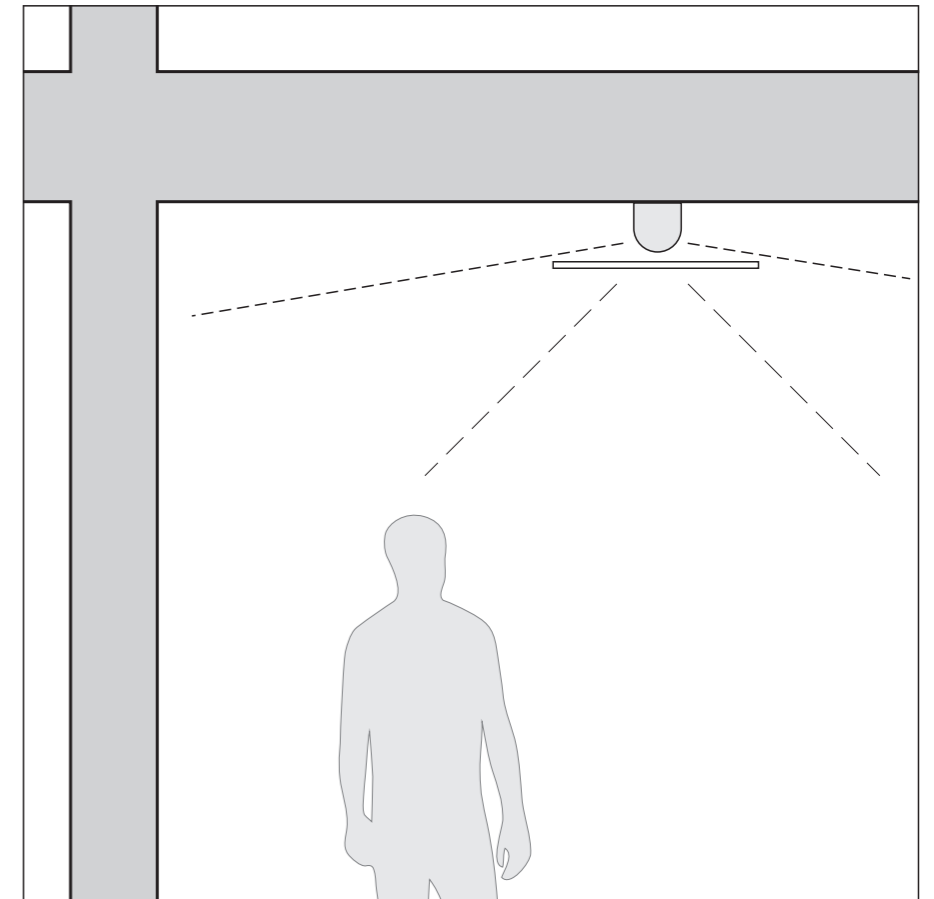
Acoustics

Principle 3.1: Prison environments should have decent atmospheric conditions
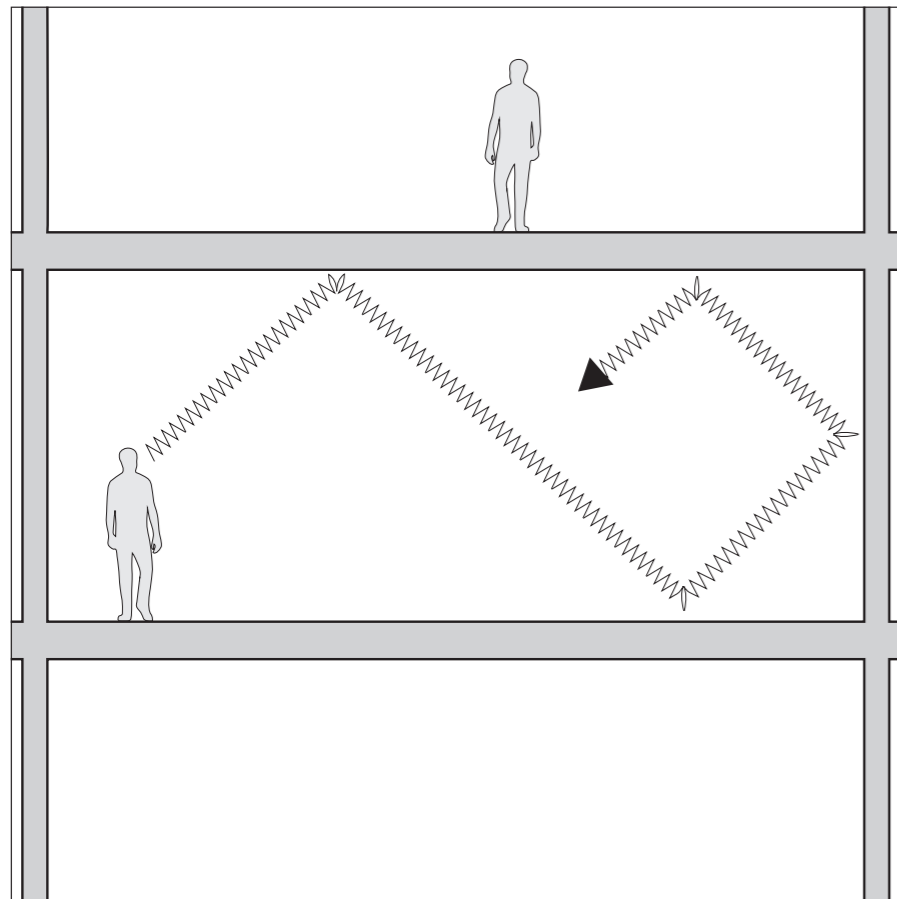
Typical situation

• Use of hard materials and lack of acoustic absorption creates environments typical of sports halls where the reverberation times inhibit conversation and encourage shouting. Meaningful conversation is difficult

• Typical spaces range between a Reverberation Time (RT) of 2 to 3+ seconds

• Continuous, high noise levels are stressful and inhibit conversation

Possible design response

• Acoustic absorption should be incorporated into the building fabric. A portion of absorptive material can be provided by soft furniture, but this should not be too heavily relied upon due to its shorter lifespan

