Brighton and Sussex University Hospitals

Staff Welfare Policy

Version	Amendment	Author
1.0	Final version	TD

Contents

Policy for Staff Welfare

1. Purpose

1.1 This policy sets out standards for the provision of staff support accommodation. It aims to enhance staff wellbeing and productivity and support the Trust in meeting its duty of care and statutory obligations. The policy is based on Health & Safety requirements, Department of Health building guidance, research evidence and best practice.

1.2 This policy applies to all new build developments and as far as practicable to refurbishments. The design standards are summarised at **Appendix A**.

2. Definitions

2.1 'Staff support accommodation' encompasses non-clinical facilities that staff require to work effectively. This includes workstations, offices, meeting rooms and quiet spaces, toilets and showers, changing rooms and lockers, and kitchen/beverage facilities.

3. Design Principles & Standards

3.1 Toilets

3.1.1 Toilets for staff based in both clinical and non-clinical areas must be provided in line with British Standard BS6465-1 Sanitary Installations (2006). Whereas patient and visitor toilets must meet the Trust Privacy and Dignity policy and be single-sex, staff toilets do not need to meet single-sex accommodation standards and may therefore be unisex if necessary (e.g. where only 1 staff WC is provided in an area).

3.1.2 BS6465-1 states staff in a permanent stationary workplace will have access to a toilet within a100m distance. This standard should ideally be extended to cover all Trust staff. The ratio of toilets to staff is as follows:-

Number of People	Number of WCs & Wash-hand basins
1 - 5	1
6 - 15	2
16 - 30	3
31 - 45	4
46 - 60	5
61 - 75	6
76 - 90	7
91 - 100	8
Over 100	plus 1 WC & wash-hand basin for every unit or fraction of a unit of 25 persons

3.2 Staff Change

3.2.1 For reasons of personal safety, infection control and public confidence, the Trust Uniform Policy states that wherever possible staff who need to wear uniforms or specific clothing to deliver patient care should not travel to or from work in uniform. Staff changing facilities should therefore be provided within or in close proximity to each department or as a single centralised facility per floor.

3.2.2 Staff changing areas will be sized to allow at least half the maximum number of staff on duty at any one time to change simultaneously. For reasons of privacy and dignity, one semi-ambulant self-enclosed changing room will be provided in each changing facility, with the remaining changing designed as open-plan. Transgender staff will be able to use the enclosed cubicle within the appropriate changing room to maintain their privacy.

3.2.3 Staff changing facilities should meet HBN00-02 Sanitary Spaces (July 2008). Separate changing facilities for male and female staff will be provided. Access to the changing facility will be secured according to the Trust's Security policy.

3.2.4 The appropriate number of showers, toilets and wash-hand basins will be provided within the changing rooms. Well-illuminated mirrors (with shelves) and power points for hairdryers will also be provided.

3.2.5 Where staff are required to wear theatre scrubs, their changing facilities will include storage facilities for clean footwear, disposable hats, clean and dirty scrubs.

3.3 Lockers

3.3.1 Staff changing areas will include full-length lockable lockers for clothing and personal effects. Lockers should be token-operated rather than key-operated or padlocked, in line with the Trust Security policy.

3.3.2 The number of lockers will be determined as follows: where a shift system is used, twice the number of lockers as the maximum number of staff on duty at any one time; for a non-shift workplace, the same number of lockers as the maximum number of staff on duty at any one time. Allowance should also be made for visiting staff who need to change, e.g. trainees. For space planning, the following formula should be used: $1.1m^2$ per full-height locker for up to 30 lockers, and $0.75m^2$ per full-height locker for 30 lockers or more. (This allocation does not include the semi-ambulant individual changing room that will also be provided).

3.3.3 Lockers will normally be provided on a 'hot-basis', i.e. used by staff only for the duration of their shift and then reallocated. However staff who do not have access to ongoing storage for personal effects (i.e. non-desk based) will be provided with an allocated smaller locker (bag-sized) to keep items which cannot reasonably be transported to and from work each day (e.g. text books, personal hygiene items, etc).

3.3.4 In addition, smaller lockers (e.g. for handbags) will be provided for peripatetic staff (e.g. pharmacy and therapy staff who work across a number of wards) for use on a 'hot-basis'. These will be located in each department rather than in the staff changing facilities.

3.4 Staff Rest Areas

3.4.1 Where staff cannot easily leave their work area to take their break entitlements (e.g. ward staff), staff rest areas will be provided within the department. For staff groups who are able to leave their work area for breaks if they wish there is no requirement to provide staff rest accommodation within the department; shared Trust facilities (e.g. canteen, terraces and other outdoor space) are considered sufficient.

3.4.2 Staff rest areas must meet HBN00-03 Clinical and Clinical Support Spaces (January 2010). The space should be sized based on the maximum number of users likely to be in the space at any one time. Where a rest room with fewer than 15 seats is required, the option of creating larger shared accommodation with other departments on the same floor should be considered.

3.4.3 All staff rest areas must have natural light, ventilation and windows.

3.4.4 Ambulant seating can be allocated at $1.5m^2$ per space. Where wheelchair access is required, each wheelchair user requires a $3m^2$ space. Rest rooms with 30 or more seats must have a separate pantry/refreshment area; rest rooms with fewer than 29 seats may instead have a mini kitchen ('beverage bay'). In HBN 00-03, mini kitchen/beverage bays should be sized at $5m^2$ and pantries at $8m^2$.

3.4.5 Specialist interior design advice should be sought to ensure that staff rest areas are positive environments that promote staff well-being.

3.5 Pregnant & Breastfeeding Staff

3.5.1 In line with Workplace (Health, Safety & Welfare) Regulations (1992) and Trust policy HR30 Maternity, Paternity and Adoption Leave Policy & Guidelines, facilities must be provided for staff who are pregnant or breastfeeding. Pregnant staff will be able to rest within provided Staff Rest areas if required. Breastfeeding staff may use the publicly-accessible Infant Feeding Rooms or if they need to express milk can alternatively use the enclosed changing cubicle in the female staff changing rooms.

