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Building certification as a driver in green building design

The holistic approach of WELL

Relatori

prof. Carlo Caldera
prof. Ivo Martinac

Candidato

Isabella Labartino

Abstract

L'industria delle costruzioni si basa sulla valutazione dell'impatto ambientale degli edifici. La situazione attuale mostra il raggiungimento di alti standard di sostenibilità dal punto di vista ambientale, ma queste costruzioni spesso trascurano la soddisfazione degli occupanti.
L'international Well Building Institute (IWBI) ha rilasciato un nuovo standard chiamato WELL, il cui obiettivo è quello di indirizzare il design di edifici sostenibili prestando attenzione alla salute e al benessere degli occupanti.
L'obiettivo di questa tesi è quello di capire cosa WELL aggiunga alle certificazioni già esistenti. Un gran numero di sistemi di certificazione, codici, standard e altri tipi di documenti influenzano il modo in cui i progettisti pensano e sviluppano i loro progetti e una ricerca bibliografica è stata necessaria per identificare i loro requisiti e campi di applicabilità.
I concetti innovativi proposti da WELL devono interfacciarsi con le richieste di altre certificazioni o regolamenti. La gap analysis sviluppata in questo lavoro evidenzia quali siano i gap e gli overlaps tra WELL e le normative svedesi sulle costruzioni (BBR), Miljöbyggnad, BREEAM-SE e LEED-IT. La sede di White Arkitekter a Stoccolma, conosciuta come Katsan e certificata con Miljöbyggnad oro, è utilizzata come caso di studio. L'obiettivo è quello di fornire un approccio più particolare al problema rispetto all'approccio generale prodotto con la gap analysis.
Lo studio mostra gap significativi tra WELL e le altre certificazioni, diversamente da ciò che accade tra WELL e il caso di studio.
Il confronto dei risultati ottenuti per i diversi standard evidenzia alcuni indicatori innovativi presenti solo in WELL. Questi indicatori rispondono alla domanda su cui si basa questa ricerca e sottolineano cosa WELL aggiunga al concetto di sostenibilità.

KEYWORDS: WELL, Miljöbyggnad, BREEAM-SE, LEED-IT, gap, concept, feature, health, well-being

Abstract

Construction industry is based on the evaluation of building environmental impact. The current situation shows buildings reaching high standards in the field of environmental sustainability, but they often neglect occupants' satisfaction.
The International Well Building Institute (IWBI) has released a new building standard called WELL, whose aim is to create sustainable buildings paying attention to occupants' health and well-being.
The goal of this thesis is to understand what does WELL add to existent building certification systems. There is a large number of certification systems, green codes, green standards and several other kinds of documents that influence the way in which designers think and develop their projects. A research background is carried out to identify their requirements and fields of applicability.
The innovative concepts proposed by the IWBI, need to interface with requirements from different regulations or certifications. The gap analysis performed in this work highlights which are the gaps and the overlaps between WELL and Swedish building regulations (BBR), Miljöbyggnad, BREEAM-SE and LEED-IT.
The White Arkitekter's office in Stockholm, known as Katsan and certified with Miljöbyggnad Gold, is used as a case study to have a more specific approach to the problem than the general approach provided with the gap analysis.
The report shows significant gaps between WELL and the other regulations and certifications, which are reduced when considering the case study.
The outcomes for the different standards have been compared and they have evidenced some innovative features present only in WELL. These features answer to the research question and underline what does WELL add to sustainability concepts.

KEYWORDS: WELL, Miljöbyggnad, BREEAM-SE, LEED-IT, gap, concept, feature, health, well-being

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Contents

List of Figures

List of Abbreviations

GHGs	Greenhouse Gas Emissions
HVAC	Heating, Ventilation and Air Conditioning
BBR	Boverket Byggregler
BREEAM	Building Research Establishment Environmental Assessment Method
LEED	Leadership in Energy and Environmental Design
USGBC	U.S. Green Building Council
ANSI	American National Standards Institute
ASTM	American Society for Testing and Materials
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers
ISO	International Standards Organization
IWBI	International WELL Building Institute
GBCI	Green Business Certification Inc.
SBS	Sick Building Sindrome
CDC	Center for Disease Control
SGBC	SWeden Green Building Council

List of Regulations

SFS 2010:477	Swedish Code of Statutes: Air Quality Ordinance
SS 25267:2007	Acoustics: Sound classification of spaces in buildings
SS EN 779:2012	Svensk Standard: Particulate Air filters for general ventilation
SS EN 12097:2006	Svensk Standard: Ventilation for buildings - Ductwork
SS EN 12464-1:2011	Svensk Standard: Lighting for work places
SS EN 13779:2007	Svensk Standard: Ventilation for non-residential buildings
SS EN ISO 7730:2006	Svensk Standard: Ergonomics of the thermal environment
ASHRAE 62.1:2016	Ventilation for acceptable indoor air quality
ASHRAE 55:2013	Thermal environmental conditions for human occupancy

1 Introduction

The future of our society and environment is strongly connected to the climate change and its effects. Scientific consensus has declared, nearly unanimously, that climate change is the outcome of thousand of years of human activity. Mathematical models show the link between a human-driven increase in Greenhouse Gas Emissions (GHGs) and an increase in global temperatures. The primary cause of this increase of GHGs has been identified as the use of fossil fuel-based energy (Autodesk, 2017).
Buildings have a considerable impact on the environment during their entire life cycle, from construction to operation. To face this problem, sustainability evaluation tools have been developed to realize more environmental-friendly buildings. Sustainability assessment methods are often used at the design stage, but the building performance may be affected by building owners and occupants. In particular, office buildings may not meet the estimated energy saving target, because of the occupants' influence on the facility operation (Monfared and Sharples, 2011). Comfort within a building could be evaluated through many variables. In office buildings, for example, some of the most influential parameters are productivity, health and well-being, together with contentment with features and facilities. One of the conceptual model used by Newsham et al. (2009) to demonstrate this thesis is shown in Fig.1:

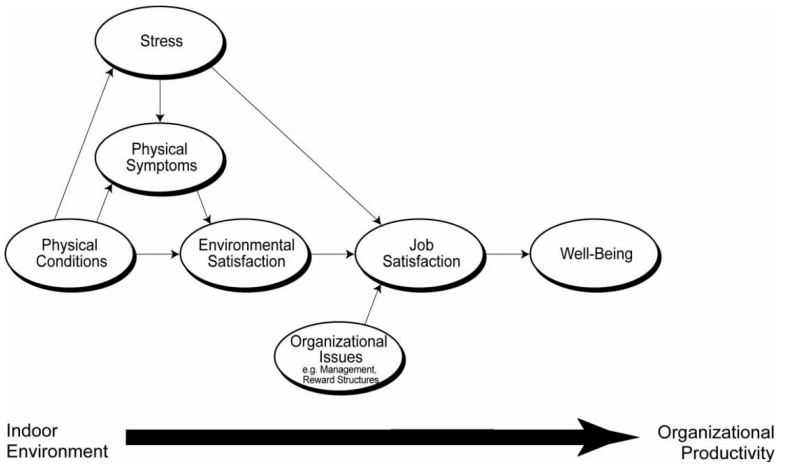

Fig. 1: Conceptual model of linkages between indoor environment and outcomes important to organizational productivity. (Newsham et al., 2009)

In a sustainable building, some green design features can provide a better environment, but some other energy savings strategies could lead to situations of discom-

fort. For example, in a central heating, ventilation and air conditioning (HVAC) system windows operations are controlled by building management system. This allows a more efficient reduction of energy consumption, but, at the same time, it reduces occupants' control over environmental conditions (Monfared and Sharples, 2011). Because of occupants' needs and requests, it is often necessary to reach a compromise among environmental and social sustainability(Moezzi, 2009).
The development of WELL Building Standard is based upon these problems, the necessity to reduce buildings environmental impact without neglecting occupants' well-being. The aim of WELL is to propose a holistic approach to the buildings design, but also new management strategies for owners and new office policies to trainee the staff.
The innovations introduced by IWBI standard should be associated with other certification systems requirements, but their level of correlation is still unknown. This is the base of this thesis work, which will identify and quantify gaps and overlaps between WELL and other standards. In this first section, there is an introduction to the thesis work, describing goals,research questions and methodology.

1.1 Aim and research question

The primary aim of this thesis is to understand what WELL adds to existing certification systems, which are the concepts that make the IWBI Building standard unique and why this standard improves the quality of the built environment, considering occupants' health.
The goal is to answer the following research questions:

> "What does WELL add to existent building certification systems?"
> "How many WELL features are considered as improvements and how can they be evaluated?"
> "Which are the most innovative concepts in WELL?"
> "What could be the result of the application of WELL to a Swedish building?"

The gap analysis is performed considering the Swedish building regulation BBR and three building certification systems: the Swedish Miljobyggnad, BREEAM (Swedish version) and LEED (Italian version).
The methodology used to answer the research questions is briefly described in the following paragraph.

1.2 Methodology

The work consists basically of five phases, illustrated in Fig.2, described in the following lines:

1) Literature review: this step aims to review the existent building evaluation tools used worldwide, to provide their definition and to understand which are their fields of applicability.

2) WELL description: in this section the WELL Building Standard is described considering its development process, its structure, its concepts and the procedure which needs to be followed when searching the WELL certification.

3) Gap analysis: the aim of this phase is to understand the relation between WELL and other examples of building standards and certification systems. For this study, BBR (Swedish building regulation), Miljöbyggnad, BREEAM-SE and LEED-IT, will be compared with WELL.

4) Case study: it represents an example of the application of WELL to a building already certified with Miljöbyggnad, using the gap analysis as a start point for the building evaluation.

5) Results and discussion: analysis results will be compared and discussed to illustrate how the aims of the thesis have been reached and to answer to the research question.

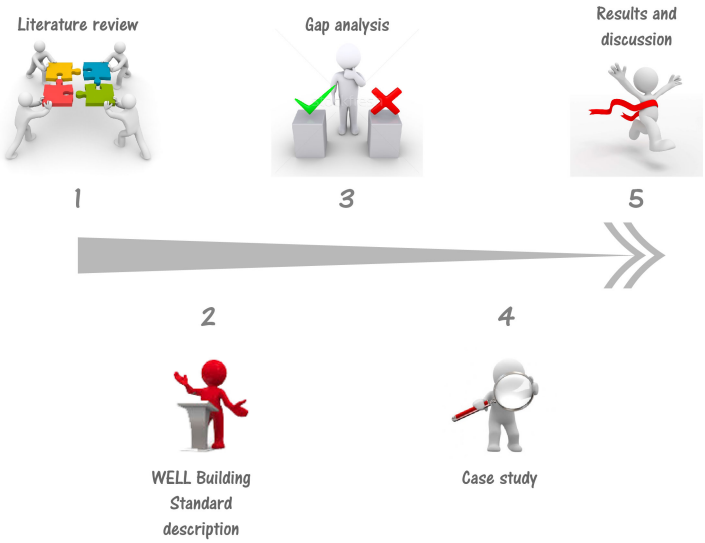

Fig. 2: Work flowchart. (Labartino, 2017)

1.3 Collaboration

The thesis is performed in collaboration with the office of White Arkitekter in Stockholm. The company was founded in 1950s and, since then, it became one of the biggest architectural studios in Scandinavia, developing also international projects around the world.
Sustainability is one of the main values of White, for this reason they commissioned a work to better understand WELL and its applicability. The objective is to use the outcomes of this thesis to support discussion with clients and display how WELL is connected with other certification systems, traditionally used in Sweden.