• Acoustic Reverberation Times should be appropriate to the use of the spaces. As a general guide, typical association spaces should be designed to achieve a RT of 1 second. Smaller spaces for semi-private conversations should aim for 0.5 to 1 second. Existing standards for other institutions such as schools should be referred to for technical guidance
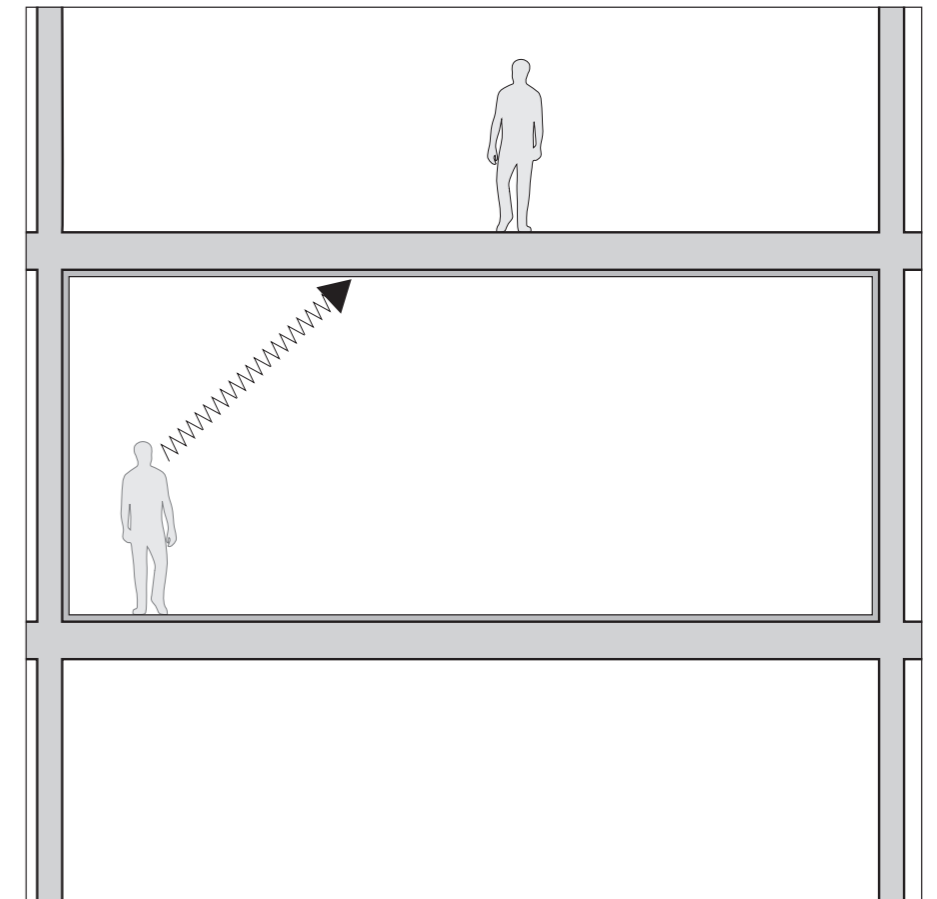
Cells
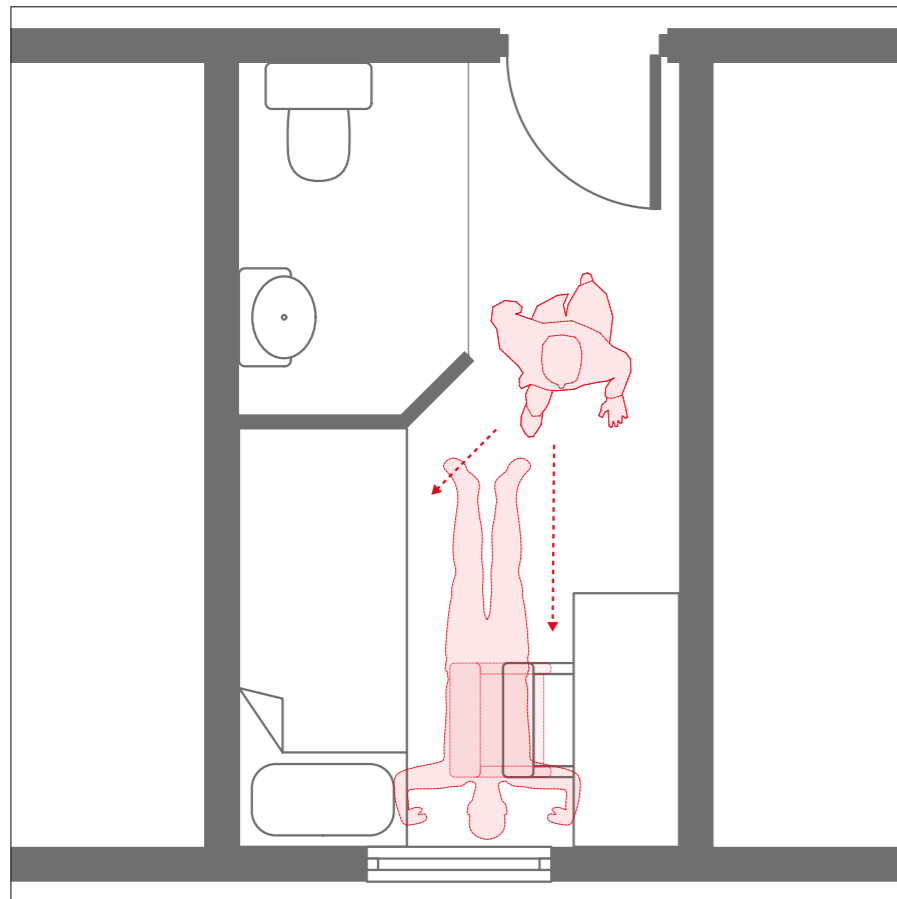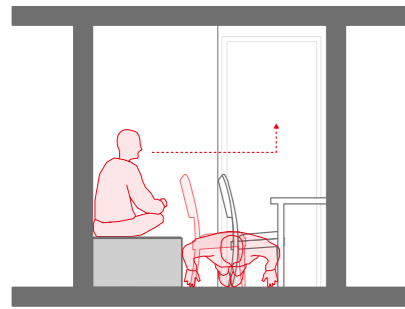
Typical situation

• The typical cell contains most of the elements required for daily activities, but the layout does not enable maximum flexibility nor use of the space. Many typical exercises that people might do in their own space are not possible in a typical cell, such as press-ups

• There is inadequate storage, particularly for clothing and the height of the cell is not made use of due to anti-ligature requirements

• Lighting is not dimmable and limited personalisation of the space is possible

Possible design response

• A more intensive design process and design review incorporating product and furniture design expertise should be undertaken to make the cell as habitable, personalisable and adaptable as possible, whilst continuing to ensure safety and security

• Overall cell dimensions should be reviewed

Overall dimensions to be reviewed

STORAGE

THE NO EQUIPMENT WORKOUT FOR YOUR SMALL SPACE

L. J. FLANDERS

CELL WORKOUT
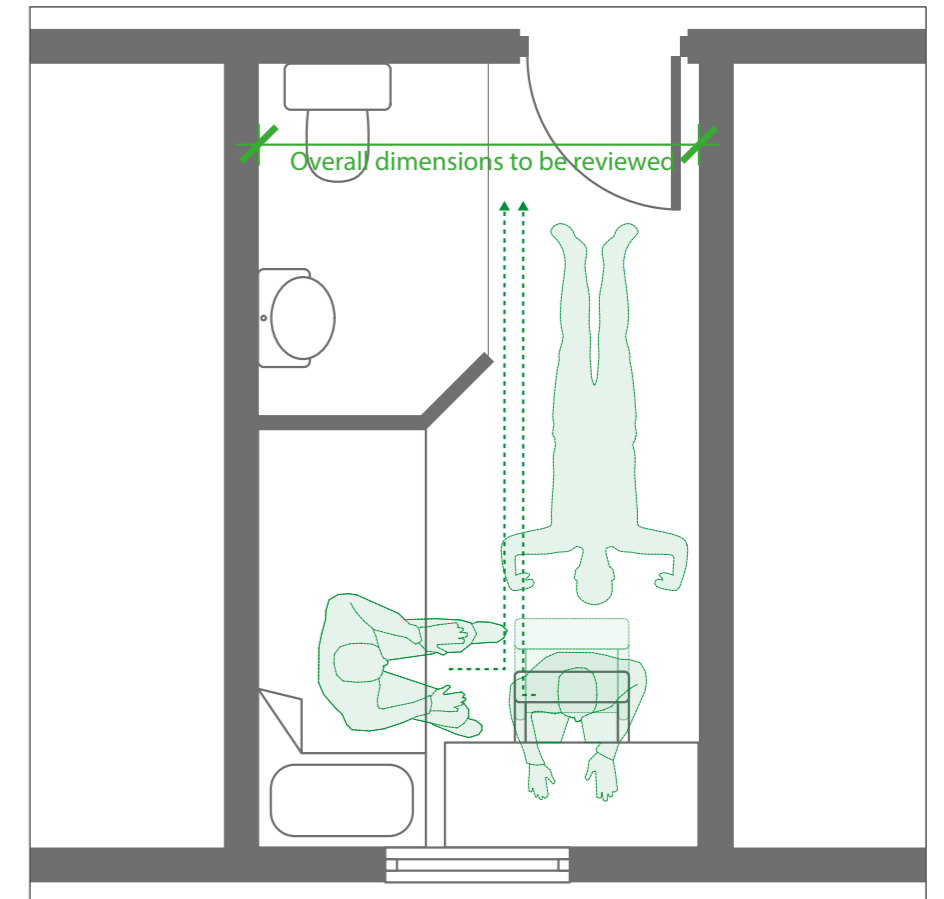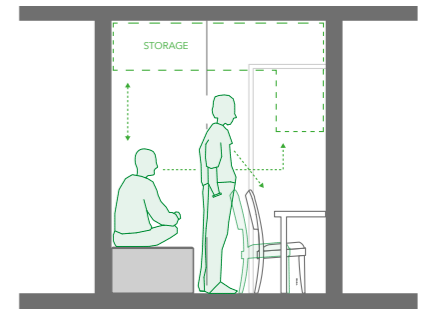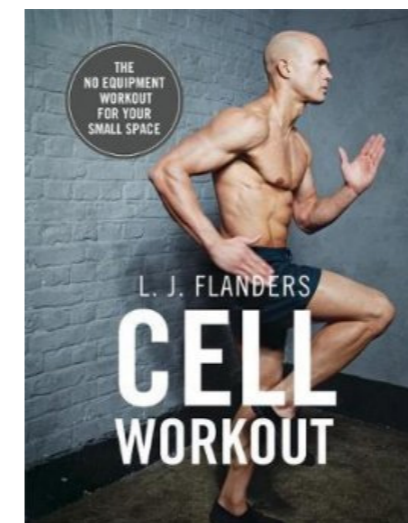
Aesthetics and personalisation