3.5.2 Space within a fridge for storage of expressed milk will be available in each department staff rest room or beverage bay. Expressed milk should be stored in sterilised bottles in a cool bag at the rear of the fridge, as recommended in Breastfeeding and Work: Information for Employees and Employers[1.]

4.   Office Design Principles

4.1 Workstations: Hot Desks

4.1.1 Hot-desks are 'workstations provided by the employer but allocated on a needs basis'. This is the preferred arrangement for staff who either require a workstation for the minority of their working week or who require access to a workstation in a number of locations.

4.1.2 Research[2] suggests that the benefits of hot-desking include the ability for employees to work in areas that best suit the task at hand, reduced space costs, improved communication and increased flexibility. However in designing hot-desk areas consideration should be given to storage requirements, integrated technology (e.g. phone and voicemail access) and ensuring an appropriate fit between staff's individual needs and the generic facilities.

4.1.3 Managers of staff who hot-desk should be mindful that the research also shows disbenefits to include a perceived loss of status, reduced contact with colleagues and an increase in physiological and psychological stress when changing social environments at work [3.]

4.2 Workstations: Open Plan

4.2.1 Open plan offices are those in which 'acoustical screens (most commonly 60" high) are used in place of ceiling-height partitions to separate workstations'.

4.2.2 This is the Trust's preferred standard for office accommodation, with staff grouped by functionality (i.e. carrying out similar tasks and types of work) to minimise distractions. Research suggests that this configuration enhances collaboration, promotes knowledge transfer and improves the performance of routine tasks (by providing the stimulation of contact with others).

4.2.3 However, research also shows the disbenefits to include lower visual and acoustic privacy and increased disruption, which may lead to lower performance.

4.2.4 As set out in HBN00-03 Clinical and Clinical Support Spaces (January 2010), open-plan offices with eight or more workstations must be sized at $6.6m^2$ per workstation, to include:

- one breakout space ($6m^2$), one quiet workspace ($5.5m^2$) and one interview room ($8m^2$) for every 16 workstations;
- one photocopy/printing room ($6m^2$) with multifunctional printer/copier and storage for paper/printing supplies, for every 32 workstations.

Where 8 to 16 desks are open-plan, the breakout space and quiet workspace are omitted, but

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[1] http://www.nhs.uk/Planners/breastfeeding/Documents/breastfeedingandwork%5B1%5D.pdf
[2] Simpson , N (2000) Health & Safety Executive. The effects of new ways of working.
[3] Brennan, A (2002) Environment and behavior. Traditional versus Open Office Design: A Longitudinal Field Study.

interview room and photocopy/printing room are provided.

4.2.5   The arrangement of workstations should be discussed with users. Research suggests that face-to-face seating disturbs 60% of employees when they are trying to concentrate ('T' layout). However, this needs to be balanced with a risk assessment of health & safety issues of chair clashes in the 'U' or horse-shoe layout:

'T' Layout	'U' Layout

4.3 Workstations: Cellular Offices

4.3.1   Cellular offices provide an opportunity for highly concentrated work, privacy and (usually) close proximity to a window.   The default workstation layout is open-plan, grouped by task or function to minimise disruption. However, options for cellular offices should be discussed with users depending upon the space available and any specific requirements they may have.

4.3.2   Where possible, cellular offices should be designed so the workstations face away from the wall and have access to light from the window, leaving space for visitors in the area around the door.

4.4 Light & Lighting

4.4.1   Research[4] suggests that optimal lighting, and in particular the presence of daylight, results in significant productivity gains, enhances employee wellbeing, potentially reduces running costs and improves overall organisational image.

4.4.2   All workstations should ideally have natural light. Where this is not possible, priority in allocating workstations with natural light must be given to staff who are desk-based for the majority of their working day. As a minimum, all workstations must have borrowed light. Research[5] suggests that in the office environment proximity to a window increases employee satisfaction.

4.4.3   Effective glare control is essential to avoid eyestrain, tiredness and work errors. The Health and Safety Regulations (1992) state that 'windows shall be fitted with a suitable system of adjustable covering to attenuate the daylight that falls on the workstation'[6]. Suitable controls include curtains or blinds and anti-glare lighting.

4.4.4   It should be noted that different users have different lighting needs. For example, older people generally require more illumination in order to perform tasks and find it more difficult adjusting to varying light levels in the environment[7]. Research[8,9] suggests that that the more

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[4] Littlefair, P (2001) BRE. Office Lighting Environmental Engineering Centre
[5] Yildirim, K. et. Al. (2007) The effects of window proximity, screen height, and gender on perception of open-plan offices Journal of Environmental Psychology
[6] Littlefair, P (2001) BRE. Office Lighting Environmental Engineering Centre
[7] Herman Miller (2001) Lighting in the Workplace. www.hermanmiller.co.uk/EasySiteWeb/GatewayLink.aspx?alId
[8] Ding, S (2008) Users' privacy preferences in open plan offices facilities, Vol. 26.No. 9/10
[9] Newsham, G (2004) "Effect of dimming control on office worker satisfaction and performance," Proceedings of the Annual Conference of the Illuminating Engineering Society of North America

control an employee has over lighting (intensity, direction), the higher their satisfaction levels. Workstations should therefore be designed with localised manual dimming, e.g. desk lamps.

4.5 Air Quality

4.5.1 Offices should be designed with windows that can be opened easily as and when required. Where indoor textiles are used, maintenance will be required to avoid particle build up.

4.5.2 Research[10] suggests that poor quality air can irritate employee's mucous membranes; cause fatigue, headaches, sinus congestion and shortness of breath; and cause a loss of concentration and productivity. Improving the quality of indoor air can result in significant cost savings[11].