2 Research background

This section illustrates the several kinds of standards, codes and regulations. Since each one of them addresses different issues, a brief explanation illustrates their goals and their field of applicability.
Beside the documents' description, there will be the presentation of the benefits of buildings sustainability evaluation and the illustration of the emerging issues in sustainable buildings.

2.1 Building sustainability evaluation tools

Buildings have direct and indirect impact on the environment during all their life cycle, from the construction to the demolition. The meanings associated to the term "sustainable building" are various, but the common point is that sustainable buildings try to reduce resource use, emissions and waste, and to increase occupant comfort and health (Brown et al., 2010).
The necessity to preserve the environment where we live, has lead to the creation of green building standards, certification and rating systems, which aim is to reduce the environmental impact through sustainable design (Vierra, 2016). Some of their logos are displayed in Fig.3.
The first efforts toward this goal began during 1990s, thanks to the creation of Building Research Establishment Environmental Assessment Method (BREEAM), the first rating system in the U.K. It was followed by the U.S. Green Building Council (USGBC) with its Leadership in Energy and Environmental Design (LEED), a rating system for new construction. Since then, LEED continued to grow, including rating systems for existing buildings and entire neighbourhoods (Vierra, 2016).
Other standards were developed, but they were strictly linked to national priorities and requirements or tried to go beyond current policies and building practices or evolving concepts as net zero energy. Beside building certifications, green product standards were inserted in the marketplace in 1980s and increased in 1990s. Initially, their aim was to reduce product toxicity and their impact on the indoor air quality, but, during the 21st century, because of global warming issues and resource depletion, green product standards started to include also data about manufacture, use and reuse (Vierra, 2016).

Fig. 3: Green Building programs. (SustainableForestryInitiative, 2017)

2.2 Definitions

To understand the different methods to evaluate buildings environmental qualities, it is important to clarify the different tools which may be adopted, explaining their meaning and field of use. In the following section there will be the definition of four elements, each one linked to a specific aspect of the building life.

2.2.1 Building standards

A standard is a set of criteria and guidelines used to evaluate the quality of a product. Organizations such as American National Standards Institute (ANSI), American Society for Testing and Materials (ASTM) or American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) provide standards related to building practices that are re-elaborated by the International Standards Organization (ISO), which task is to define and develop worldwide standards setting up the basis for new laws or industry norms. According to ISO, a standards is a "a document, established by consensus,approved by a recognized body that provides for common and repeated use as rules, guidelines, or characteristics for activities or their results.". There are two different types of requirements, prescriptive, which means identifying methods of achievement, and performance based, that is state expectations of the final result (Vierra, 2016).

2.2.2 Green codes

Green building codes are mostly developed in the U.S. and they try to increase the levels of sustainability and performance related to building design and construction. Also in this case, it is possible to identify several types of codes (Vierra, 2016):

. Prescriptive: materials and equipment requirements are collected into tables, it represents a fast and conservative approach to code fulfillment;

. Performance-based: are employed when designers wish to achieve particular results, rather than simply meet standards requirements;

. Outcome-based: it consists in establishing a goal and verifying that the completed building meets it.

The difference between codes and standards is the compulsiveness of the codes. When starting a new project is important to check for state or local green codes, which affect significantly the result of the project (Vierra, 2016).

2.2.3 Green product certifications

A certificate proves that a product fulfills the criteria defined by a standard. The definition provided by ISO is "any activity concerned with determining directly or indirectly that relevant requirements are fulfilled." (Vierra, 2016)
Green product certification states that a product meets a particular standard and offers environmental benefits. Usually a product is evaluated on life-cycle parameters, which include energy use, recycled content, manufacturing emissions, disposal and use. the credibility and liability of a green product certification increases when a third part, an actor independent from the product manufacturer, contractor, designer and specifier, conducts the product testing and provides the certificate. (Vierra, 2016)

2.2.4 Green building rating and certification systems

Green building rating or certification systems evaluate the project as a whole, going beyond the single product, as happens in the case of standards and product certifications.An integrated design process is the base of green building rating and certification systems and it is needed to realize project that are environmentally responsible and resource efficient, considering the entire building life-cycle (Vierra, 2016).

2.3 Benefits of green building certification systems

There are several reasons which lead to the verification of the environmental quality of a building through green building certification systems. Rating systems represent valuable educational and marketing tools for owners and designers and construction teams, but they provide also an incentive for clients, owners, designers and users to develop and promote new construction practices, focused on sustainable aspects (Vierra, 2016).
Several studies have shown that the use of green building standards brings both economic and environmental benefits. Energy, carbon, water and waste can be reduced, such as operating costs, while it is possible to witness to an increase on return of the investment, occupancy and rent. Occupants may improve their productivity and health, thanks to a better indoor air quality, natural daylight and healthier materials (Vierra, 2016).
Green buildings have also impact on social aspects related to sustainability, strengthening the connection among humans and nature, shaping new sustainable ways of living, thanks to the opportunity given to the users to control and to be responsible of the surrounding environment (Brown et al., 2010).
The type of certification chosen depends on the nature of the project, since each one has different needs and requirements, beside the available budget. The market of certification systems is highly dynamic, since the goal is to achieve ever higher levels of sustainability, so it is necessary to analyze the current framework to obtain the best result possible (Vierra, 2016).

2.4 Emerging issues

The current marketplace continues to receive new green technologies and materials, which have not been already tested long enough in the built environment and their performance for safety, durability and fire resistance is still roughly defined. New and more stringent requirements are continuously introduced to the standards and certification process, to test and certify toxicity and product emissions (Vierra, 2016).
Bureaucracy is not the only obstacle to the development of green buildings. A study performed by the U.S. Green Building Council has demonstrated that the success of green buildings depends on the identification of human benefits, for this reason, it is important to start to investigate occupant comfort and satisfaction, which are the base for healthy and productive buildings.
The finding was that users of sustainable buildings tend to be more satisfied with thermal comfort and air quality, but complain about lighting and acoustic quality. Green buildings occupants were shown to be more tolerant towards these draw-

backs, for a phenomena called "forgiveness", which causes users to be comfortable ignoring inadequacies of the built environment. Personal control over the physical environment, used to react to episodes of discomfort, is important for the forgiveness. Users should be able to manage windows and blinds, heating and cooling systems and lighting installations (Gou et al., 2013).
Green building design and construction, carried out following green building standards or guidelines, does not mean that these buildings will perform better than non-green buildings. To achieve an optimal result, the use of natural resources should be done effectively within economic means, and designers should pay particular attention and support comfort and well-being of occupants (Gou et al., 2013).

3 The "WELL" building standard

The previous pages introduced the problem of shaping a new way to link sustainable design with the well-being of the occupants. In the U.S. a new certification has been developed with the aim of pursuing the design of green building enhancing the wellness of the occupants. The name of the certification is WELL and it is spreading all over the world rapidly, for this reason it is necessary to understand it and find out its advantages and disadvantages, through a gap analysis. In this section there is an overall description of the standard WELL proposed by the International WELL Building Institute (IWBI), with a focus on its development process, the procedure to follow to get the certification with the labels Silver, Gold or Platinum (illustrated in Fig.4), and the concepts on which is based this certification system.

Fig. 4: WELL levels of certification. (Labartino, 2017)

3.1 The IWBI and the WELL development process

The International WELL Building Institute (IWBI) is a public benefit corporation which mission is to promote the integration of human health and well-being considerations into the built environment design. The IWBI, together with other public benefit corporations in U.S., seek to balance public benefits with profitability, using the power of private capital for greater good.The IWBI was launched by Delos in 2013, thanks to the intervention of Paul Scialla, the Delos' founder, who decided to share WELL globally to improve people life-style by developing healthy spaces (IWBI, 2014).
The WELL building standard is the result of seven years of research and development consulting, based on a three-phases peer review process of scientific,

practitioner and medical sources. Analyzing environmental health, behavioral factors, health outcomes and demographic risk factors it was possible to shape new practices in building design and management. Furthermore, WELL is linked to existing standards and international guidelines, which leads to the clarification and harmonization of existing thresholds and requirements (IWBI, 2014).
WELL was introduced in the marketplace in October 2014, after a complete comprehensive expert peer review, and is a third-party certified by Green Business Certification Inc. (GBCI), which administers the LEED certification.
The certification is based on the evaluation of a set of features, which cover various individual needs of buildings occupants, to measure wellness in the built environment (IWBI, 2014).
Each feature of the WELL Building Standard is correlated to the human body systems, grouped and studied as following:

- Skeletal system: body support and movement are the primary concerns of the skeletal systems, as well as to protect internal organs against impacts, to store minerals, to produce blood cells and to aid hormone regulation. All of this depend on proper nutrition and adequate physical activity.

- Nervous system: it is the key of body functions, since every process is controlled by it, this is why it is important to support neurological and cognitive functions.

- Immune system: its primary function is the defence of the human body, through the use of a series of highly specialized cells, proteins, tissues and organs, which may be threaten by toxins, poor sleep, nutrition and excessive stress.

- Cardiovascular system: it works to remove waste from body tissues and to supply nutrients to the organism, but stress, unhealthy diets, lifestyle choice and environmental pollutants could affect its functioning, leading to a decread quality of life.

- Digestive system: nutrient breakdown, absorption and assimilation are the task performed by this complex system, but they could be influenced by dietary habits and stress, together with pollutants present in the food that we eat and on the surfaces that we touch.

- Urinary system: it is responsible for several critical functions, as for example filtration of toxins, balance of blood pH and electrolytes, maintenance of blood pressure and the elimination of waste through urine. To prevent injuries to it, it is important to reduce stress and exposure to harmful substances.

- Reproductive system: dysfunctions of this system have impact on overall health. Proper diet, exercise and ergonomics may help in maintain the good state of the system.
- Integumentary system: it represents the outer layer of the body, which is composed of skin, hair and nails. It protect internal organs from impact, prevents water loss. maintain stable the body temperature and acts against foreign pathogens and dangerous toxins.
- Respiratory system: it works together with the circulatory system, to provide oxygen and remove carbon dioxide from body tissues. Fitness and Air features are particularly addressed in reducing negative impacts of the built environment onto this system.
- Muscular system: it makes possible movement, blood circulation, digestions and supports posture, but it need balanced diet and phycal activity to continue working properly.
- Endocrine system: the disruption of this system's functions leads to a variety of healthy problems, since important processes as growth, immunity, metabolism, reproduction, mood and digestion are seriously compromised.

The (Fig.5) contains a set of representations of the human body systems previously described.