Principle 3.3: Uses of colour, shapes, materials and variability in design should be considered
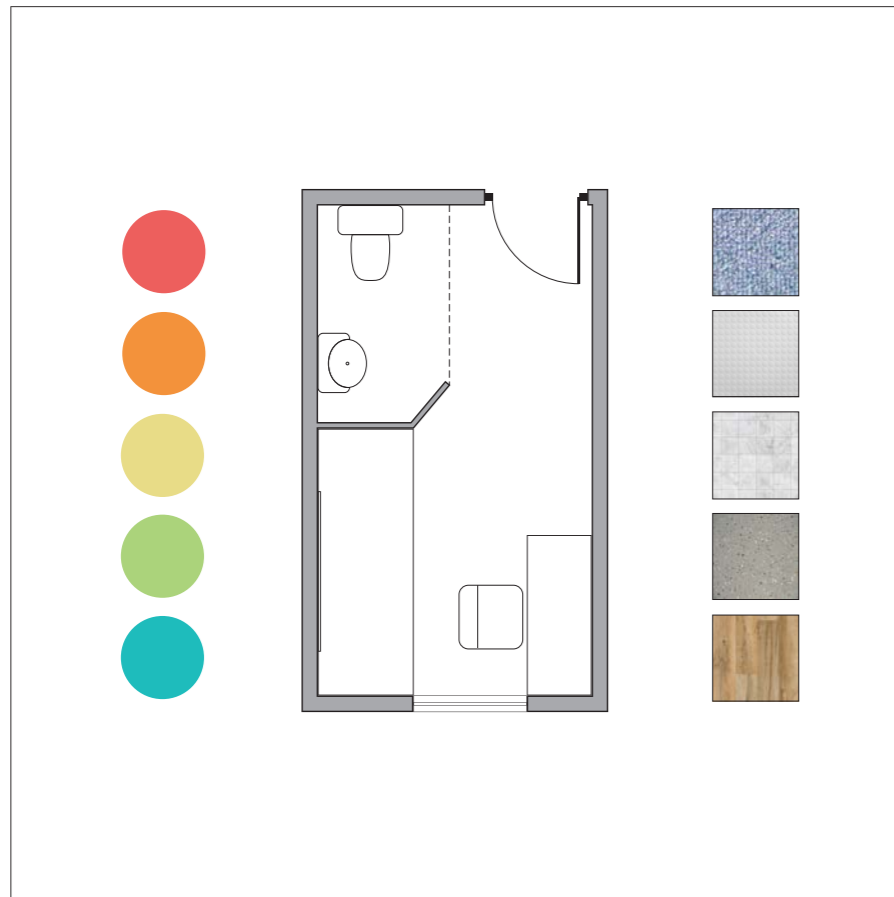
Possible design response

• A wider range of colours and materials creates a more visually-appealing environment.

• Use of soft materials reduces the negative effects of 'hard architecture'.

• Ability to personalise certain aspects of cells has many benefits for increased wellbeing, higher morale and greater motivation. Designed differences between cells enables individual identity within the institution.

• This can range from temporary environmental adjustments, painting walls and optional furniture colours.

• The entire environment should not be designed to be indestructible as this tends to encourage destructive activities. Providing elements that require a small degree of care in use, particularly in individual spaces can help foster better connections between people and their environments.

Possible design response

• Staff areas to be designed with high professional ambition, i.e. make staff feel proud to come to work

• Commercial organisations are increasingly aiming to improve staff wellbeing through design of supportive workspaces as a means to attract and retain staff. The prison service should adopt the same strategy.
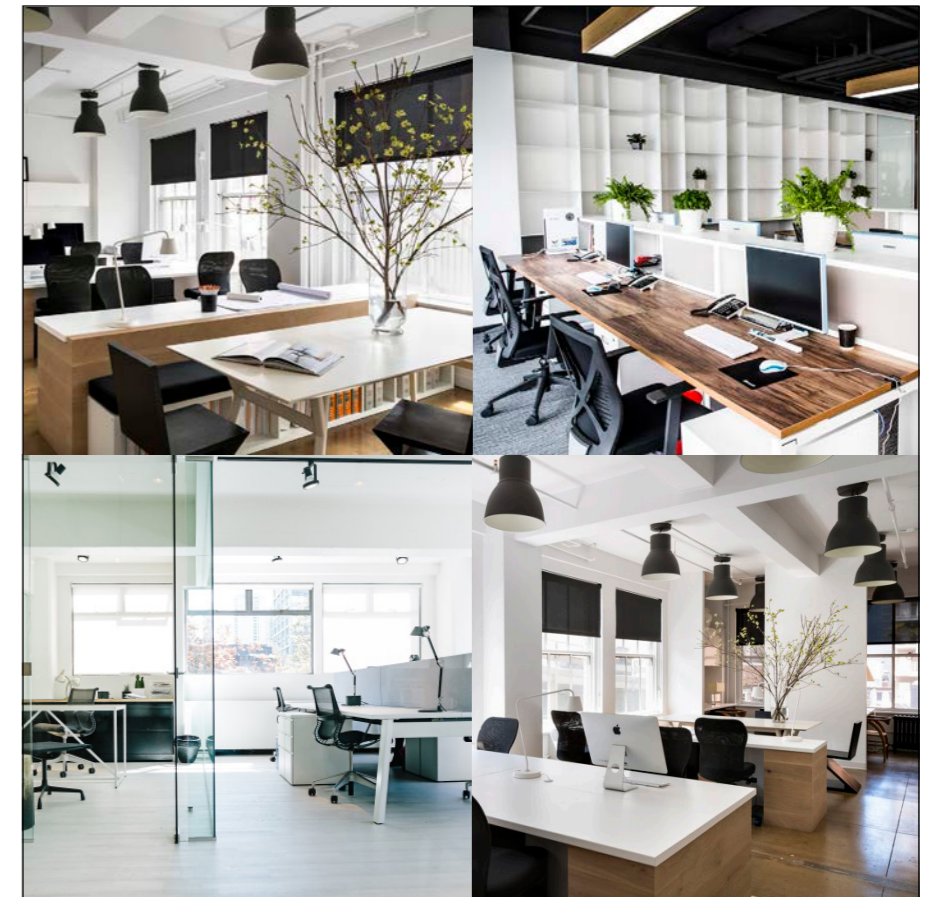
matter