4.6 Plants

4.6.1 Research suggests that there are a number of benefits of having plants in an office setting. A 2007 study[12] by NASA found that 'living plants can remove several toxic chemicals from the air in building interiors'. Other research[13] has found that plants play a positive role in employee welfare and can help to reduce short term employee absence. In one study[14], indoor plants reduced employee fatigue, coughs, sore throats and other cold-related illnesses by more than 30%, partially by increasing humidity levels and decreasing dust.

4.6.2 Certain plants have effective sound absorption qualities, e.g. Peace Lily and Weeping Fig[15]. Plants such as spider plants, English ivy, and peace plants are suggested as a cost effective method for improving air quality in the office environment[16].

4.6.3 Although staff should be aware of the risk of introducing bugs and horticultural diseases into the office environment[17] staff bringing in their own plants to work has been shown to have health benefits. These include enhanced cognitive functioning and reduced stress and depression[18].

4.7 Acoustics

4.7.1 Noise in the office environment (e.g. conversations, telephones) tends to impair performance, often causing distraction and increasing errors. However this depends on factors such as predictability, level of control, intensity, frequency and personal noise tolerance[19].

4.7.2 In order to provide sufficient auditory and visual privacy, screening between desks should be at least 1.4m tall and air paths through dividing elements (e.g. office screens) minimised. Where folding screens are required, screens with closure seals that lock panels in place should be selected[20].

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[10] Kaushik, M (2008) Business Today Stay Healthy in a closed environment
[11] American Industrial Hygiene Association (2007) Improving Indoor Air Quality Where You Work
[12] NASA (2007) Innovative Partnerships Programme. Plants Clean Air and Water for Indoor Environments http://www.sti.nasa.gov/tto/Spinoff2007/ps_3.html
[13] Appleby, M (2009) Horticulture week. Case for investment grows as evidence for plants' role in well-being is highlighted
[14] Fjeld, T and Bonnevie, C (2002) Reducing health complaints at work Plants for people. The effect of plants and artificial day-light on the well-being and health of office workers. http://greenplantsforgreenbuildings.org/attachments/contentmanagers/25/PlantsArtificialDaylight.pdf
[15] Tarran, J. University of Technology Sydney (2008) Use of living pot-plants to cleanse indoor air
[16] Tarran, J. University of Technology Sydney (2008) Use of living pot-plants to cleanse indoor air
[17] Cooper, N (2007) Personnel Today. Spotlight on: plants in the workplace. http://www.personneltoday.com/articles/2007/05/29/40829/spotlight-on-plants-in-the-workplace.html
[18] Elings, M (2005) People- Plant interaction. The physiological, psychological and sociological effects of plants on people. http://library.wur.nl/frontis/farming_for_health/04_elings.pdf
[19] Evans, G W& Johnson, D(2000) Stress and Open-Office Noise Journal of Applied Psychology, Vol. 85, No.5
[20] National Research Canada Council (2005) Acoustical Requirements for Design and Construction.

4.7.3   Although infection control needs to be considered, the literature strongly suggests that soft surface flooring is beneficial, particularly in an open plan office[21]. The 'cut pile' carpet (with filament yarn to ensure no fibre shedding) is considered to be the most appropriate in a healthcare setting. Treatment with an antimicrobial product may also assist in making the carpet more resistant to microbial organisms[22].

4.7.4   Further measures to reduce noise levels include ceiling tiles and acoustic wall panels, which can be attached to existing walls.

4.7.5   Communal/social areas (e.g. kitchens, printer/photocopy rooms) should be acoustically separated from main working areas.

4.7.6   Attention should be given to choice of modular furniture to enable staff to adapt their workspace and control how their space is accessed (e.g. creating barriers to entry) in order to maintain privacy, to reduce a sense of crowding, and for future flexibility.

4.8 Temperature

4.8.1   Employers must ensure that during working hours the temperature inside buildings is reasonable. Under the Health, Safety and Welfare Regulations 1992, 16°C is the minimum acceptable temperature[23]. The regulations do not establish a maximum acceptable temperature however the Trade Union Congress recommend a maximum working temperature of 30°C[24]. The Trust heating/cooling infrastructure should therefore be designed to maintain office temperatures within these parameters.

4.9 Storage

4.9.1   Research[25] suggests that the provision of personal storage in the office environment directly contributes to staff satisfaction, performance and productivity. Appropriate storage should therefore be provided for each workspace.

4.10 Colour Scheme

4.10.1 Effective colour design can make staff's work easier practically, psychologically and emotionally[26, 27, 28]. The interior design scheme should be selected in collaboration with users, using the Trust-wide colour palettes when available. Colours should be cheerful, natural, inviting and should complement the office lighting.

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http://www.nrc-cnrc.gc.ca/eng/ibp/irc/cbd/building-digest-186.html
[21] Bene (2010) Working in a living space
[22] Marlings Limited (2010) Textured cut pile carpets
http://www.marlings.co.uk/product_specs/Highgrove_PS_20_iss_2.pdf
[23] TSSU (2009) Office Health and Safety. http://www.tssa.org.uk/article-47.php3?id_article=1000
[24] TUC (2002) Attention: industrial, regional and H&S correspondents plus planning desks.
http://www.tuc.org.uk/workplace/tuc-5385-f0.cfm
[25] O'Neill, M (1994) Environment and behavior. Work space adjustability, storage, and enclosure as predictors of employee reactions and performance
[26] Dalke, H (2004) Lighting and colour for hospital design
[27] The Society of Light and Lighting (2008) Lighting Guide 2: Hospitals and health care buildings
[28] The Telegraph (2008) Shades of meaning in the office décor.
http://www.telegraph.co.uk/finance/2787035/Shades-of-meaning-in-the-office-decor.html

APPENDIX A

STAFF WELL-BEING AND PRODUCTIVITY
IN THE OFFICE ENVIRONMENT

1.   **Introduction**

The purpose of this report is to review key literature considering the link between elements of office design, staff motivation, morale and productivity. The report will provide recommendations and identify design implications for 3Ts focusing on the following key areas:

1. **Open plan offices, Cellular offices and Hot-desking**
2. **Furniture layout**
3. **Room acoustics**
4. **Air quality**
5. **Light and Lighting**
6. **Plants**
7. **Colour scheme**

In order to select the most beneficial areas of research a literature review was carried out and the architectural needs for the design were considered. The areas above have been listed with number one representing the strongest link between office design and workforce motivation, morale and productivity.