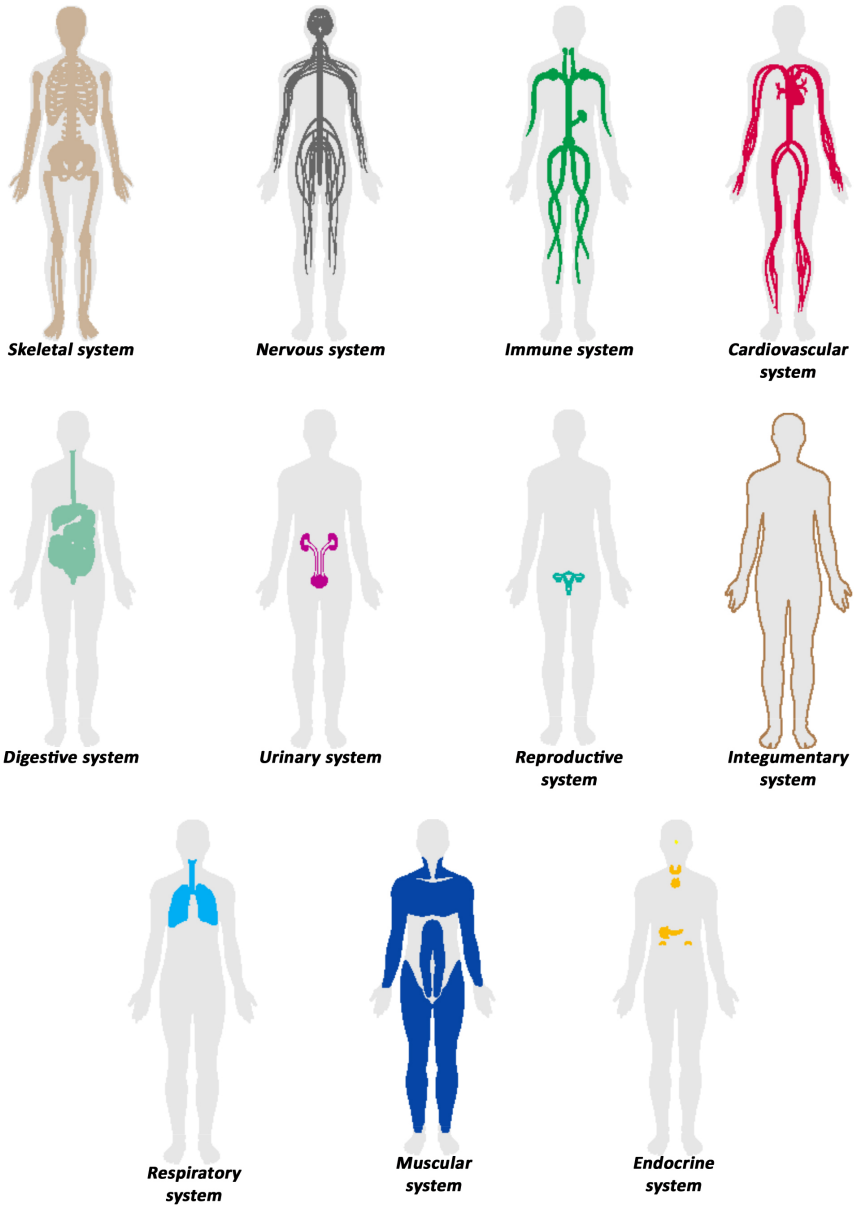

Fig. 5: Human systems considered by WELL Building Standard. (IWBI, 2017a)

3.2 Standard description

The WELL Building Standard is the first building standard which focuses exclusively on occupants health and well-being. The research on which is based, studies the connection among building and people, trying to understand which is the impact that places where we spend more than 90% of our time have on human life. People health, wellness, productivity and happiness become the center of design, construction, operations and development decisions, since physical workplace is one of the major factors affecting performance and job satisfaction (IWBI, 2015j). The WELL certification can be applied to different building sectors considering all the different types of building needs (Fig.6). The current adopted standard is WELL v1, that is optimized for commercial and institutional office buildings. For this version, there are three project typologies (IWBI, 2015j):

. New and Existing Buildings: for this project type the scope of the WELL Building Standard is to address design construction, but also some aspects of building operation (IWBI, 2017a);

. New and Existing Interiors: this project type is applicable mainly to office projects which occupy only a space in the building, or that occupy an entire building not undergoing major renovations (IWBI, 2017a);

. Core and Shell: in this project type, the application of the WELL Building Standard influences some key elements of the construction, as structure, window locations and glazing, building proportions, heating, cooling and ventilation systems, and water quality. It also search to consider the relation between the site and the surrounding facilities, with the scope to improve occupants wellness (IWBI, 2017a).

PROJECT TYPES	PRECONDITIONS	OPTIMIZATIONS	TOTAL
New and Existing Buildings	41	59	100
New and Existing Interiors	36	62	98
Core and Shell	26	28	54

Fig. 6: Project types. (IWBI, 2017a)

Beside the WELL v1, the IWBI has developed pilot version to make possible the application of the standard to new building sectors, as retail, multifamily residential, education, restaurant and commercial kitchen projects (IWBI, 2015j). The provided WELL features consider all possible elements of building design

and occupant health, wellness and comfort. The certification is based on a set of universally applicable features, which are adaptable to different building types, but it also recognizes the complexity of construction and design paths. For this reason, WELL provides the opportunity to give space to every project team creativity, thanks to the use of two processes: alternative adherence paths and innovation features (IWBI, 2017b).
Adherence paths are adopted by project teams who wants to propose alternative solutions to meet WELL features. These solutions needs to be based on valid scientific, medical and technical peer review. If the proposed strategy is approved, it could become part of the WELL features. Innovation features allows project teams to develop unique strategies to shape an healthy environment, supported by an adequate peer review, as in the case of alternative adherence paths (IWBI, 2017b).
The Fig.7 represents the steps to perform in order to successfully achieve the WELL certification, which are described in the following paragraphs.

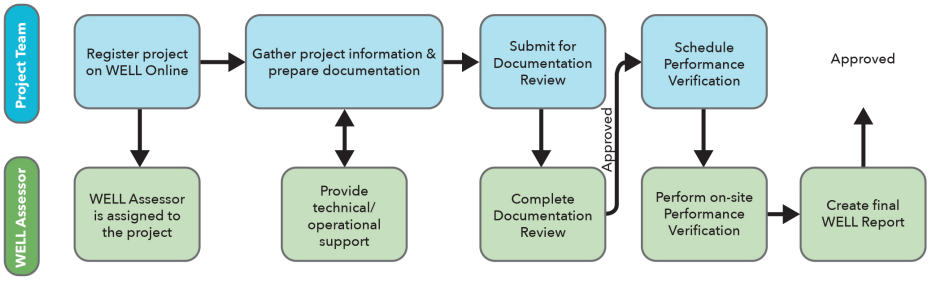

Fig. 7: Certification process. (IWBI, 2017b)

3.2.1 Registration

The intent to certify the project with the WELL Standard is presented through the official on-line registration application and project management system, WELL Online. The registration consists in the submission of basic information about the project and in the declaration of the project path. It depends on the project type, based on the primary space type of the building, and determines which are the features applicable to the project (IWBI, 2017b).
After registering the project on the on line platform, the Green Business Certification Inc. (GBCI) assigns a WELL Assessor to the project. This actor is the third-party certification entity, which task is assess and review the project, but also assists the project team before documentation submission (IWBI, 2017b).

3.2.2 Documentation requirements

To show evidence that the project fulfils certain WELL features, it is necessary to provide different kinds of documents, briefly described in the following lines (IWBI, 2017b).

. Annotated documents: they refer to existing project documents, which should show how WELL features and other parts have been met (IWBI, 2017b). Design drawings, operation schedules and policy documents are identified as annotated documents.

. Letters of assurance: when an appropriate professional, such as architects, contractors or engineers, works on a specific WELL feature and oversees design, construction or operations, this document is needed to confirm that the WELL features requirements have been fulfilled (IWBI, 2017b).

. General documents: while annotated documents and letters of assurance are referred to specific feature requirements, general documents simply inform IWBI and the WELL Assessor about details of the project. In this category there are representative floor plans or project maps, mechanical drawings, project report and description (IWBI, 2017b).

3.2.3 Documentation submission, review and approval

The WELL Assessor starts with a first round of Documentation Review, which lasts approximatively 20-25 business days, at the end of which he/she will indicate which features documentation requirements have been met and if there are additional information needed. If all the documents are accepted, the project team can continue with the next steps of the certification process. In the opposite situation, the project team will be notified of inaccurate or unsatisfactory documentation and it will provide a new documentation to be review. This step might continue until all the documentation is considered appropriate (IWBI, 2017b).

3.2.4 Performance verification

A site visit, conducted by the WELL Assessor, is necessary to perform, test and verify that all applicable requirements of WELL features have been fulfilled. Performance verification needs to be scheduled considering the project type, since different criteria are taken into account. The following table summarizes which are the criteria that influence the performance verification schedule, based on different project types (IWBI, 2017b).

PATH	DOCUMENTATION APPROVED	ONE MONTH FROM CERTIFICATE OF OCCUPANCY	50% OCCUPANCY
New and Existing Buildings New and Existing Interiors	Yes ✓	Yes ✓	Yes ✓
Core and Shell	Yes ✓	No ×	No ×
Retail Pilot Program Education Facilities Pilot Program Restaurant Pilot Program Commercial Kitchen Pilot Program	Yes ✓	Yes ✓	No ×
Multifamily Residential Pilot Program	Yes ✓	No ×	No ×

Fig. 8: Schedule Performance Verification. (IWBI, 2017b)

The WELL Assessor will evaluate, using sampling protocols provided by IWBI, all applicable environmental parameters as air quality, water quality, light attributes, thermal considerations, acoustic elements IWBI (2017b).

3.2.5 WELL report

In the WELL report there is an assessment of every single feature, together with inspection details, analysis results and the status of the previously submitted documentation. If any of the requirements has not been meet, than the report will indicate which kind of deficiencies exists. Once that the report is issued, the project team must accept or initiate curative actions or appeal within 180 calendar days, if not, the WELL report is considered as final. Curative actions are available for project teams that wish to fix unmet criteria and request a new Performance Verification. Appeals are available to project teams that want to contest findings written in the WELL report (IWBI, 2017b).
If a project is approved, it will receive a WELL award package. To maintain its status, a continued engagement is needed, which means provide results of post-occupancy surveys, proof of maintenance and ongoing environmental parameter measurements. These documents must be sent within 15 months of certification and then every 12 months.

3.2.6 Recertification

The WELL certificate is valid for three years, after that the project team must apply for recertification on WELL Online. During the recertification, there is a review of newly validated letters of assurance and a new Performance Verification (IWBI, 2017b).

3.3 The WELL Concepts

The WELL Building Standards collects over 100 features related to seven concepts (represented in Fig.9), which change not only the building design and operation, but also their impact and influence on humans. In the following section the description of the seven concepts will simplify the understanding of the standard, its goals and the way with which it operates (IWBI, 2015c).

Fig. 9: WELL concepts. (McLeod, 2017)

3.3.1 Air

Clean air is a fundamental aspect to consider when talking about human health, since air pollution is considered to be the first environmental cause of premature mortality. Globally, traffic, construction, agricultural activity, combustion sources and particular matter, are polluting the air we breath. Indoor air quality is affected not only by outdoor sources, but also from building materials, indoor combustion sources and water leaks, and the poor ventilation in buildings may increase pollution problems. Air quality issues can decrease work productivity and cause the Sick Building Sindrome (SBS), which symptoms are connected to eye, skin and airway irritation, as well as headache and fatigue. Of course, the reactions are different from person to person, but a considerable aspect to consider is the duration of exposure. Some means which might be adopted to prevent indoor pollution are pollution source avoidance, proper ventilation and air filtration (IWBI, 2015a).

3.3.2 Water

Clean drinking water is at the base for optimal health, but water contamination by biological, chemical and mineral contaminants is a major public health issue. However, treatment and distribution systems installed to keep drinking water clean, are potential sources of contamination. People prefer to drink bottled water to avoid polluted water, but this leads to environmental concerns as well as the problem of water degradation after some time (IWBI, 2015i).
For all these reasons, WELL requires a broad initial assessment to evaluate the quality of the water from building sources. After that, it is possible to design filtration systems and test the water quality over the building life-span (IWBI, 2015i).

3.3.3 Nourishment

Health maintenance, weight management and chronic disease prevention are strictly correlated to the nutrition. Busy lives and longer workdays are worsening the quality of our meals, besides social, economic, physiological and environmental factors, such as the built environment. Food choices and dietary patterns depend on distance and access to groceries and other places where there is a large availability of healthy foods and reduced marketing and availability of unhealthy foods. The goal of WELL is to try to implement strategies and policies which may aid an healthy diet (IWBI, 2015h).