Multiple needs

> **Principle 3.7:** Identify, anticipate and accommodate for multiple needs

> **Principle 3.8:** Prison environments should be accessible to all prison users
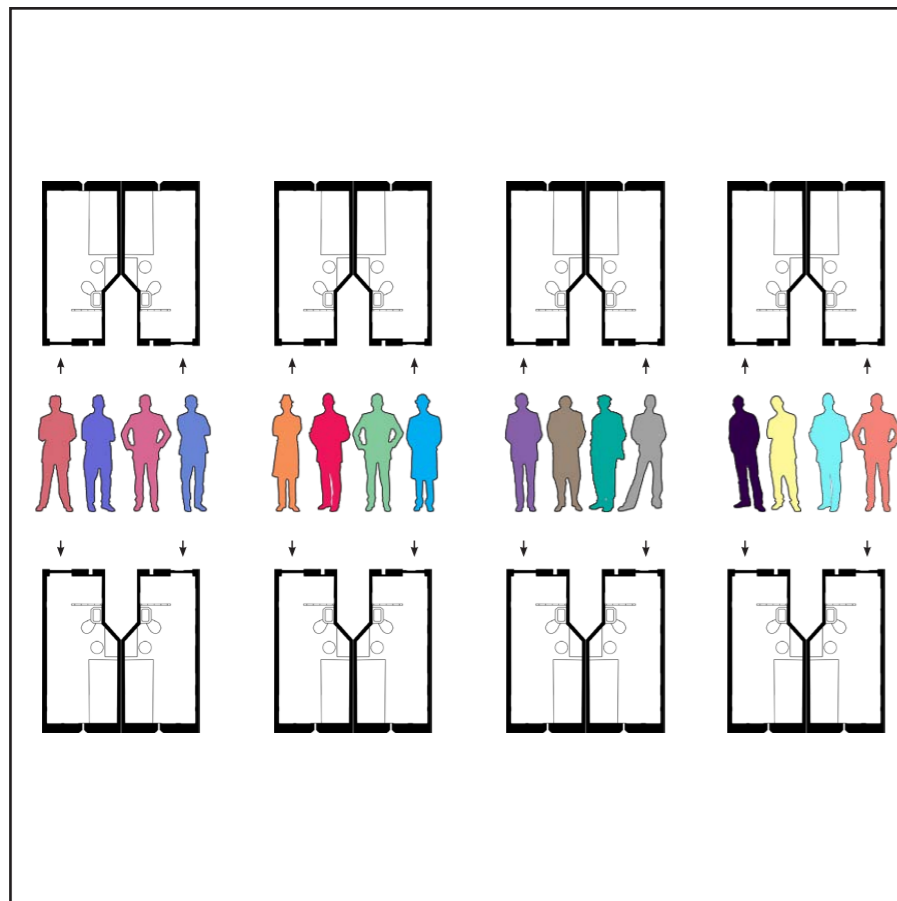
Typical situation

• People in custody have much higher prevalence of health and related needs than the population at large.

• As the prison population ages, these needs are increasing.

• Physical disability as well as degenerative conditions such as Alzheimer's are increasing.

• Briefs for prison design do not adequately address these needs at present.

• This is an area that needs much further study to properly inform the design process and is only lightly addressed in this first design guide.

Possible design response

• Accessibility and dementia audits should be undertaken on design proposals, taking into account the higher needs of the prison population.

• Adaptability for varying needs should be taken into account.

• Evidence generally supports the advantages of single cell occupancy but a small portion of double occupancy cells may also be needed for more vulnerable people. This is one area that contradicts the Mandela Rules and should be carefully considered according to needs.

• The proportion of each room types should be reviewed to reflect the balance of needs, now and anticipated in the future.

Single

Double
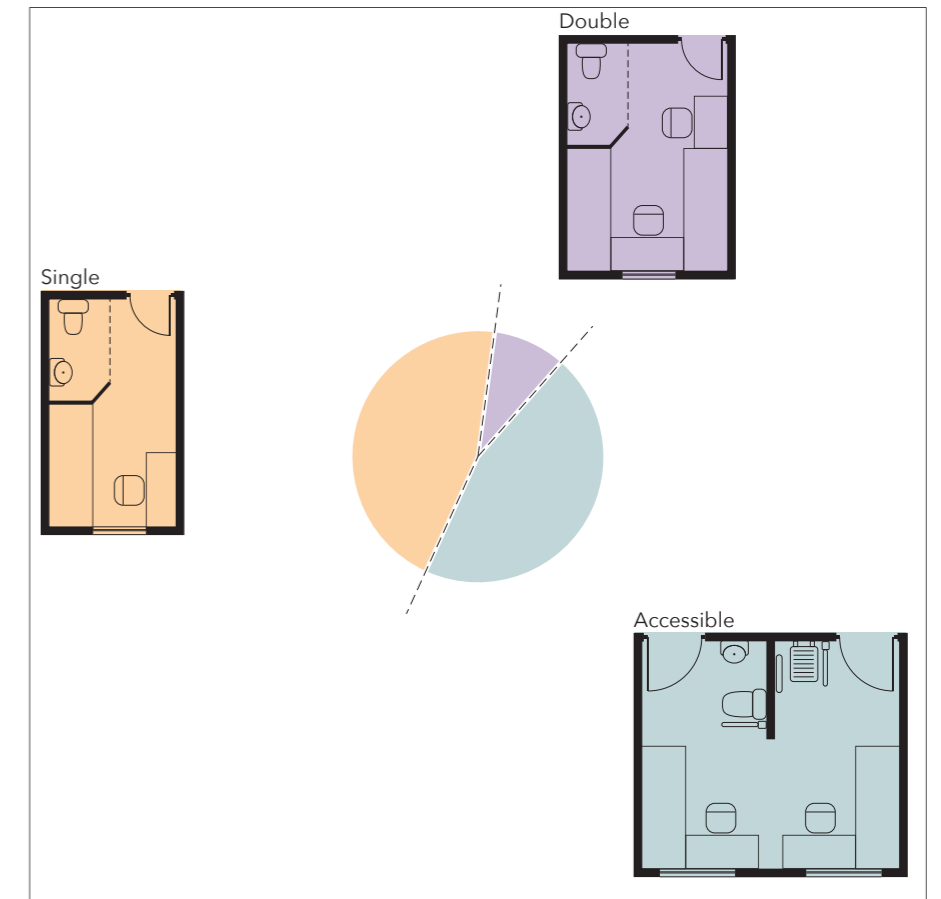
Accessible

Car park / approach / entrance

Visitors' area

Possible design response

• The car park, approach, entrance and facade should be designed to create a civic presence, be accessible and welcoming to workers and visitors alike.

• Consideration should be given to families waiting for visits eg. sheltered picnic areas and landscaping as well as visitor facilities building.
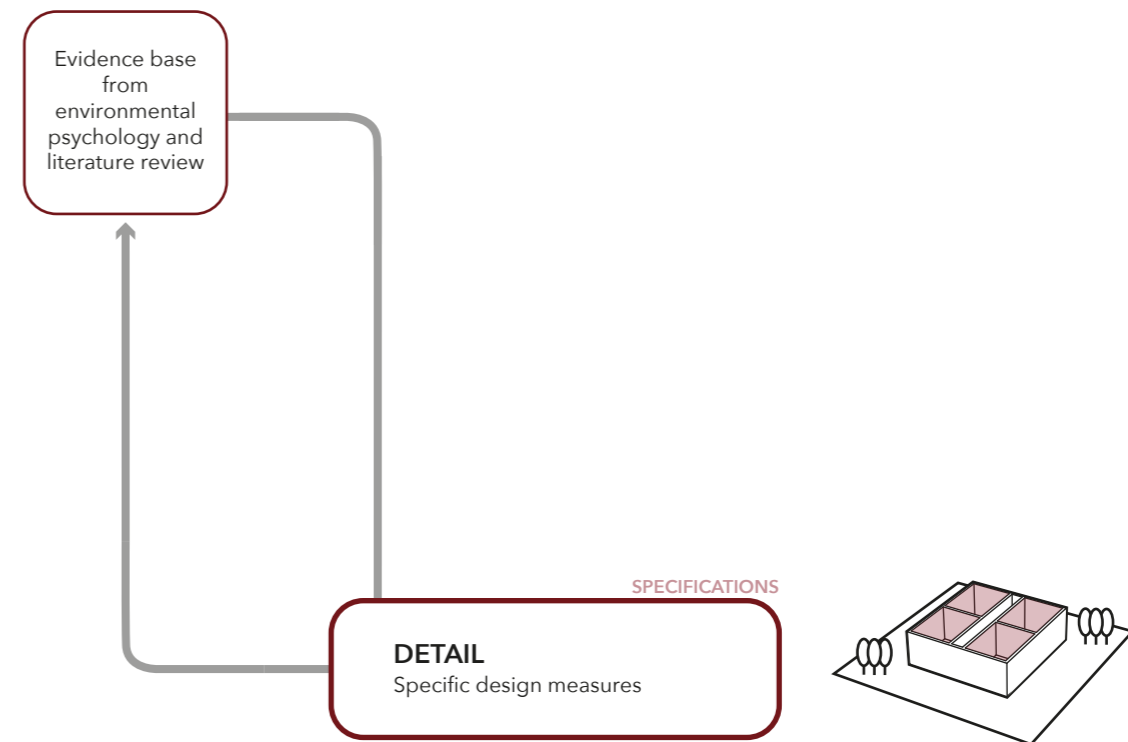
Possible design response