The majority of offices within the 3Ts scheme are cellular however there will be open plan offices for the following departments:

- Trust HQ
- CIRU
- Neuroscience Medical Secretaries
- ENT Medical Secretaries
- Oncology Medical Secretaries
- Procurement and Facilities Management
- Imaging
- Medical Physics

These open plan offices will be grouped by functionality, i.e. people carrying out similar tasks and types of work.

2.   **Research Evidence**

2.1   OPEN PLAN OFFICES, CELLULAR OFFICES AND HOT-DESKING

2.1.1 Open plan Vs Cellular offices

An open plan office can be defined as 'an environment comprised of systems furniture and "enclosed private offices" as workspaces completely enclosed with dry wall and a door.'[29] Within the 3Ts project an open plan office has been defined as an office with 8 or more workstations.

The evidence highlights that there are both advantages and disadvantages to the open plan office environment. Research suggests the main advantage is the creation of a collaborative environment and the promotion on knowledge transfer. Mawson (2002) highlights that the performance of routine tasks will improve since employees who find their jobs tedious may find

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[29] O'Neill, M (2008) Knoll Workplace Research, Open Plan and Enclosed Private Offices.
http://www.knoll.com/research/downloads/OpenClosed_Offices_wp.pdf

contact with others a source of stimulation. [30] It is important to highlight that office layout and work processes need to be aligned in an open plan office in order for optimum productivity (Haynes, 2008).[31]

However disadvantages (Yildikim, 2007) include: lower visual and acoustic privacy and increased disruption which is likely to lead to lower employee performance. It is therefore critical that within the open office environment, collaboration and privacy are balanced.[32] It is important to consider how these points potentially impact staff well-being and productivity and how these can be reduced through a well designed office.

The workplace should provide a variety of areas for collaboration, interaction and concentrated work. O'Neill (2008) emphasises the importance of carefully choosing modular furniture. For example research shows that open plan environments should be complemented by dedicated, enclosed work spaces with reduced noise and visual distractions.[33] One solution is the 'think tank' concept i.e. an acoustically screened room near the workplace for activities that require focused concentration (Bene, 2010). As the Staff and Support Accommodation 3Ts Design Policy highlights one quiet workspace for ($5.5m^2$), one breakout space ($6m^2$) and one interview room ($8m^2$) for every 16 workstations should be provided.[34] This is based on the Health Building Notes (HBN) recommendations.

The evidence suggests that the main advantages of cellular offices are that they provide an opportunity for highly concentrated work, privacy and (usually) close proximity to a window. Further research highlights that if possible, where there are one to three person offices their workstations should face the window, leaving space for visitors in the area around the door.

The main disadvantages of cellular offices include less general information flow, less employee movement and the possible effect of isolation (O'Neill, 2008). To conclude, throughout the 3Ts development there will be cellular and open plan offices therefore the potential risks identified need to be considered balancing collaboration and privacy.

2.1.2 Hot-desking

Although hot-desking will not be a significant feature of the 3Ts development it is important to consider best practice in this area. Hot-desking i.e. 'desk space provided by the employer but allocated on a needs basis' should cater for employees who do not need a dedicated workspace. Research shows that the key benefits of this approach include the ability for employees to work in areas that best suit the task at hand, reduced space costs, improved communication, and increased flexibility with the opportunity for employees to find an optimum balance for work life. Some of the identified constraints include the provision of storage, making sure the facilities meet staff needs, lack of personal territory, loss of status and reduced contact with colleagues.[35]

The choice of furniture in the hot-desking offices should be carefully analysed considering technological develops in areas such as laptops, wireless technology and personal digital assistant devices. Hot-desking offices generally cater for employees who need to carry out work for a short period of time therefore areas for employees on the move should be created. For example 'touch down desks' where employees have the choice of sitting or standing and are fully supported by integrated technology.[36]

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[30] Mawson, A (2002) The workplace and its impact on productivity. Advanced Workplace Associates, London, http://www.ovvupier.org/uploads/articles/larticle8.pdf

[31] Haynes, B (2008) The impact of office layout on productivity. Journal of Facilities Management, Vol 67, No. 3

[32] Yildirim, K. et. Al. (2007) The effects of window proximity, screen height, and gender on perception of open-plan offices Journal of Environmental Psychology

[33] O'Neill, M (2008) Knoll Workplace Research, Open Plan and Enclosed Private Offices. http://www.knoll.com/research/downloads/OpenClosed_Offices_wp.pdf

[34] 3Ts Design Policy (2010) Staff Welfare and Support Accommodation

[35] Simpson , N (2000) Health & Safety Executive. The effects of new ways of working.

[36] Carr, P (2006) London Chamber of Commerce. The portable office.

NHS Lincolnshire highlight that it is vitally important that the following key factors are considered when determining the suitability of individual posts for hot-desking: [37]

1. *Whether or not the type of work is process based and whether it can be carried out confidentially.*
2. *Whether or not the work is location dependent.*
3. *Whether there is a need for supervision.*

Finally, it must be noted that employees often experience an increase in physiological and psychological stress when changing social environments at work. [38]

2.1.3 Open plan, Cellular offices and Hot-desking Recommendations

- Open plan offices should be used within the 3Ts programme but only with design features to reduce the potential negative impact on staff.

- Open plan offices should be grouped by functionality where people carry out similar types of work.

- In open plan offices separate enclosed workspaces such as 'think tanks' should be incorporated into the design.

- Cellular offices should where possible be designed with desks facing the window.

- Where there are cellular offices spaces that promote collaboration should be made available.