3.3.4 Light

Visible light is the part of electromagnetic radiation which spectrum is bordered by ultraviolet and infra-red wavelengths. It is important to highlight the impact of light on humans physiological functions, which are spread in a 24-hour cycle called circardian rhythm. Light participate in keeping body's internal clocks synchronized through the process known as circardian photo entrainment, which is affected by both artificial and natural light. Since every person spends the major part of the day indoors, it is necessary to allow the body to have periods of both brightness and darkness, in order to maintain optimal and properly synchronized circardian rhythms (IWBI, 2015f).
A series of lighting codes and guidelines provide illuminance recommendations related to the different rooms types and their uses; the goal is to minimize eye-strain and reduce productivity losses and headaches (IWBI, 2015f).
WELL tries to shape guidelines and suggestions to avoid disruption to the body's circardian system, increasing productivity, assure good sleep quality and enhance

appropriate visual acuity (IWBI, 2015f).

3.3.5 Fitness

According to the Center for Disease Control (CDC), fitness is defined as "the ability to carry out daily tasks with vigor and alertness, without undue fatigue, and with ample energy to enjoy leisure-time pursuits and respond to emergencies". Regular physical activity is essential to achieve optimal health, represented by weight management, chronic disease prevention and fitness maintenance. A minimum level of activity could avoid diabetes, metabolic syndrome, obesity, hearth disease and other chronic conditions.
Current lifestyle makes difficult for people to be enough physically active, because of factors as modern transportation and sedentary jobs, but also the built environment impacts on physical activity levels (IWBI, 2015d).
The WELL building standard aims to integrate physical activity into daily life, promoting active lifestyle and discouraging sedentary habits.

3.3.6 Comfort

Physiological disruption, distraction and irritation affect the comfort of the indoor environment, but they can be reduced adopting precaution to guarantee acoustic, ergonomic, olfactory and thermal comfort. The result is stress and injury prevention and increased productivity and wellness (IWBI, 2015b).
Sound is one of the aspects that affect the occupants' perception of comfort, since sounds of different nature may be distracting and disruptive to work or relaxation, as shown in employee surveys. Acoustic problems seem to be the first source of dissatisfaction in the built environment, so the aim of WELL is to mitigate unwanted noise levels and decrease the intrusion of exterior sounds (IWBI, 2015b).
Ergonomics and universal design have also a great impact on physical and mental stress, which are represented by musculoskeletal and nervous system disorders. The comprehensive ergonomics solutions suggested by the WELL Building Standard, deal with providing access for people with limited mobility, but also preventing injury creating navigable spaces for everyone (IWBI, 2015b).
Thermal comfort is affected by environmental variables as well as psychological parameters, like individual expectations, which makes it subjective. Not everyone in the same environmental conditions will show the same level of comfort, for this reason the WELL Building Standards offers an holistic approach for the thermal comfort evaluation, which takes into account a mix of strategies to address occupant issues (IWBI, 2015b).

3.3.7 Mind

Mind and body are strictly connected to each other and supporting a healthy mental state could produce important psychological and physical benefits. The WELL Building Standard identifies features of the built environment and particular policies in the workplace, which may be adopted and introduced to manage mood, sleep, stress levels and psychological status to reach overall occupant health and well-being (IWBI, 2015g).

3.3.8 Innovation

The WELL Building Standard considers innovation as one of the keys to provide health and wellness in the built environment. Science evolves continuously and it needs to be integrated into the building design (IWBI, 2015e).

4 Gap analysis

The aim of the gap analysis is to highlight which are the gaps and the overlaps between two elements or concepts and what extra does WELL add. In the case of this thesis, the study is carried out comparing the WELL Building Standard with BBR, Miljöbyggnad, BREEAM-SE and LEEDv4-IT.
It has been illustrated in the previous chapters, the presence of three different categories in WELL Building Standard, which are New and Existing Buildings, Core and Shell, New and existing interiors. The preliminary study is accomplished on all the three categories, but more detailed description is done only for "New and existing interiors".
To obtain accurate outcomes from the gap analysis, it has been chosen to work both on WELL preconditions and optimization. It is important to highlight that the number of features changes according to the category studied, as it is possible to observe in Fig.6. When switching from one category to another some preconditions may be removed or become optimizations. To reach the lowest level of WELL certification, Silver, it is necessary to fulfil all the preconditions (for more information, see Fig.4).

4.1 WELL assessment method

The IWBI proposes a certification structured in concepts, features and parts, deeply described in this section. The gap analysis is based on the features' classification proposed by WELL. Each concept has a precise number of features, which are further split into different parts. The following picture (Fig.10) describes an example regarding the classification of a feature, with its label and its parts.

Feature 01. Air quality standards	
Part 1. Standards For Volatile Substances	The following conditions are met: a. Formaldehyde levels less than 27 ppb. b. Total volatile organic compounds less than 500 µg/m³.
Part 2. Standards For Particulate Matter And Inorganic Gases	The following conditions are met: a. Carbon monoxide less than 9 ppm. b. PM2.5 less than 15 µg/m³. c. PM10 less than 50 µg/m³. d. Ozone less than 51 ppb.
Part 3. Radon	The following conditions are met in projects with regularly occupied spaces at or below grade: a. Radon less than 4 pCi/L in the lowest occupied level of the project.

Fig. 10: Description of a sample WELL feature ((IWBI, 2017b)

To proceed with the study, it has been necessary to create tables where all the features are sorted by concept, identified as precondition (P) or optimization (O) and described in all its parts. The gap analysis consists in two steps, evaluation of the parts and evaluation of the features. In the following section, there is the description of the methodology adopted during the study.

4.1.1 WELL parts

First, it is necessary to understand whether each part of the feature is addressed, if yes, how it is done, and then, understand if the overall feature is fulfilled or not. A schema of colors is employed to identify the grade of accomplishment of the feature's part. For a better explanation, an example will be shown for each color.

Green: the part is addressed and fulfilled
In this example, the WELL requirement is considered fulfilled by Swedish regulations. Indeed, the IWBI proposes several alternatives to meet the requirement, including "national VOC content regulations".

. WELL feature 04: Part VOC reduction, part 01: Interior paints and coatings

> The VOC limits of newly applied paints and coatings meet one of the following requirements:
>
> a. 100% of installed products meet California Air Resources Board (CARB) 2007, Suggested Control Measure (SCM) for Architectural Coatings, or South Coast Air Quality Management District (SCAQMD) Rule 1113, effective June 3, 2011 for VOC content.
> b. At minimum 90%, by volume, meet the California Department of Public Health (CDPH) Standard Method v1.1-2010 for VOC emissions.
> c. Applicable national VOC content regulations or conduct testing of VOC content in accordance with ASTM D2369-10; ISO 11890, part 1; ASTM D6886-03; or ISO 11890-2.

. Swedish Building regulation (BBR 6:5. Materials)

> Materials and construction products used in a building shall not in themselves, or through their treatment, negatively affect the indoor environment or the local environment of the building, when the performance requirements of these regulations are met.

Orange: the part is addressed with different methodologies or it is partly addressed
Different methodologies are adopted in different countries when designing the ventilation system. The WELL standard requires the application of ASHRAE 62.1:2013, but it is possible that the application of different regulation may bring to the same result. In this case, it is not possible to generalize the comparison between WELL and Swedish standard, because it really depends on the project and on the design choices.

. WELL feature 03: Ventilation effectiveness, part 01: Ventilation design

> One of the following requirements is met for all spaces:
>
> a. Ventilation rates comply with all requirements set in ASHRAE 62.1-2013 (Ventilation Rate Procedure or IAQ Procedure).
> b. Projects comply with all requirements set in any procedure in ASHRAE 62.1-2013 (including the Natural Ventilation Procedure) and demonstrate that ambient air quality within 1.6 km [1 mi] of the building is compliant with either the U.S. EPA's NAAQS or passes the Air Quality Standards feature in the WELL Building Standard for at least 95% of all hours in the previous year.

. Swedish Building regulation (BBR 6:25. Ventilation)

> Ventilation systems shall be designed to ensure the required outdoor air flow can be supplied to the building. The ventilation system shall also be able to carry off hazardous substances, moisture, unpleasant odors and effluent from people and emissions from building materials, as well as pollutants from activities in the building to the extent such inconveniences is not carried of in other ways. (BFS 2014:3).

Another situation found in the gap analysis is the partial fulfilment of a feature's part, as happens in the example presented below. WELL requires the fulfilment of formaldehyde levels and total volatile organic compounds, but Swedish regulations contain only instruction regarding the formaldehyde levels. In this case, it is not possible to decide whether the part is fulfilled or not.

. WELL feature 01: Air quality standards, part 01: Standards for volatile substances

> The following conditions are met:

a. Formaldehyde levels less than 27 ppb.
b. Total volatile organic compounds less than 500 $\mu g/m^3$.

. Swedish regulations:

a. KIFS 2008:2, chapter 5 section 20:

> Anyone who manufactures or imports to Sweden wood-based boards must ensure that the untreated boards do not give off more formaldehyde than 0.124 mg/m^3 of air when tested according to Swedish Standard SSEN 717-1;2004

b. There is no requirement regarding the issue.

Yellow: the part is addressed, but it is referred to different limits or thresholds
The adoption of different measure systems all over the world produces a variety of thresholds or limits for the same physical entity. A mathematical conversion is needed to make possible a comparison between the requirements. All the thresholds or limits found during the gap analysis are collected into a table, inserted as an annex of this report.

. WELL feature 01: Air quality standards, part 03: Radon

> The following conditions are met in projects with regularly occupied spaces at or below grade: Radon less than 4 pCi/L in the lowest occupied level of the project.

. Swedish Building regulation (BBR 6:23. Radon in indoor air)

> The annual average of the activity concentration of radon in the indoor air must not exceed 200 Bq/m^3. (BFS 2016:6).

In this example, radon levels are expressed into two different ways in WELL and BBR. Converting Bq/m^3 into pCi/L, it is possible to decide that the feature's part is not fulfilled.

WELL threshold is 4 pCi/L
BBR threshold is 200 Bq/m^3
200 Bq/m^3 corresponds to approximately 5.41 pCi/L
The part is not fulfilled

Grey: the part is not addressed
The IWBI has a completely different approach to evaluate buildings and this is why a lots of features' parts are not addressed by the other certification systems used in this study. The one below is only one of the situations where the part is classified as "Not addressed".

. WELL feature 87: Beauty and design I, part 01: Beauty and mindful design

The project contains features intended for all of the following:

a. Human delight.
b. Celebration of culture.
c. Celebration of spirit.
d. Celebration of place.
e. Meaningful integration of public art."

The results of the comparisons are collected into a table where all the parts are commented to justify the color choice including references to the sources. An extract of the commented table is reported in Fig.11. Full tables for the three WELL categories are present in the attachments.

			WELL		Swedish local regulations
1	P		Feature 01. Air Quality Standards		
		Part 1. Standards For Volatile Substances	The following conditions are met: a. Formaldehyde levels less than 27 ppb. b. Total volatile organic compounds less than 500 µg/m³.		a. The threshold is respected as requested from KIFS 2008:2 5.20 b. There is no requirement regarding the issue
		Part 2. Standards For Particulate Matter And Inorganic Gases	The following conditions are met: a. Carbon monoxide less than 9 ppm. b. PM2.5 less than 15 µg/m³. c. PM10 less than 50 µg/m³. d. Ozone less than 51 ppb.		According to SFS 2010:477 a. It is fully fulfilled b. It is not fulfilled c. It is fully fulfilled d. It is not fulfilled
		Part 3. Radon	The following conditions are met in projects with regularly occupied spaces at or below grade: a. Radon less than 4 pCi/L in the lowest occupied level of the project.		BBR 6.23

Fig. 11: Extract of the commented table for "New and existing interiors"

4.1.2 WELL features

The process continues deciding if the feature is fulfilled, which happens only if all the parts are addressed. The fact that a feature is not fulfilled should not considered as a negative point, but rather as a strong point. It means that the feature is something that WELL is adding to the existing certifications and the innovation would improve the quality of the built environment. This is the reason why the results show two alternatives: "Fulfilled" and "WELL improvement". A second table is created to illustrate an overview of the results, indicating only whether the feature is fulfilled or not. The following image represent the overview for the Air concept in th category "New and existing interiors". (Fig.12). All the summary tables for the three categories are inserted as attachments.