• Should have a visual connection with the visitor car park and external visitor centre.

• Soft furniture, play areas, use of vibrant colours and private visiting rooms help to improve the visiting experience.

• Reverberation times should be around 0.5 seconds.

Photo: http://www.sps.gov.uk/Corporate/Prisons/LowMoss/HMP-Low-Moss.aspx

Photos by Andrew Lee

Detail level

Evidence base from environmental psychology and literature review

SPECIFICATIONS

DETAIL
Specific design measures

Guidance on the following pages highlights some specific opportunities for improved and more integrated design to tackle issues at the constructional level.

matter

Wall / ceiling construction

Section
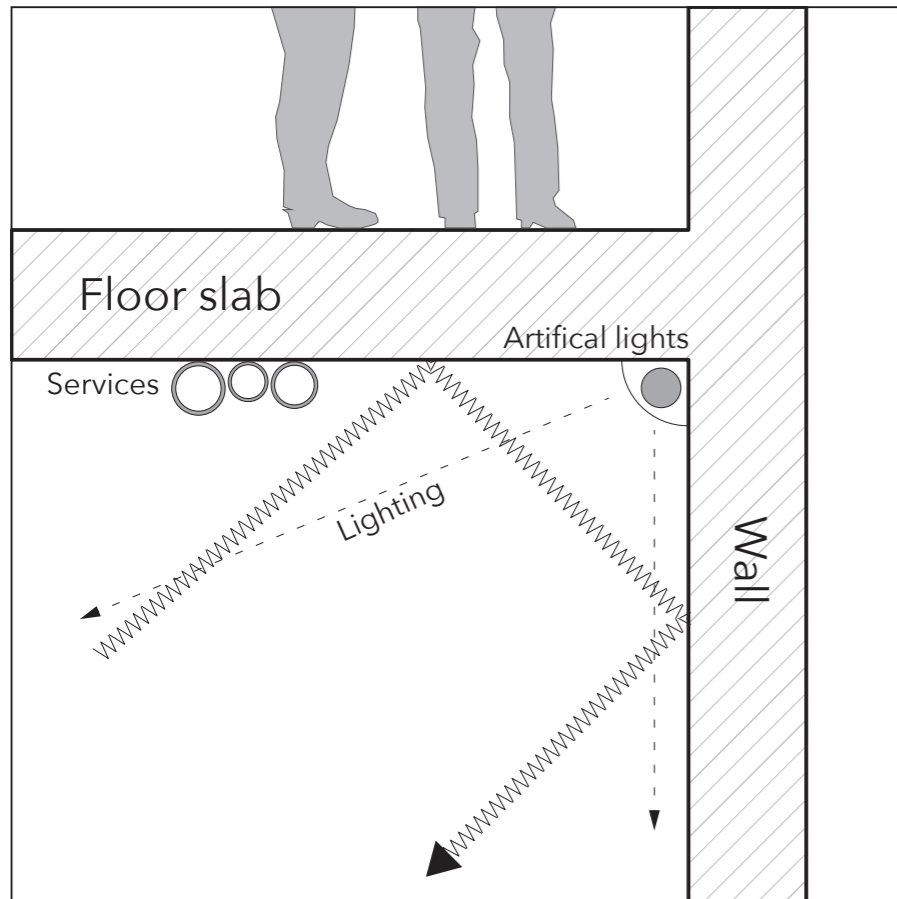
Typical situation

• No acoustic absorption. 'Live' acoustics with long reverberation times hinders communication and encourages shouting.

• Direct artificial lighting causes eyestrain and upsets circadian rhythms.

• Surface mounted services are not integrated into building design

• Hard, 'mean' aesthetic that does not support normalisation.

Possible design response

• Integrated design enables many, related issues to be addressed together. Security and maintenance issues can be addressed through design and fabrication.

• Opportunities for Modern Methods of Construction to greatly increase efficiencies and reduce labour on site.
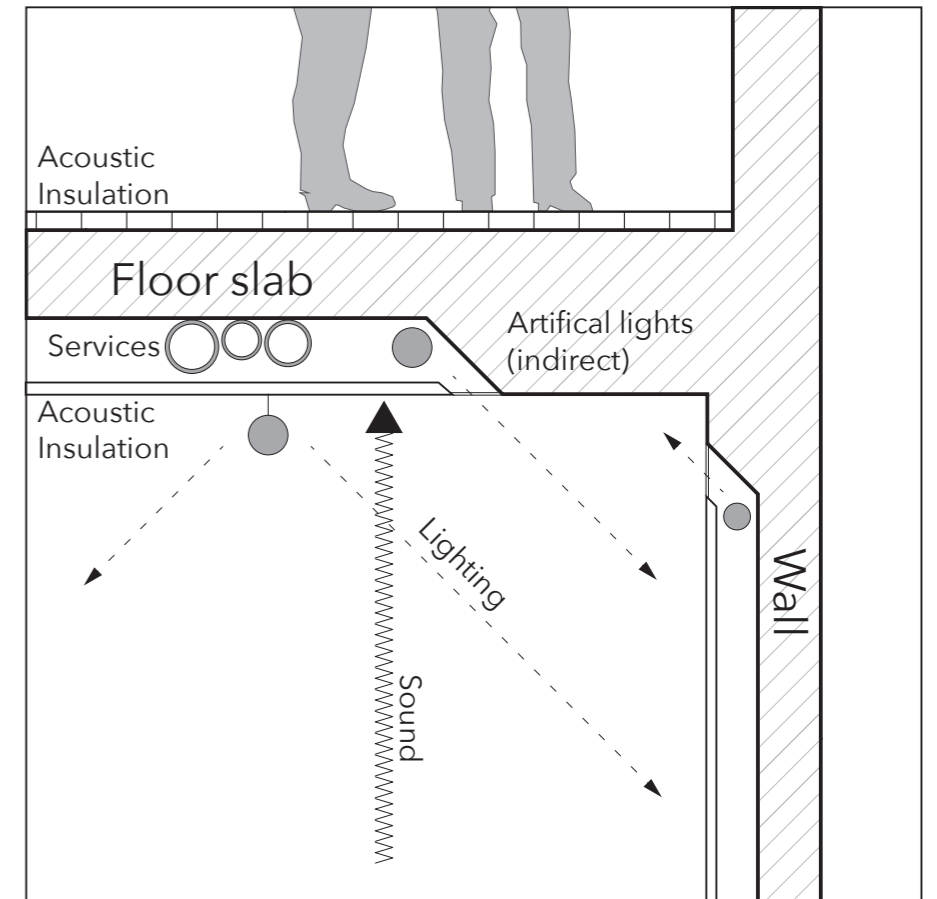
Section
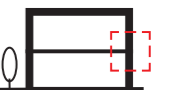
Windows 1 - Plan format
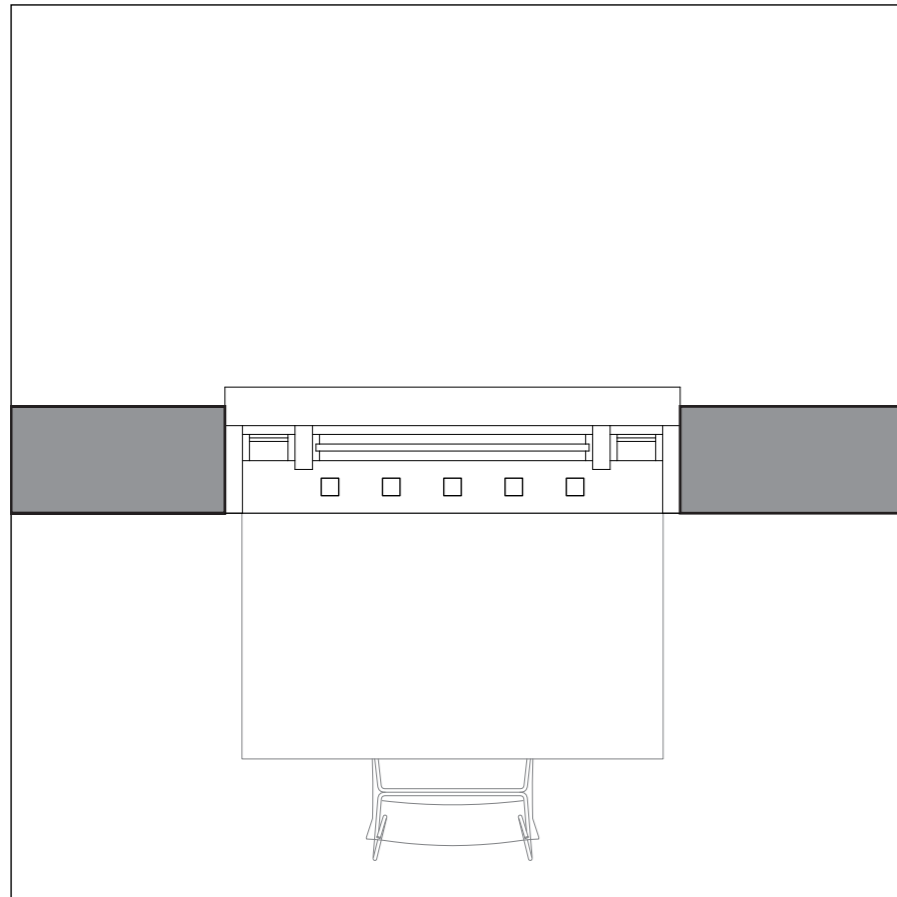
Typical situation