- Employees who spend the majority of their time at a desk will not be suitable for the hot-desking environment.

- Hot-desking offices should be fully supported with integrated technology e.g. phone access.

- Further discussion to take place around 'touch down desks' and furniture choice.

- Trust wide hot-desking protocol to be developed.

- Staff should be briefed throughout the design and redevelopment in order to provide a smooth transition to the new working environment.

2.2 FURNITURE LAYOUT

Research by Brennan (2002) found that furniture layout can have a major impact on employee well-being. The evidence suggests that overcrowding can damage health, productivity and increase the risks of fire and other hazards.

Ding (2008) found that control over personal space through system furniture design plays an important role in an employees perceived level of privacy. [39]

The Health Building Notes 00-03 (2010) state that for open-plan offices with 8 or more workstations, an allowance of 6.6m2 per workstation may be used. This covers requirements for the workstations and the associated enclosed workspaces. [40]

A significant feature of the office setting is the location of workstations. A key consideration within the open plan office should be whether employee workstations should be face to face (T-layout) or back to back (U-layout) **(Appendix 1)**. Research by the Fraunhofer Institute shows that face to face seating disturbs 60% of employees when they are trying to concentrate. If the T-layout is used within the office setting particular attention should be given to screens

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[37] NHS Lincolnshire (2010) Hot Desk/Shared Desk Policy
[38] Brennan, A (2002) Environment and behavior. Traditional versus Open Office Design: A Longitudinal Field Study.
[39] Ding, S (2008) User's privacy preferences in open plan offices. Facilities. Vol.26, No.9/10
[40] Health Building Notes 00-03 (2010) Clinical and Clinical Support Spaces

between employee workspaces which should have a minimum height of 1.4m. [41]

Research by O'Neill (1994) found that the provision of personal storage in the office environment directly contributes to satisfaction and enhanced employee performance. O'Neill suggests that storage units should be appropriately selected for the type of work materials needed to be stored. 'When work materials are stored outside the direct workspace, work efficiency may be reduced due to interruptions to the task to retrieve the necessary material.' Taking this into account all workstations should have sufficient personal storage in order to maintain and preserve necessary documents.[42] Please note the key principles are consistent with the minimum safety and health requirements for work with display screen equipment (1990).

2.2.1 Furniture Layout Recommendations

- For offices with 8 or more workstations as per the Health Building Notes 00-03 there should be an allowance of 6.6m2 per workstation in order to avoid overcrowding.

- Further discussion should take place around face to face or back to back seating.

- Further discussion to take place around appropriate storage units.

- Clarity of budget for appropriate furniture required to ensure privacy is obtained and optimum productivity promoted.

2.3 ROOM ACOUSTICS

The evidence suggests that noises within the office environment such as conversation and telephone noise tend to impair performance, often causing distraction and increasing errors. However a recent study suggested that the effects of noise depend upon a variety of factors such as predictability, level of control, noise intensity and frequency in addition to personal noise tolerance.[43]

Yildikim (2007) suggests that one way of reducing noise is to make sure desks are well spaced with minimum screen height between desks of 1.4m minimising distractions and interruptions.[44] Making sure there no air paths through dividing elements such as office screens is also of importance within the open plan office landscape. For example it has been suggested that folding screens should be avoided as air gaps are present. Instead screens with closure seals that lock panels in place should be used.[45]

A further study explains that hard surfaces in an office can cause the noise level to increase dramatically. Measures to reduce noise levels include ceiling tiles, appropriate flooring and acoustic wall panels, which can be attached to existing walls.[46]

Although the infection control element needs to be considered the literature strongly suggests that soft surface flooring is beneficial particularly in an open plan office. The benefits include: acoustic dampening, capacity for heat transmission, protection from falls and trips and general office ambience.[47] Suitable carpets should be selected with ease of maintenance a top priority. The 'cut pile' carpet is said to be the most appropriate in a healthcare setting with filament yarn to ensure no fibre shedding. Another option to combat infection control is to invest in carpets treated with an antimicrobial product making the carpet more resistant to microbial

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[41] Fraunhofer Institute (2009) Working in a living space. Bene

[42] O'Neill, M (1994) Environment and behavior. Work space adjustability, storage, and enclosure as predictors of employee reactions and performance. http://cool.coa.gatech.edu:8000/AdvReadings/uploads/O'Neill1994.pdf

[43] Evans, G W& Johnson, D(2000) Stress and Open-Office Noise Journal of Applied Psychology, Vol. 85, No.5

[44] Yildirim, K. et. Al. (2007) The effects of window proximity, screen height, and gender on perception of open-plan offices Journal of Environmental Psychology

[45] National Research Canada Council (2005) Acoustical Requirements for Design and Construction. http://www.nrc-cnrc.gc.ca/eng/ibp/irc/cbd/building-digest-186.html

[46] Weidman, T (2007) Acoustical Surfaces, http://www.acousticalsurfaces.com/curtan_stop/pdf/testa/Curtain_Enclosure.pdf

[47] Bene (2010) Working in a living space

organisms. [48]

Research suggests that certain plants have effective sound absorption qualities; some of the most effective are Peace Lily and Weeping Fig.[49] Plants are also a cost effective way of enhancing air quality and general employee well-being.

Finally, it is extremely important that communal and social areas are acoustically separated from the main working office. Areas such as printer areas and kitchens should be shielded through appropriate sound proofing enclosures.

To conclude the evidence base strongly recommends that careful consideration should be given to appropriate acoustic dampening materials particularly in the open plan office environment.

2.3.1 Room Acoustics Recommendations

- Unnecessary hard surfaces should be avoided where possible in open plan offices.

- Soft surface flooring should be used in the open plan office setting with careful consideration given to ease of maintenance.

- Folding screens should be avoided.

- Screens should be used between desks, with a minimum height of 1.4m for optimal acoustic privacy.

- Communal/social areas should be acoustically separated from the main working area.

- For larger open plan offices the use of wall acoustical panels would be beneficial.