			WELL	Swedish local regulations	Miljöbyggnad (New construction 3.0)			BREEAM - SE (New construction 2017)	LEEDv4 - IT (Building Design and construction v4)
					Bronze	Silver	Gold		
AIR	1	P	Feature 01. Air Quality Standards	■	■	■	■	■	■
	2	P	Feature 02. Smoking Ban	●	●	●	●	●	●
	3	P	Feature 03. Ventilation Effectiveness	■	■	■	■	■	●
	4	P	Feature 04. Part VOC Reduction	■	■	■	■	■	■
	5	P	Feature 05. Air Filtration	■	■	■	■	■	■
	6	P	Feature 06. Microbe And Mold Control	■	■	■	■	■	■
	7	P	Feature 07. Construction Pollution Management	●	●	●	●	●	●
	8	P	Feature 08. Healthy Entrance	■	■	■	■	■	●
	9	P	Feature 09. Cleaning Protocol	■	■	■	■	■	■
	10	P	Feature 10. Pesticide Management	■	■	■	■	■	■
	11	P	Feature 11. Fundamental Material Safety	■	■	■	■	■	●
	12	P	Feature 12. Moisture Management	■	■	■	■	■	■
	13	O	Feature 13. Air Flush	■	■	■	■	■	●
	14	O	Feature 14. Air Infiltration Management	■	■	■	■	■	■
	15	O	Feature 15. Increased Ventilation	■	■	■	■	■	●
	16	O	Feature 16. Humidity Control	■	■	■	■	■	■
	17	O	Feature 17. Direct Source Ventilation	■	■	■	■	■	●
	18	O	Feature 18. Air Quality Monitoring And Feedback	■	■	■	■	■	■
	19	O	Feature 19. Operable Windows	■	■	■	■	■	■
	20	O	Feature 20. Outdoor Air Systems	●	●	●	●	●	●
	21	O	Feature 21. Displacement Ventilation	■	■	■	■	■	●
	22	O	Feature 22. Pest Control	■	■	■	■	■	■
	23	O	Feature 23. Advanced Air Purification	■	■	■	■	■	■
	24	O	Feature 24. Combustion Minimization	●	●	●	●	●	●
	25	O	Feature 25. Toxic Material Reduction	■	■	■	■	■	■
	26	O	Feature 26. Enhanced Material Safety	■	■	■	■	■	■
	27	O	Feature 27. Antimicrobial Activity For Surfaces	■	■	■	■	■	■
	28	O	Feature 28. Cleanable Environment	■	■	■	■	■	■
	29	O	Feature 29. Cleaning Equipment	■	■	■	■	■	■

Fig. 12: Extract summary table for New and existing interiors

Charts are employed to graphically display the study results and they are created for each certification or regulation, considering the preconditions and the optimizations for the category "New and existing interiors". Pie charts express in percentages how many preconditions are fulfilled and how many are not fulfilled for each certification. A further representation is adopted to show how many preconditions are fulfilled or not for each concept. The same kind of illustration is employed for the optimizations. It is also interesting to show an overview regarding the classification of the parts, using as a tool pie charts.

4.2 Examined regulation and assessment methods

As said before, the gap analysis consists in comparing different concepts. In this study four assessment methods (Fig.13) are compared with WELL to understand how much their application facilitate the utilization of the new building standard introduced by IWBI. In the following paragraphs, each certification or regulation will be briefly described.

Fig. 13: Logo of the certifications studied in the gap analysis

Boverket Byggregler (BBR) and other Swedish building regulations
BBR is the acronym of Boverket Byggregler, a collection of Swedish building regulations. It provides instructions related to accessibility and architectural design, safety in case of fire, hygiene, health and environment, protection against noise, safety in use, energy conservation (Boverket, 2017). Each requirement is described including references to the specific regulation, which combination represents the minimum standards that a building must fulfil in Sweden to be approved for the construction. A list of all the regulations consulted in this study can be find at the beginning of the report.

Miljöbyggnad New construction 3.0
Miljöbyggnad is the Swedish system for certifying buildings evaluating energy, indoor climate and materials, created by SWeden Green Building Council (SGBC). It is based on BBR and in order to apply Miljöbyggnad, it is necessary to respects all the requirements of Swedish regulations. It is possible to achieve three levels of certification, bronze, silver and gold (SGBC, 2017). The observance of the minimum requirements makes the project reach the bronze level. In this analysis the Miljöbyggnad Silver and Gold levels are studied, since they add something to the Swedish regulations currently employed.

BREEAM-SE New construction 2017 v1.0
BREEAM stands for Building Research Establishment Environmental Assessment Method and it is an assessment tool used to rank constructions and real estates. BREEAM-SE is the Swedish adaptation of the international standard, introduced by the SGBC . The standard considers ten categories of sustainability weighted in different ways : management, health and wellbeing, energy, transport, water, materials, waste, land use and ecology, pollution, innovation. The rating benchmark to pass the certification corresponds to 30% and the minimum standard is the respect of the feature "Hea 4 - High frequency lighting".

LEEDv4-IT
Leadership in Energy and Environmental Design (LEED) is a building certification system created by the USGBC and adopted all around the world. The system considers how buildings are design, constructed and maintained, supplying requirements regarding integrative thinking, energy, water, waste, materials, location and transportation, sustainable sites, health and human experience, regional impact, innovation ((USGBC, 2017)). There are four level of certification: base, silver, gold and platinum. The fulfillment of the preconditions does not imply the achievement of the certification, since it is necessary to get a minimum score between 40 and 49. The last available version is LEED v4 and in this study the object of the analysis is the Italian adaptation of the certification, category "Building Design and Construction".
The standards of LEED and WELL are aligned, thanks to the collaboration between the IWBI and GBCI, which have worked in synergy to shape a method to certificate buildings both human health and environmental sustainable ((IWBI and GBCI, 2017)).

4.3 Regulation and certifications' results

The results of the gap analysis illustrate the requirements and features that would need to be considered if the building is originally certified by the Swedish local regulations, Miljöbyggnad, BREEAM-SE, or LEED-IT, and would like to acquire the WELL certification.
For each certification or regulation there are three kinds of plot:

. Feature overview which shows how many preconditions or optimizations are fulfilled and how many of them is a WELL improvement;

. Parts overview which provides a more detailed representation, showing how all the WELL parts have been classified;

. Column charts divided for preconditions and optimizations which show how many features are fulfilled or not for each WELL concept.

The results are finally compared to understand the differences between the standards and highlight how much does WELL add to each one of them.

4.3.1 Boverket Byggregler (BBR) and other Swedish building regulations

The gap analysis presents big gaps between Swedish building regulations and WELL. Most of the preconditions and the optimizations are not fulfilled, as shown in Fig.14.

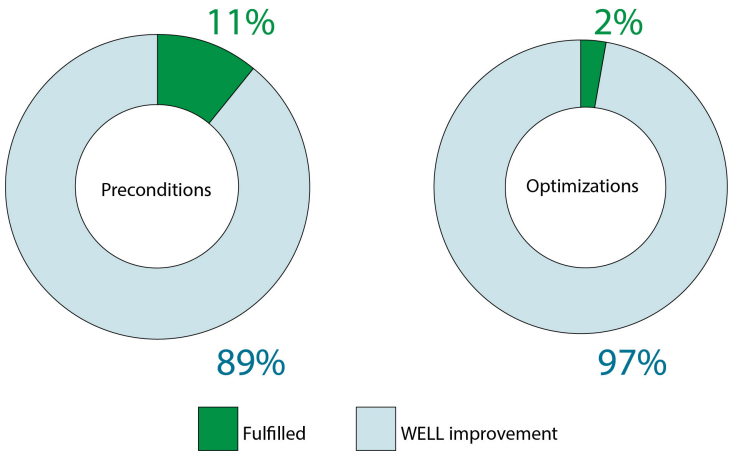

Fig. 14: Features overview: WELL - BBR

The situation is illustrated more in detail in Fig.15. A significant amount of WELL parts is addressed with different methodologies in BBR, but still the 62% of the parts is not addressed.

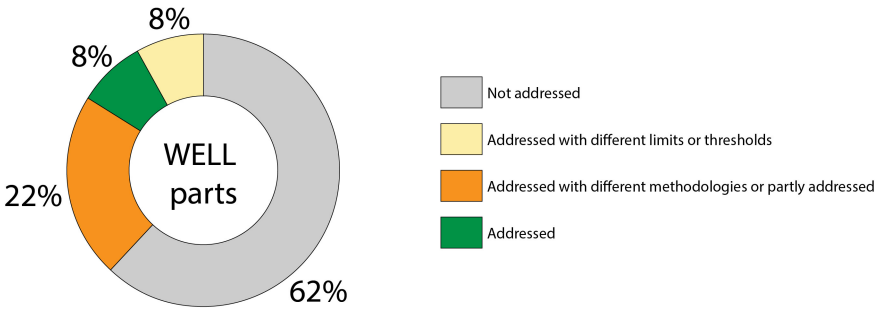

Fig. 15: Parts overview: WELL - BBR

The two columns charts (Fig.16) are needed to understand how many features are fulfilled for each WELL concept. It is possible to notice that only some preconditions in Air, Light and Comfort are considered as fulfilled, and only one optimization is met in the Air concept. This optimization is the Feature 20: Outdoor Air Systems:

> Dedicated outdoor air systems are used for heating and/or cooling systems and verified as being adequate through one of the following:
>
> a. The system complies with local codes or standards regarding dedicated outdoor air systems.
>
> b. A detailed design review of the proposed system is conducted by an independent, qualified and registered professional mechanical engineer (not employed or compensated by the mechanical engineer on record). The review addresses thermal comfort (temperature, humidity, air velocity, etc.) and ventilation rates, as well as overall serviceability and system reliability. Report must demonstrate satisfactory compliance with all applicable ASHRAE standards and codes.

It has been considered fulfilled because of the reference to local regulations in the point a.. This means that if a project adopts outdoor air systems, the feature will be necessarily fulfilled because it is correlated to national requirements.
This fulfilled optimization is present also in the results for BREEAM-SE and Miljöbyggnad, because both of them are based on the requirements of BBR.