• Bars are a constant visual reminder of incarceration, working against the aim of normalisation.

• The majority of bars on windows within the prison walls are unnecessary due to high-performance safety glass.

• Secure side-ventilators do not make use of convection and so have limited effect.

Possible design response

• Horizontal ventilators at the head and base of the window allow for convectional ventilation much like Victorian sash windows, providing greater levels of airflow.

• Opportunities for 'bay' windows to enable views and prevent overlooking should be explored.

Low vent air in

High vent air out
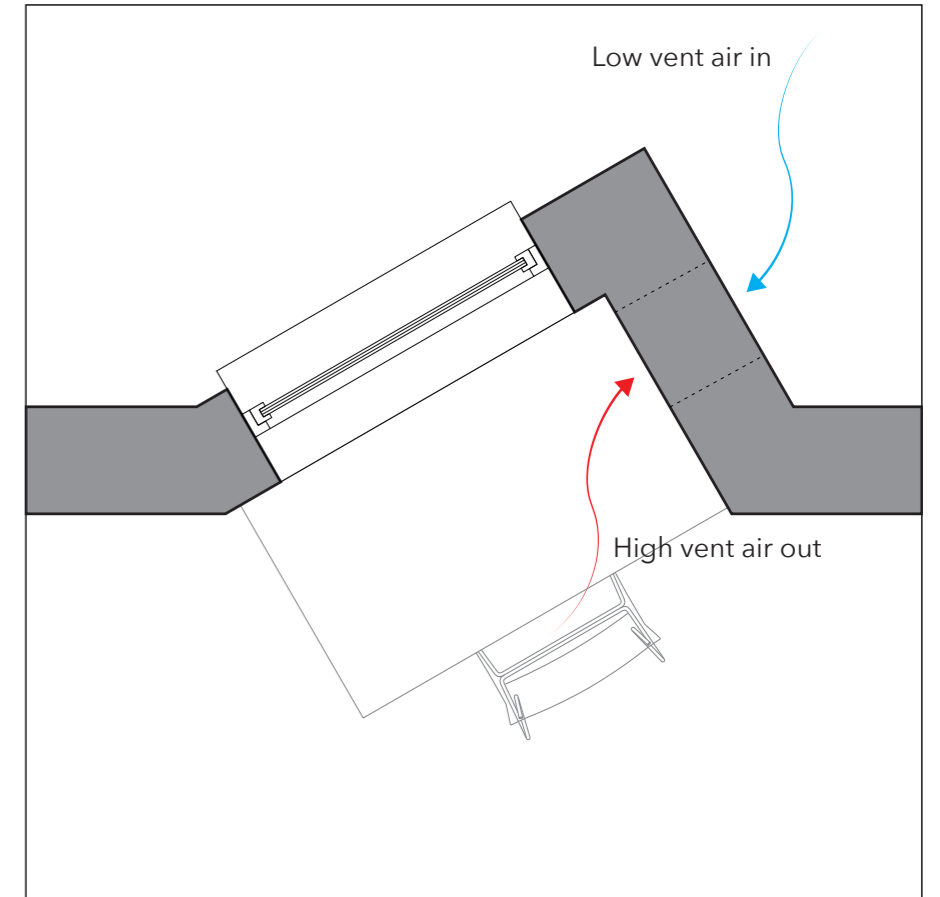
Windows 2 - Sectional form
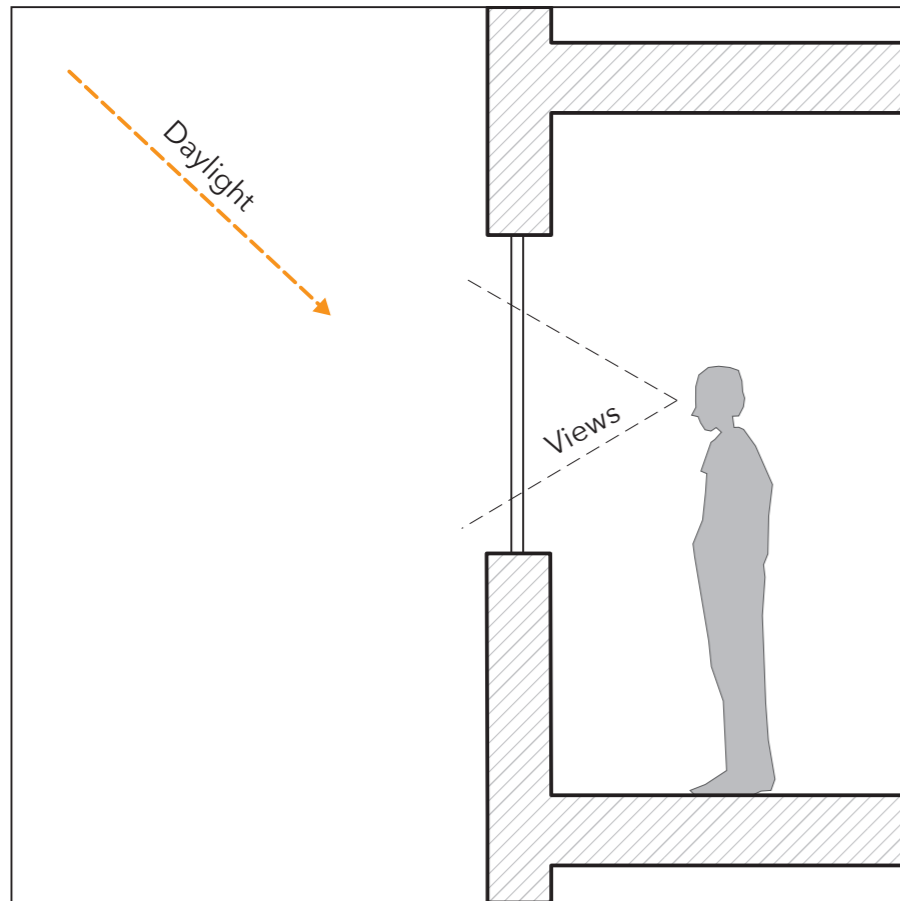
Daylight