2.4 AIR QUALITY

The evidence base suggests that there are a number of features within buildings which can contribute to poor air quality in the office environment. Leinster (1992) explains that these include:

> "Forced ventilation, indoor surfaces covered with textiles, buildings of light construction and windows that cannot be opened."[50]

Research carried out by Dr Shukla (2008) suggests that poor quality air can irritate eyes, skin, nose and throat, often causing fatigue, headaches, sinus congestion and shortness of breath. It can also make employees lose concentration and become unproductive.[51]

Research by the American Industrial Hygiene Association (AIHA) (2007) highlights that improving the quality of indoor air can have significant effects on the productivity of staff, employee health and comfort as well as make substantial cost savings.[52] According to Ulrich (1984):

> "Windows are generally seen as favourable influences on health and well-being, providing fresh air, access to views of the outside and the potential for restorative experiences."[53]

Research shows it is important that windows can be opened as and when required. The concept of 'supply air windows' could be considered for offices where ventilation may be an issue. Research by the Department of Trade and Industry proposes that supply air windows offer a solution to the problem of providing fresh air whilst reducing ventilation heat loss: supply air windows provide re-heated ventilated air by partially reclaiming heat normally lost

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[48] Marlings Limited (2010) Textured cut pile carpets
http://www.marlings.co.uk/product_specs/Highgrove_PS_20_iss_2.pdf
[49] Tarran, J. University of Technology Sydney (2008) Use of living pot-plants to cleanse indoor air
[50] Leinster, P, Mitchell, E (1992) Commission of the European Communities, A review of indoor air quality and its impact on the health and well-being of office workers
[51] Kaushik, M (2008) Business Today Stay Healthy in a closed environment
[52] American Industrial Hygiene Association (2007) Improving Indoor Air Quality Where You Work
[53] Newsham, G, (2010) Routledge. Linking indoor environment conditions to job satisfaction: a field study

to the outside and by collecting solar gains.[54]

Air temperature also needs to be taken into account. According to AIHA the most common complaint about air quality is temperature. Employers must ensure that during working hours the temperature inside buildings is reasonable: under the Health, Safety and Welfare Regulations 1992, 16 degrees Celsius is the minimum acceptable temperature.[55] It is important to note the regulations do not set out a maximum temperature; however the TUC (Trade Union Congress) recommend a maximum working temperature of 30°C.[56]

A further area of concern according to Leinster (1992) is indoor surfaces covered with textiles such as carpets, furnishing fabrics and paintings as they are more susceptible to particulate pollution.

It is important to note that this contradicts the earlier point, where it is recommended that soft furnish flooring should be used for its sounds absorption qualities. Where textiles are used in the office environment effective maintenance will need to be a top priority in order to minimise the infection control concern.

Finally plants such as spider plants, English ivy, and peace plants are suggested as a cost effective method for improving air quality in the office environment.[57]

As the literature highlights air quality is a vital factor in maintaining a healthy, productive workforce. Avoiding poor office air quality via a robust design process, considering the research mentioned above should be of top priority.

2.4.1 Air Quality Recommendations

- Windows should be able to be opened easily as and when required.

- Where indoor textiles are used robust maintenance should be a top priority to avoid particle build up.

- The concept of supply air windows should be considered for new buildings and those that are being refurbished.

2.5 LIGHTING

Research by BRE, a Capital Consulting Institute, highlights that good lighting and in particular the presence of daylight can result in important gains in productivity, enhance employee well-being, potentially reduce running costs and improve the overall organisational image.[58]

Yildikim's (2007) research found that an employee's proximity to a window in the office environment affects satisfaction. Access to daylight should be a priority for those who are at a desk for most of their working day.[59]

An important point to consider is that different users have different lighting needs and lighting control is therefore a significant factor. For example Miller (2001) found that generally older people require more illumination in order to perform tasks and find it more difficult adjusting to varying light levels in the environment.[60] The more control an employee has the more likely the satisfaction levels will be high, i.e. lighting that can be switched off or dimmed when required and when daylight is sufficient.[61] Miller suggests adjustable task lighting is critical in

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[54] Baker, P (2003) BRE. Improving air quality in homes with supply air windows
[55] TSSU (2009) Office Health and Safety. http://www.tssa.org.uk/article-47.php3?id_article=1000
[56] TUC (2002) Attention: industrial, regional and H&S correspondents plus planning desks. http://www.tuc.org.uk/workplace/tuc-5385-f0.cfm
[57] Tarran, J. University of Technology Sydney (2008) Use of living pot-plants to cleanse indoor air
[58] Littlefair, P (2001) BRE. Office Lighting Environmental Engineering Centre
[59] Yildirim, K. et. Al. (2007) The effects of window proximity, screen height, and gender on perception of open-plan offices Journal of Environmental Psychology
[60] Miller, Herman (2001) Lighting in the Workplace. www.hermanmiller.co.uk/EasySiteWeb/GatewayLink.aspx?alId
[61] Ding, S (2008) Users' privacy preferences in open plan offices facilities, Vol. 26.No. 9/10

order to give the user control over the intensity and direction of light in their personal workspace.

Dimming lights allow employees to have control of their lighting within the office environment. The BRE report highlighted that localised manual dimming can be of great value particularly in the open plan office setting. Although more costly, the system can often pay for itself in energy savings and enhanced employee productivity. An alternative low-cost method suggested by Miller is the provision of desk lamps which is said to be enough to create a more favourable impression of the work environment. Newsham (2004) confirms that in open plan offices some form of individual workstation control over lighting should be provided.[62]

Another important issue to consider is glare, 'a reduction in the ability to see details or objects caused by luminance'.[63] Research suggests that good glare control is essential to avoid eyestrain, tiredness and work errors. The Health and Safety Regulations (1992) outline:

> "Windows shall be fitted with a suitable system of adjustable covering to attenuate the daylight that falls on the workstation"[64]

Suitable controls include curtains, blinds or anti glare lighting. Anti glare lighting is created by installing a filter or incorporating a special lens to the lighting fixture. This avoids hot spots of light and potential glare in the office environment. The literature recommends that full spectrum light bulbs are used with anti glare fixtures to optimise the reduction of glare. [65] Full spectrum lighting is said to mimic natural sunlight by emitting the same wavelengths as produced by the sun. There are said to be a wide array of benefits including fatigue relief and enhanced productivity. However there are also disadvantages of full spectrum lighting such as high cost and potentially uncomfortable brightness.[66]

2.5.1 Lighting Recommendations

- Ideally all offices should have natural light. Employees who are at their desk for most of their working day should have direct access to natural light. For those areas with sporadic use access to borrowed light is vital.