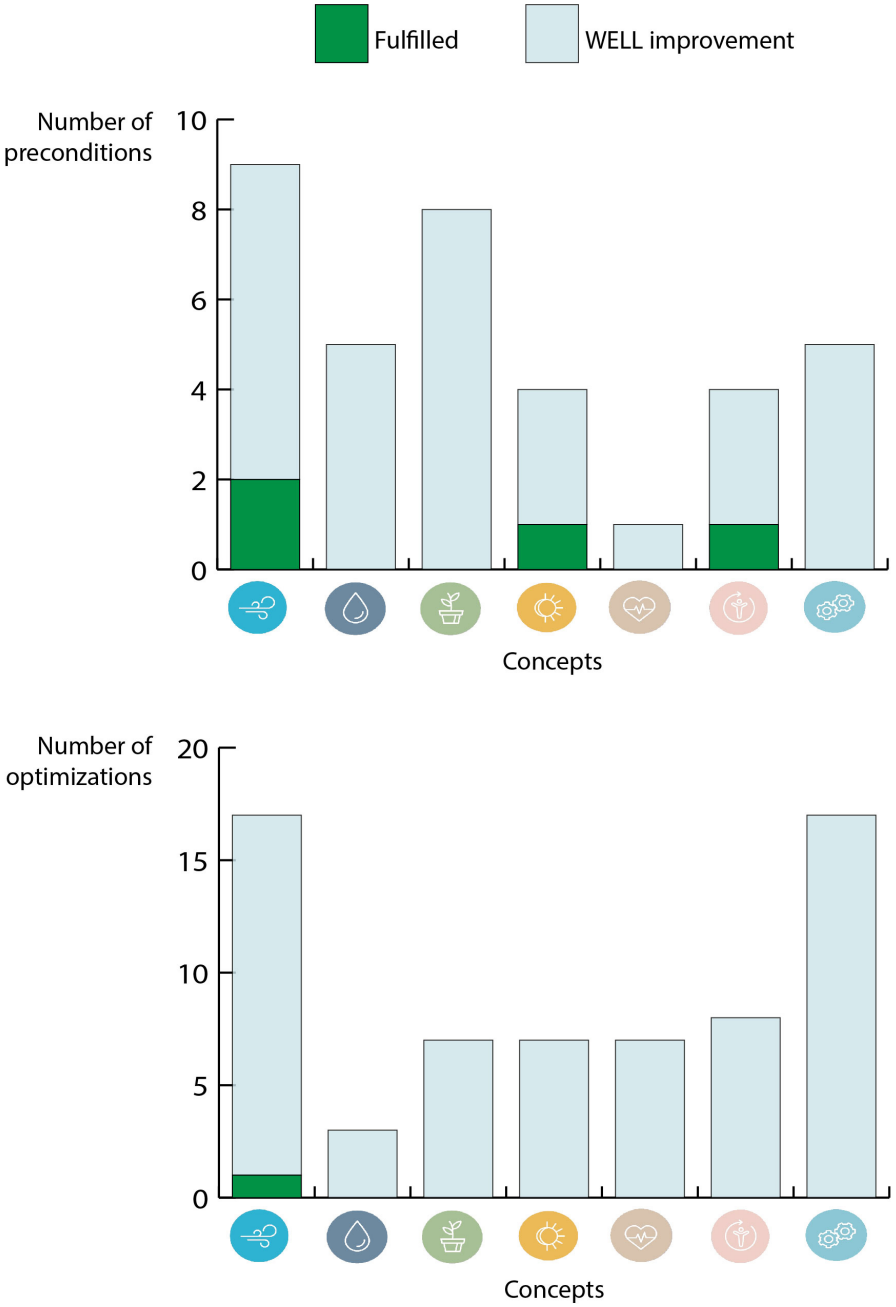

Fig. 16: Concepts overview: WELL - BBR

4.3.2 Miljöbyggnad New construction 3.0

The gaps between WELL and Miljöbyggnad are significant, since the majority of the features are considered as WELL improvements, as it is possible to see in Fig.17.

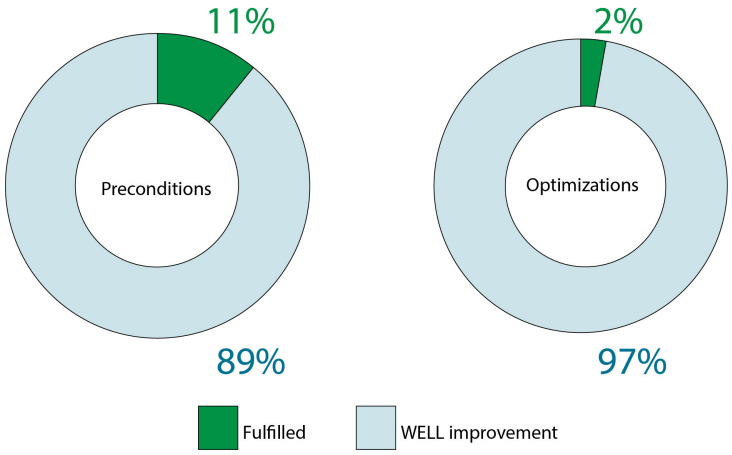

Fig. 17: Features overview: WELL - Miljöbyggnad

The percentages in Fig.18 shows that a large amount of WELL parts is not addressed and only the 21% is addressed with different methodologies or partly addressed.

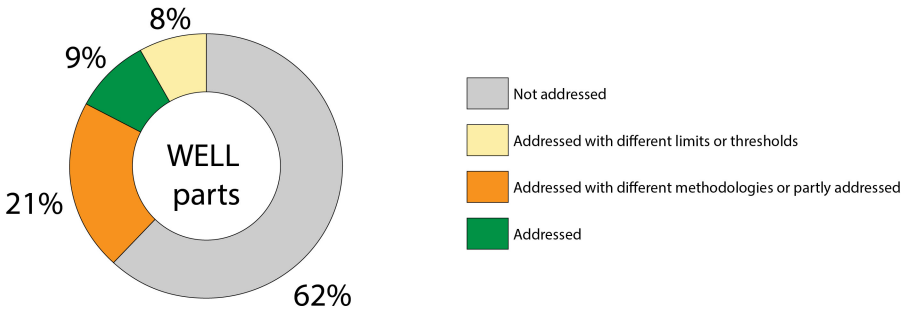

Fig. 18: Parts overview: WELL - Miljöbyggnad

The diagrams in Fig.19 provide an illustration of how many features are fulfilled for each WELL concept.

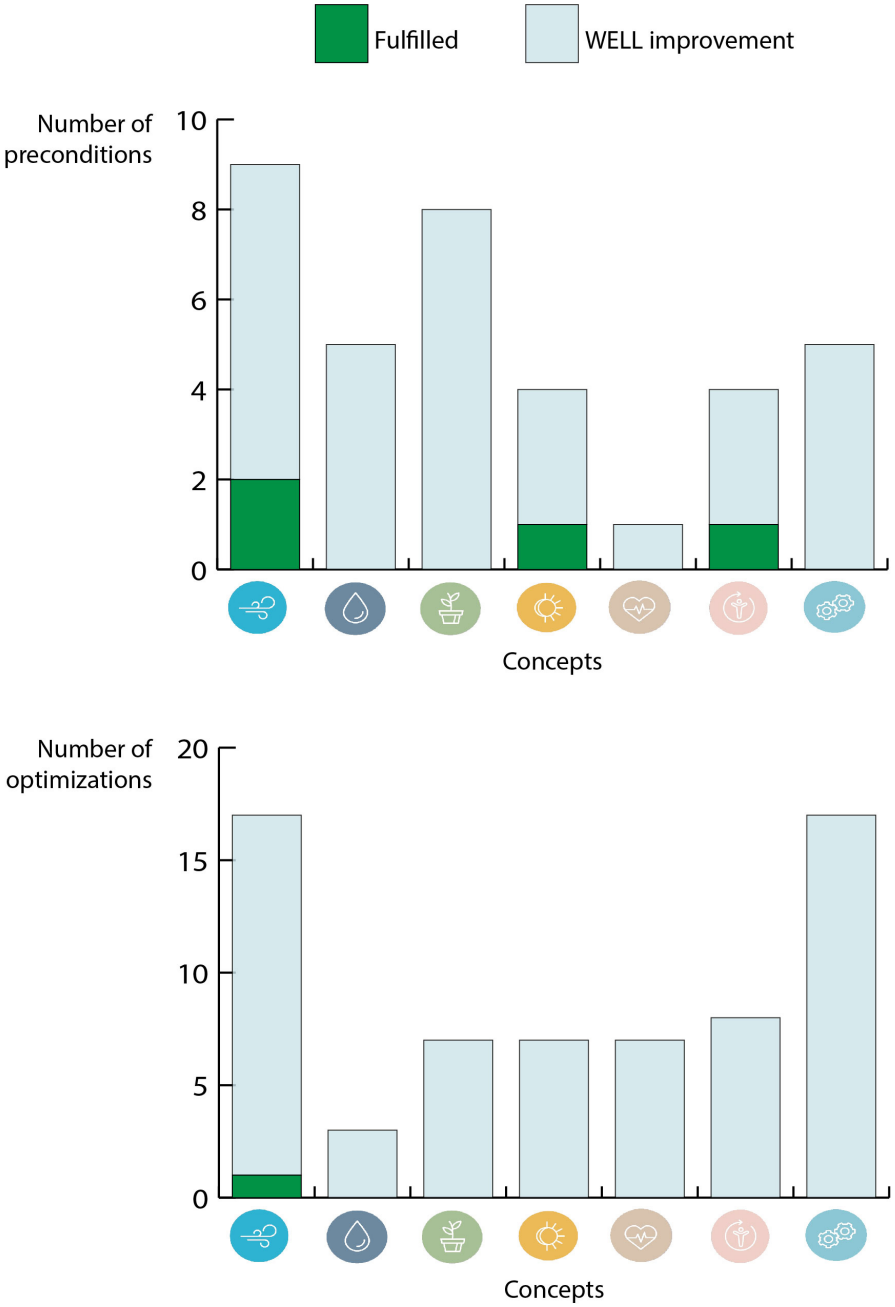

Fig. 19: Concepts overview: WELL - Miljöbyggnad

4.3.3 BREEAM-SE New construction 2017 v1.0

The outcomes' overview, shown in Fig.20, displays that the majority of WELL features are improvements of the BREEAM standard.

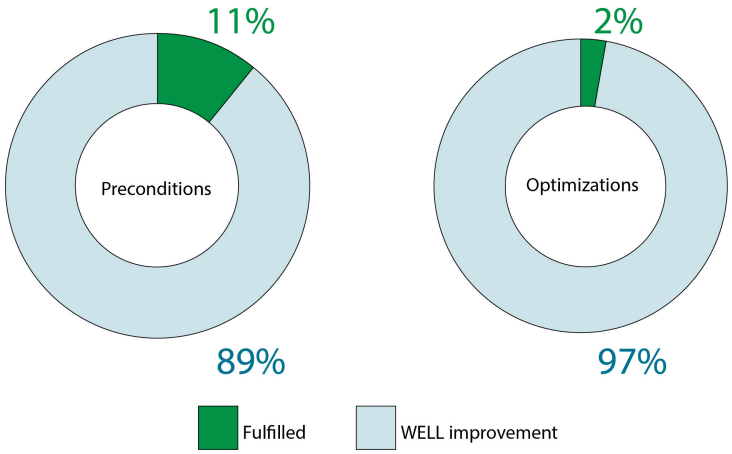

Fig. 20: Features overview: WELL - BREEAM

The parts' classification in Fig.21 shows that almost half of the parts is either fulfilled or addressed. The reason why only small percentages of the WELL features are classified as fulfilled is that a feature is fulfilled only if all of its parts are met.