Views

Typical situation

• Typical sized windows that are obscured with bars provide a reduced amount of daylight and views to the outside.
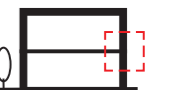
Possible design response

• Full height windows allow for increased daylight penetration enhanced views of the outside from association spaces and a sense of open-ness
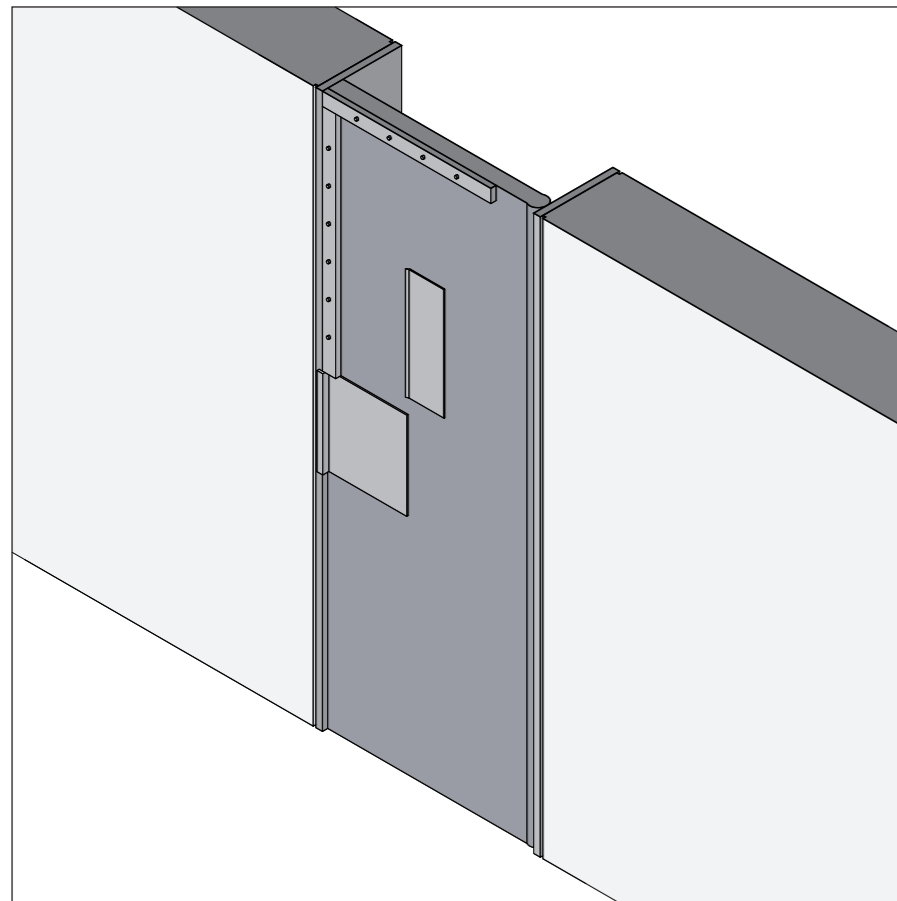

Daylight

Ventilation
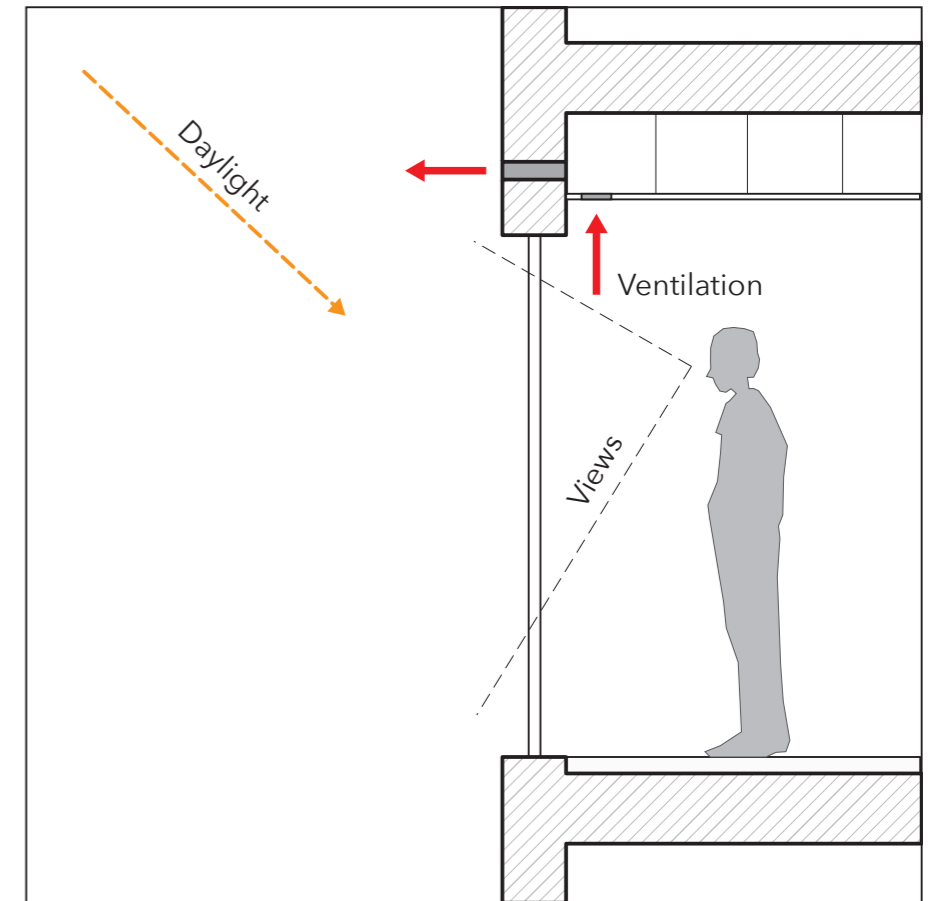
Views

Section

Section

Rooflights

Possible design response

• Where external windows are not possible or with limited views, rooflights should be used.