- It is recommended that dimming lights for each workstation are introduced into the open plan office environment and considered for cellular offices.

- Where this is not possible individual desk lamps should be used.

- Appropriate curtains, blinds or anti glare lighting (using full spectrum light bulbs) should be used in all office environments.

2.6   PLANTS

The research suggests there are a number of benefits of having plants in an office setting. A recent study by NASA published in 2007 suggested:

> "Living plants can remove several toxic chemicals from the air in building interiors. Plants can be used in the office to improve the quality of the air and to make it a more pleasant place to work."[67]

A recent study by NASA and the Associated Landscape Contractors of America (ALCA) suggest plants can greatly reduce volatile organic compounds in the air. Research has also suggested

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[62] Newsham, G (2004) "Effect of dimming control on office worker satisfaction and performance," Proceedings of the Annual Conference of the Illuminating Engineering Society of North America

[63] The Society of Light and Lighting (2008) Lighting Guide 2: Hospitals and health care buildings

[64] Littlefair, P (2001) BRE. Office Lighting Environmental Engineering Centre

[65] Smith, S (2010) What are Types of Anti-Glare Lighting?

[66] Full Spectrum Solutions (2009) Full Spectrum Lighting for Light Therapy
http://www.fullspectrumsolutions.com/full_spectrum_lighting.shtml

[67] NASA (2007) Innovative Partnerships Programme. Plants Clean Air and Water for Indoor Environments
http://www.sti.nasa.gov/tto/Spinoff2007/ps_3.html

that plants play a psychological role in welfare and can help to reduce short term employee absence.[68]

According to a University of Agriculture study in Norway (Fjeld, 2002), indoor plants can reduce fatigue, coughs, sore throats and other cold-related illnesses by more than 30 percent, partially by increasing humidity levels and decreasing dust.[69]

Research suggests that there are health benefits of encouraging staff to bring in their own plants. The caring aspect is a key benefit, said to have a positive effect on cognitive functioning and provide an antidote to stress and depression. [70] Caring for a plant also gives employees a chance to take a short break and encourages workplace movement. In order to engage staff an office gardener column on the intranet could be set up offering gardening tips, discussion boards and competitions. However the potential risks highlighted by Personnel today (2007) must also be considered,

> "Employees, who bring their own plants into the workplace, can potentially introduce bugs and horticultural diseases into the environment."[71]

Fjeld concludes that:

> "It is likely that indoor vegetation may change the environment in such a way that it corresponds better with our positive response patterns towards elements of nature, and hence influence the measurable stress level in the body."

The literature research strongly suggests that natural planting can enhance the well-being of employees. Including plants in the office environment is a cost effective way of creating a holistic setting having profound effects on employee well-being and productivity.

2.6.1 Plants Recommendation

- Natural planting should be used in the office environment to maximise the health and well-being of employees.

- Staff should be encouraged to bring in their own plants and desks should have adequate space for this.

- Staff should be engaged in this well-being activity through intranet forums and competitions.

2.7 COLOUR SCHEME

The evidence suggests a number of key areas to take into account when considering colour schemes in an office setting. An NHS Estates study in 2004 highlighted:

> "Good colour design in hospitals can facilitate the work of staff and even make their work easier, practically, psychologically and emotionally."[72]

A further study by the Society of Light and Lighting (2008) explained that colour plays a vital role in enhancing the healthcare environment. It encourages visitors to feel positive about their experiences and helps staff to appreciate their work place. The report emphasises that knowledgeable application of lighting and colour can influence a person's mood, well-being and

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[68] Appleby, M (2009) Horticulture week. Case for investment grows as evidence for plants' role in well-being is highlighted

[69] Fjeld, T and Bonnevie, C (2002) Reducing health complaints at work Plants for people. The effect of plants and artificial day-light on the well-being and health of office workers. http://greenplantsforgreenbuildings.org/attachments/contentmanagers/25/PlantsArtificialDaylight.pdf

[70] Elings, M (2005) People- Plant interaction. The physiological, psychological and sociological effects of plants on people. http://library.wur.nl/frontis/farming_for_health/04_elings.pdf

[71] Cooper, N (2007) Personneltoday. Spotlight on: plants in the workplace. http://www.personneltoday.com/articles/2007/05/29/40829/spotlight-on-plants-in-the-workplace.html

[72] Dalke, H (2004) Lighting and colour for hospital design

orientation.[73] Further research by colour psychologist Dr David Lewis found that 80% of UK office staff believe the colour of their surroundings has a significant impact on both their emotions and their performance.[74]

Finally, involving staff in the colour scheme decision making process through a pre-selected colour palette will allow greater coordination, staff engagement and a personalised office environment maximising productivity and staff well-being.

The evidence confirms that having a strategic colour scheme throughout the office environment will create a productive focused setting for employees.

2.7.1 Colour Scheme Recommendations

- Colours that are cheerful, natural, inviting and compliment the office lighting should be selected.

- A collaborative approach should be taken in the decision making process, consulting with staff about their office colour scheme (using a pre-selected colour palette) and taking on board creative expertise.

3. Key Principles

For ease of reference the key principles have been split into essential and ideal categories.