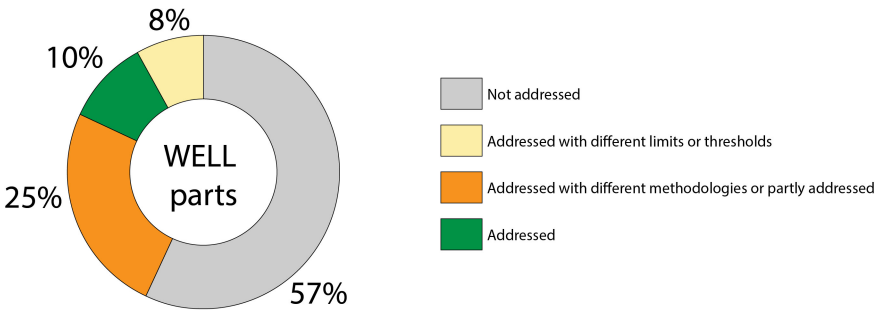

Fig. 21: Parts overview: WELL - BREEAM

The Fig.22 contains columns charts to present how many features are fulfilled for each WELL concept.
It is possible to notice that, differently from BBR and Miljöbyggnad, there is an optimization in the mind concept considered as fulfilled. In fact, the feature 86: Post- Occupancy Surveys addresses the same issues of the BREEAM feature Man

05 Aftercare: Post-Occupancy evaluation and for this reason it has been classified as fulfilled. Below, there is the datail of this comparison:

. WELL feature 86: Post-Occupancy surveys

Part 01 In buildings with 10 or more employees, the Occupant Indoor Environmental Quality (IEQ) Survey™ from the Center for the Built Environment at UC Berkeley (or approved alternative) is completed by a representative sample of at least 30% of employees at least once per year unless otherwise noted. The survey covers the following topics of occupant satisfaction:

a. Acoustics.
b. Thermal comfort, including humidity and air flow, at least twice a year (once during the cooling season and once during the heating season).
c. Furnishings.
d. Workspace light levels and quality.
e. Odors, stuffiness and other air quality concerns.
f. Cleanliness and maintenance.
g. . Layout.

Part 02 Aggregate results from surveys are reported within 30 days to the following groups:

a. Building owners and managers.
b. Building occupants (upon request).
c. The International WELL Building Institute.

. BREEAM-SE New construction 2017 v1.0: Post Occupancy Evaluation (POE):

. The client or building occupier makes a commitment to carry out a POE1 exercise one year after initial building occupation. This is done to gain in-use performance feedback from building users to inform operational processes. This includes recommissioning activities, and to maintain or improve productivity, health, safety and comfort. The POE is carried out by an independent third party (see Man 01 Project brief and design: Relevant definitions) and needs to cover:

a. review of the design intent and construction process (review of design, procurement, construction and handover processes)

   b. Feedback from a wide range of building users including facilities management on the design and environmental conditions of the building covering:
      a. Internal environmental conditions (light, noise, temperature, air quality)
      b. Control, operation and maintenance
      c. Facilities and amenities
      d. Access and layout
      e. Other relevant issues.
   c. Sustainability performance (energy consumption, water consumption, performance of any sustainable features or technologies, e.g. materials, renewable energy, rainwater harvesting etc.).
2. b. The client or building occupier makes a commitment to carry out the appropriate dissemination of information on the building's post-occupancy performance. This is done to share good practice and lessons learned, inform changes in user behaviour, building operational processes and procedures, and system controls. Refer to compliance notes CN3.1 and CN3.2 for a definition of appropriate dissemination. This also provides advice on appropriate dissemination where the building or building information is commercially or security sensitive.

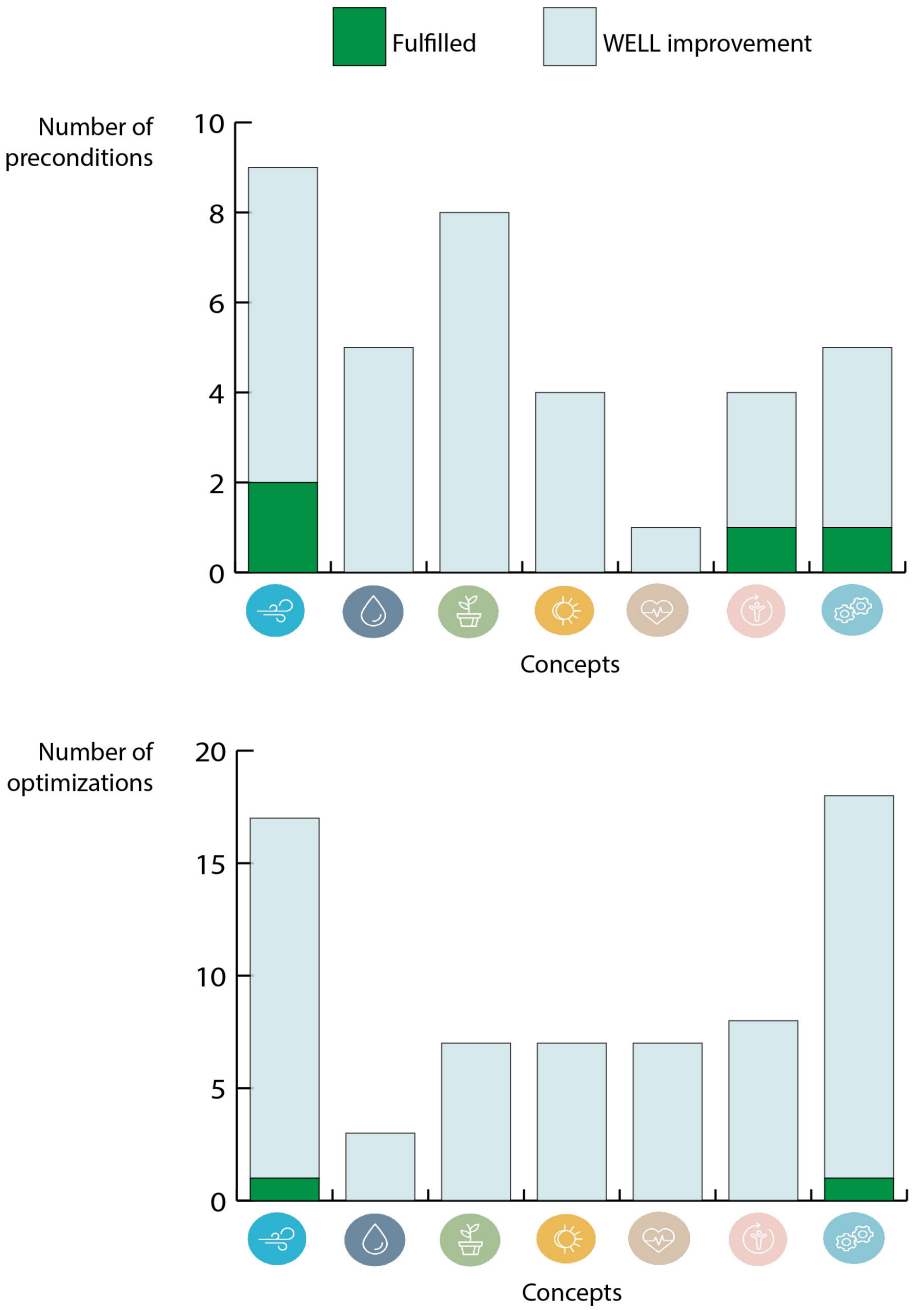

Fig. 22: Concepts overview: WELL - BREEAM

4.3.4 LEEDv4-IT

The results present overlaps between WELL and LEED since different preconditions and optimizations are fulfilled.

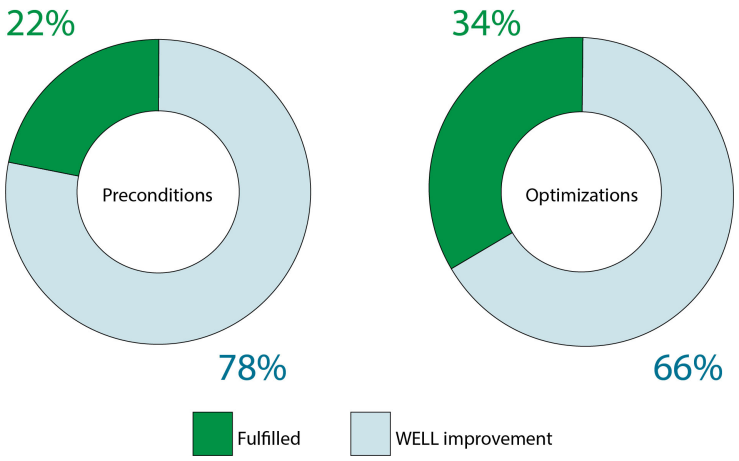

Fig. 23: Features overview: WELL - LEED

The pie chart in Fig.24 provides all the necessary information to understand how the features have been classified.

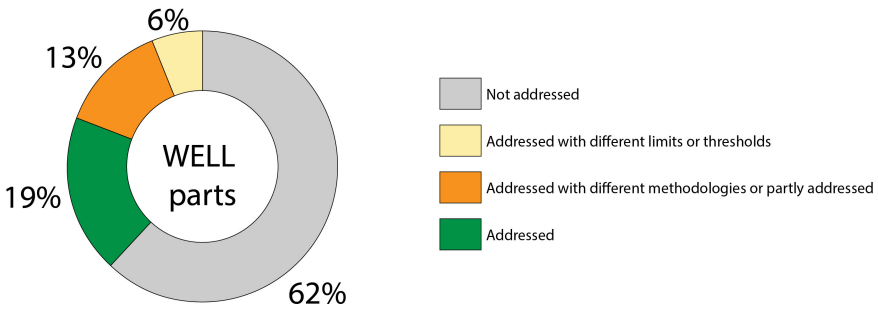

Fig. 24: Parts overview: WELL - LEED

Finally, as in the previous cases, all the features are organized in their concepts (Fig.25), to underline where the overlaps are situated.