Cell separation

Typical situation

• Doors are typically made of steel and do not allow natural ventilation

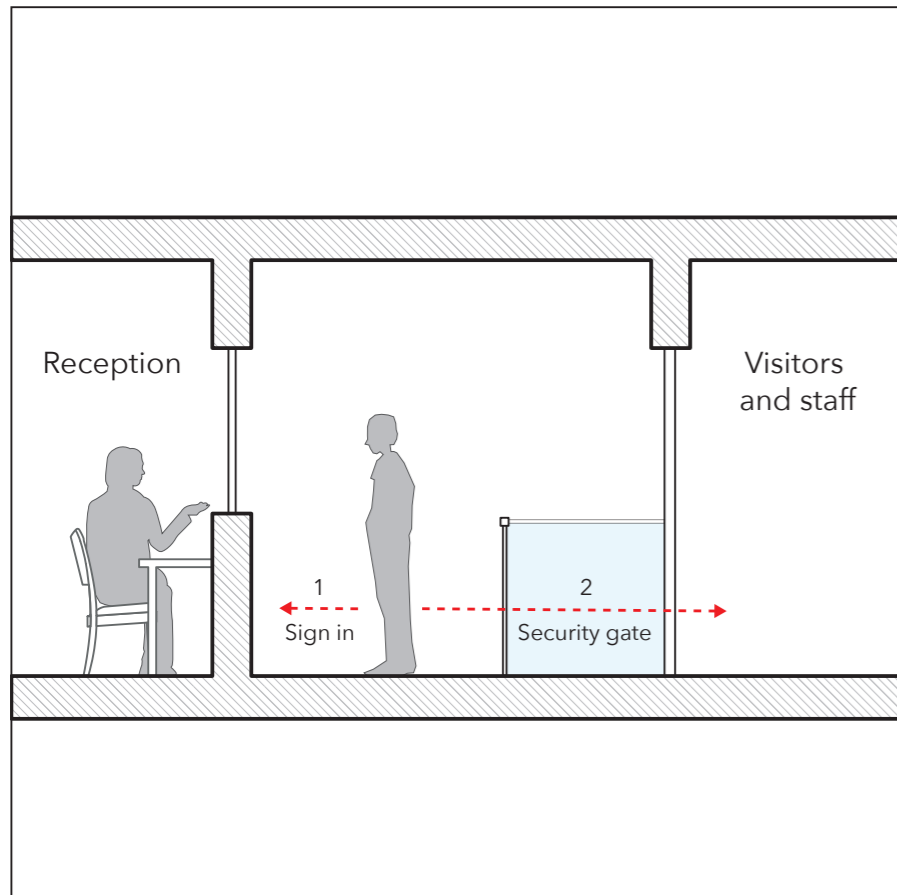• The sound of steel doors closing is a continuous reminder of incarceration

Possible design response

• Timber doors should be considered. Where steel doors are used, baffles should be used to minimise noise.

• Natural ventilation should be enabled between common parts and cells. Fire collars can be incorporated in vents if necessary.
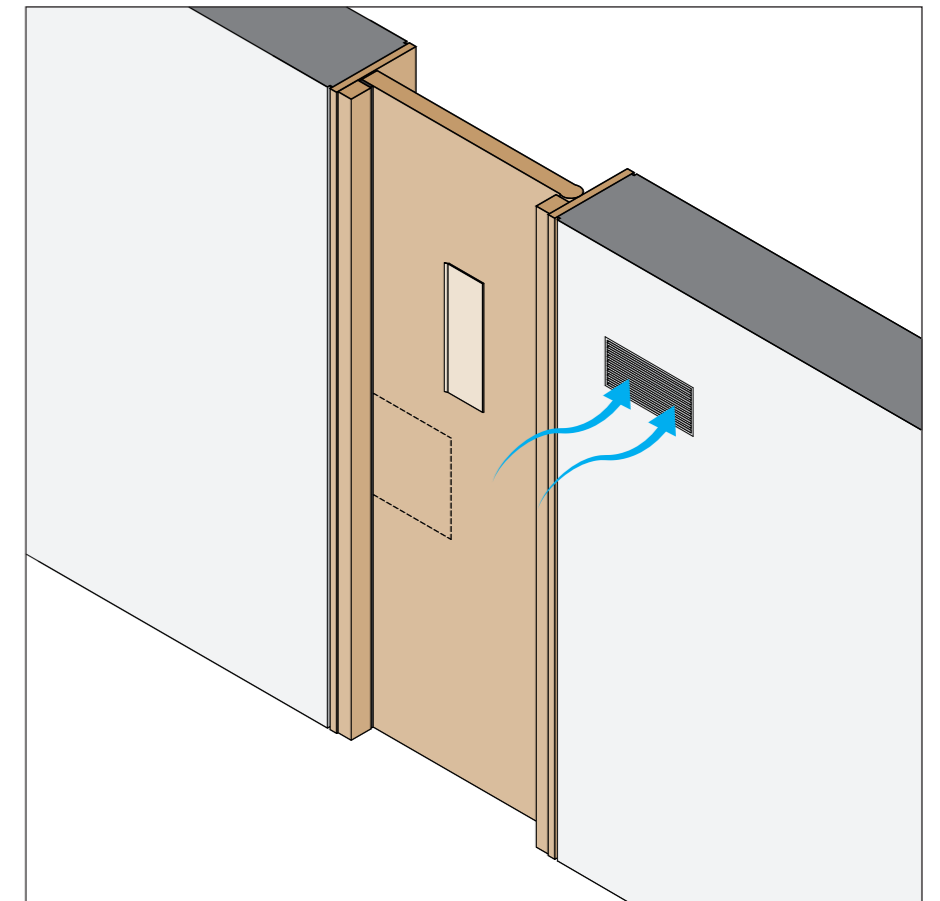
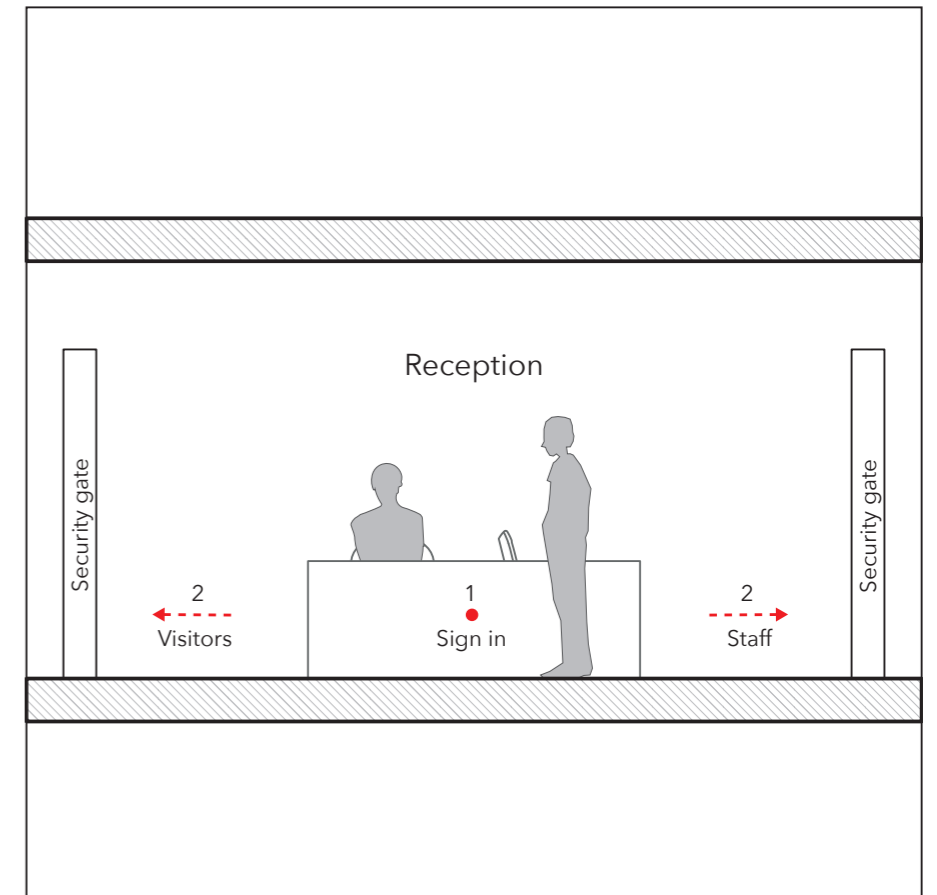## Entrance building / sequence

Typical situation

• The entry sequence is typically heavily constrained. The overall effect is to dehumanise both staff and visitors, restricting communication and inhibiting movement.

Possible design response

• The entry sequence and design should be as welcoming as possible, whilst respecting security requirements. Reception staff should not be physically separated by impermeable screens from visitors.

• Adequate space should be provided for movements through the security sequence.

• Reception areas should be designed with civic presence in mind.

matter

ARCHITECTURE