Open plan

- Open plan offices should be used within the 3Ts programme but only with design features to reduce the potential negative impacts on staff (**Essential**)

- For offices with 8 or more workstations as per the Health Building Notes 00-03 there should be an allowance of 6.6m2 per workstation in order to avoid overcrowding (**Essential**)

- In open plan offices separate enclosed workspaces such as 'think tanks' should be incorporated into the design (**Essential**)

- Screens should be used between desks, with a minimum height of 1.4m for optimal acoustic privacy (**Essential**)

- Open plan offices should be grouped by functionality where people carry out similar types of work (**Essential**)

Open plan - Room Acoustics

- Soft surface flooring should be used in the open plan office setting with careful consideration given to ease of maintenance. Unnecessary hard surfaces should be avoided where possible in open plan offices (**Essential**)

- Communal/social areas should be acoustically separated from the main working area (**Essential**)

- For larger open plan offices the use of wall acoustical panels would be beneficial (**Ideal**)

Open plan – Lighting

- Ideally all offices should have natural light. Employees who are at their desk for most of their working day should have direct access to natural light. For those areas with sporadic use access to borrowed light is vital (**Essential**)

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[73] The Society of Light and Lighting (2008) Lighting Guide 2: Hospitals and health care buildings
[74] The Telegraph (2008) Shades of meaning in the office décor.
http://www.telegraph.co.uk/finance/2787035/Shades-of-meaning-in-the-office-decor.html

- Dimming lights for each workstation should be introduced into the open plan office environment and considered for cellular offices. Where this is not possible individual desk lamps should be used (**Essential**)

- In all office environments careful attention should be given to appropriate curtains, blinds or anti glare lighting (using full spectrum light bulbs) (**Essential**)

Open plan – Furniture Layout

- Further discussion should take place around face to face or back to back seating (**Essential**)

- Employees who spend the majority of their time at a desk will not be suitable for the hot-desking environment (**Essential**)

- Hot-desking offices should be fully supported with integrated technology e.g. phone access (**Essential**)

- Further discussion to take place around touch down desks and furniture choice (**Essential**)

- Trust wide hot-desking protocol to be developed (**Essential**)

Cellular Offices

- Where there are cellular offices spaces that promote collaboration should be made available (**Essential**)

- Cellular offices should where possible be designed with desks facing the window (**Ideal**)

Interior décor

- Clarity of budget for appropriate furniture required to ensure privacy is obtained and optimum productivity promoted (**Essential**)

- Folding screens should be avoided (**Essential**)

- Natural planting should be used in the office environment to maximise the health and well-being of employees (**Essential**)

- Staff should be encouraged to bring in their own plants and desks should have adequate space for this (**Essential**)

- Further discussion to take place around appropriate storage units (**Essential**)

- Colours that are cheerful, natural, inviting and compliment the office lighting should be selected (**Essential**)

- A collaborative approach should be taken in the decision making process, consulting with staff about their office colour scheme (using a pre-selected colour palette) and taking on board creative expertise (**Essential**)

Air Quality

- Windows should be able to be opened easily as and when required (**Essential**)

- Where indoor textiles are used robust maintenance should be a top priority (**Essential**)

- The concept of supply air windows should be considered for new buildings and those buildings that are being refurbishment (**Ideal**)

Operational

- Staff should be engaged in the office gardener concept through intranet forums and competitions (**Ideal**)

- Staff should be briefed throughout the design and redevelopment in order to provide a smooth transition to the new working environment (**Essential**)

- For future use the key principles should be incorporated into a design policy for the refurbishment and build (**Essential**)

4.   Evaluation of the 3Ts design

The key recommendations should be considered in conjunction with the 1:200 and particularly the 1:50 design process. As the 3Ts Design Philosophy identifies, the building will care for the health and well-being of staff, ensuring back office areas are kind and compassionate in their design. It is extremely important that when each area is discussed the potential impact on employee well-being and productivity levels is carefully considered.

Finally, in order for effective decisions to be made it is crucial that procurement budgets are identified and acknowledged during the decision making process.

5.   Metrics

The implementation of the key principles can be measured using the below methods. Research suggests that staff well-being is a critical element of an organisations success. Dr Steve Boorman, in his review of staff health and well-being within the NHS, made some key recommendations including:

> "Staff health and well-being should be embedded in the core business of organisations as part of what it means to be a good employer."[75]

Incorporating the key principles into the 3Ts office design is an opportunity to reduce short term sickness absence. This is of particular importance with the Boorman review reporting that the NHS currently loses 10.3 million working days annually due to sickness absence, costing £1.7 billion per year. These high figures can partially be attributed to a lack of focus on employee well-being within the NHS. The success of the office design in improving employee well-being can be partially measured through the monthly sickness absence figures for the Trust. This reduction should also result in a decrease in bank and agency spend for sickness cover.

Implementation of the suggested key principles should also be reflected in the annual staff survey results with improvements in areas such as job satisfaction, staff well-being and overall retention rate. Another useful metric is the patient survey especially as research suggests staff who are empowered, engaged and well supported provide better patient care, directly and indirectly.[76]

6.   Conclusion

The evidence highlights that the link between office design, staff motivation, morale and productivity is very high. Incorporating the suggested key principles in the 1:50 design plans will positively impact employees within the Trust. The projected benefits include higher employee satisfaction and well-being , reduction in short term sickness absence, reduced bank and agency spend for sickness cover, a high retention rate and the opportunity to enhance the Trusts status of an employer of choice. Although some of the design features may be more costly the advantages to be gained by the Trust over the buildings lifetime far outweigh the cost.

Finally by incorporating the key office design principles the Trust will enhance its status as an employer of choice and generate a productive culture where staff are dedicated to the organisation's success.

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[75] Boorman, S. The Boorman Review (2009) NHS Health & Well-being Review
http://www.nhshealthandwell-being.org/FinalReport.html
[76] Department of Health. White Paper. Equity and excellence: Liberating the NHS (2010)
http://www.dh.gov.uk/en/Managingyourorganisation/Healthandwell-being/index.htm p40