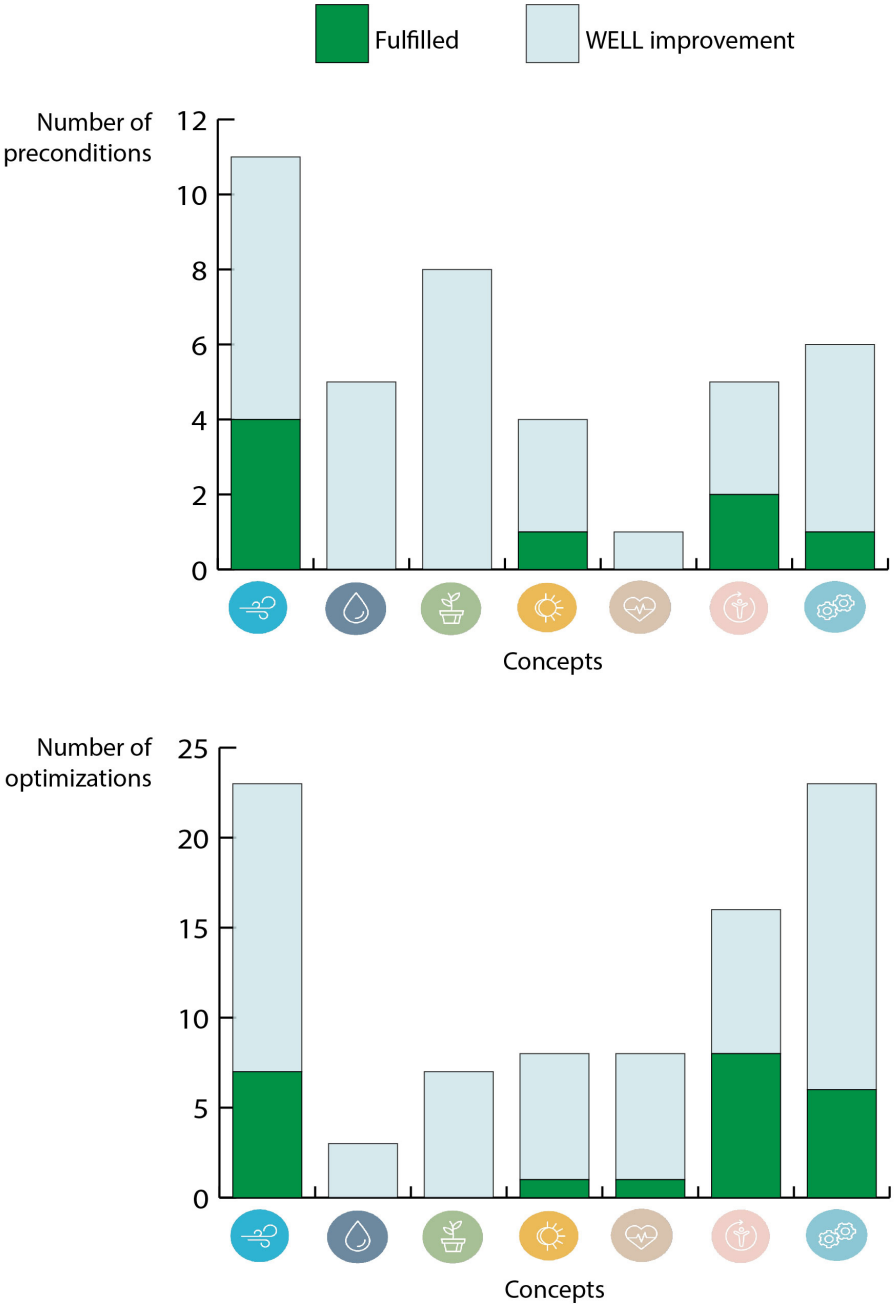

Fig. 25: Concepts overview: WELL - LEED

Despite the cross-walk between WELL and LEED, there are lots of features that are considered as WELL improvements. The reason is that, often, not each part of the feature is fulfilled. An example is shown in Fig.26. It is important to underline that in this study it has been examined the Italian version of the American standard, which means that some features are adapted to local regulations.

WELL				LEEDv4 - IT (Building Design and construction v4)
1	P	Feature 01. Air Quality Standards		
		Part 1. Standards For Volatile Substances	The following conditions are met: a. Formaldehyde levels less than 27 ppb. b. Total volatile organic compounds less than 500 µg/m³.	EQ - Indoor Air Quality Assessment - Table 1
		Part 2. Standards For Particulate Matter And Inorganic Gases	The following conditions are met: a. Carbon monoxide less than 9 ppm. b. PM2.5 less than 15 µg/m³. c. PM10 less than 50 µg/m³. d. Ozone less than 51 ppb.	According to EQ - Indoor Air Quality Assessment - Table 1 a. b. c. are fully fulfilled d. It is not fulfilled
		Part 3. Radon	The following conditions are met in projects with regularly occupied spaces at or below grade: a. Radon less than 4 pCi/L in the lowest occupied level of the project.	P - EQ - Minimum Indoor Air quality Performance

Fig. 26: Example of a WELL feature not fulfilled by LEED-IT

4.4 Results comparisons

The outcomes of the gap analysis for each certification or regulation are collected and compared in this section. The aim is to understand which are the similarities and the differences between them. It is possible to observe in Fig.28 that BBR, Miljöbyggnad and BREEAM-SE have the same percentages of fulfilled preconditions and optimizations, even though the percentage of fulfilled parts are different (Fig.29).
The reason is that WELL considers a feature satisfied only if each part of that particular feature is met. Miljöbyggnad and BREEAM-SE show higher percentage of fulfilled parts than BBR, but these parts are only a portion of a feature, which contains other parts that are not fulfilled. The situation is different for LEED-IT, since the fulfilled parts are within the same feature and this make the percentages increase.
WELL introduces several innovations in fields already considered by the other standards. Air, Water and Light are example of these fields. The explanation is that the assessment methodologies of WELL are often different from the methodologies proposed by BBR, Miljöbyggnad, BREEAM and LEED, and completely new issues related to wellness are considered.
The Water concept is the best exemplification of the problem, since none of the examined certifications fulfils its features. The concept addresses the issues listed in Fig.27. These features require several chemical analysis of the water sample to assure the absence of a list of dangerous substances. The certifications and regulations analysed in this study do not contain detailed instructions and limits regarding all the chemical elements contained in the WELL features. For this reason, the outcomes of the gap analysis show that there are no fulfilled features in the Water concept, despite it is a topic largely addressed in the certification systems. Further information are contained in Attachment V.

WATER	30	P	Feature 30. Fundamental Water Quality
	31	P	Feature 31. Inorganic Contaminants
	32	P	Feature 32. Organic Contaminants
	33	P	Feature 33. Agricultural Contaminants
	34	P	Feature 34. Part Public Water Additives
	35	O	Feature 35. Periodic Water Quality Testing
	36	O	Feature 36. Water Treatment
	37	O	Feature 37. Drinking Water Promotion

Fig. 27: Features in the Water concept

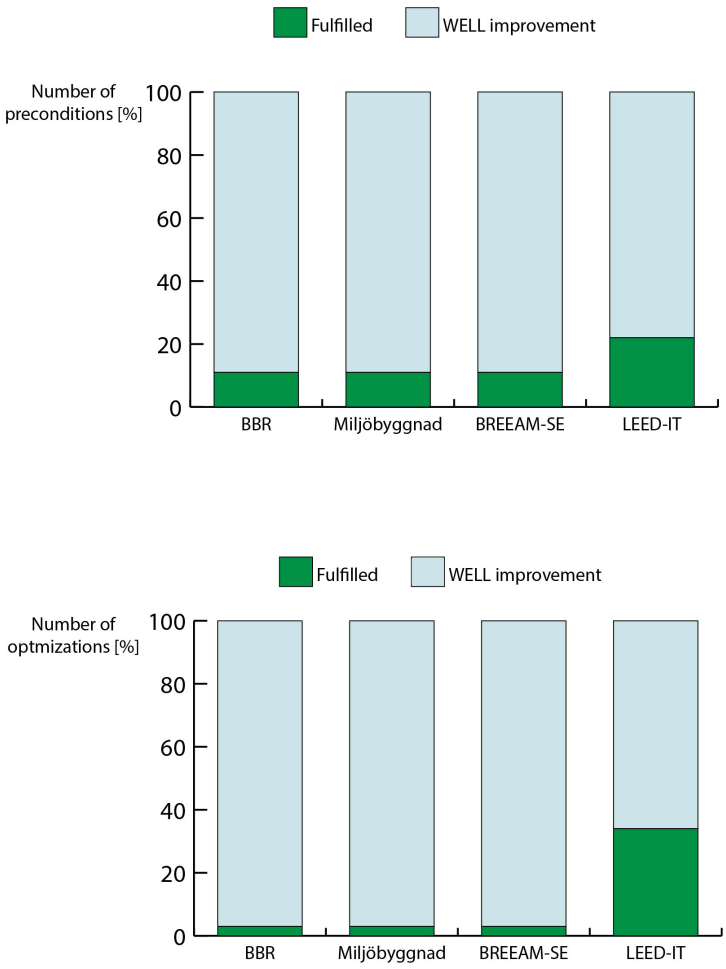

Fig. 28: Results' comparison between BBR, Miljöbyggnad, BREEAM-SE and LEED-IT

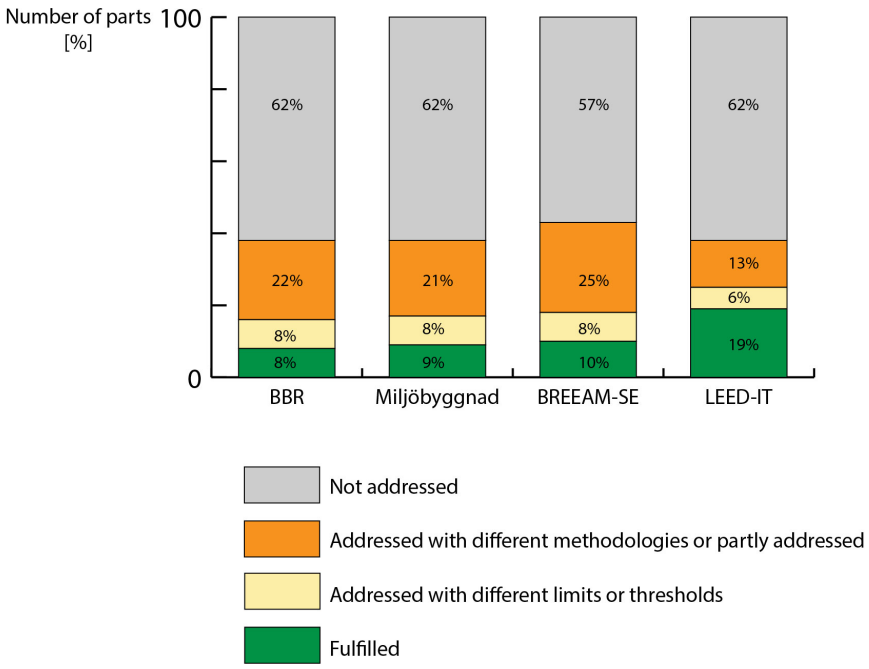

Fig. 29: Detailed results' comparison between BBR, Miljöbyggnad, BREEAM-SE and LEED-IT

The comparison has shown that there are some WELL features that are fulfilled by none of the examined regulation or certification, collected in the table in Fig.31. They are identified in this report as innovative features. They could be evaluated into two different ways, considering a subjective or objective approach. For example, the features Food advertising, Health and Wellness Awareness or Beauty and Design are evaluated using an subjective approach, since they are no way to measure them. On the other hand, features as Color Quality, Active furnishings or Post-Occupancy Surveys, need to follow precise instructions to be fulfilled. The table in Fig.31 is composed of the following columns:

. Concept

. Reference number

. Feature type: precondition or optimization

. Complete name

. Subjective evaluation: it is marked if the feature considers a subjective evaluation

. Objective evaluation: it is marked if the feature considers an objective evaluation

Beside the table, a pie chart displays the percentages related to how many features require a subjective evaluation or an objective evaluation (Fig.30).

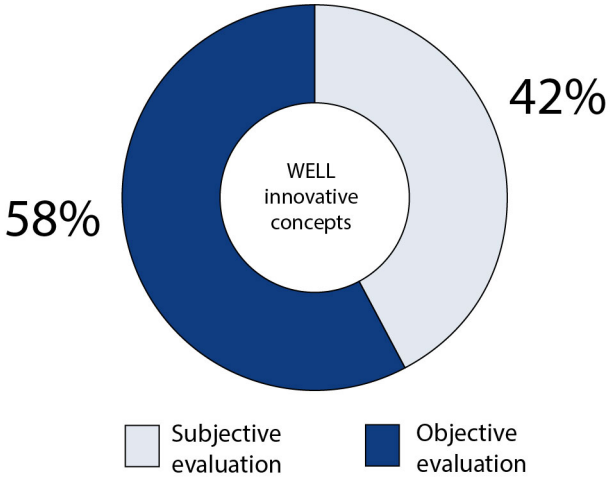

Fig. 30: Chart to classify the evaluation type for WELL innovative features

Concept			Feature	Evaluation type	
				Subjective	Objective
Air	8	O	Feature 08. Healthy Entrance		•
	9	P	Feature 09. Cleaning Protocol	•	
	13	O	Feature 13. Air Flush		•
	15	O	Feature 15. Increased Ventilation		•
	17	O	Feature 17. Direct Source Ventilation		•
	18	O	Feature 18. Air Quality Monitoring And Feedback		•
	19	O	Feature 19. Operable Windows		•
	21	O	Feature 21. Displacement Ventilation		•
	22	O	Feature 22. Pest Control		•
	25	O	Feature 25. Toxic Material Reduction		•
	27	O	Feature 27. Antimicrobial Activity For Surfaces		•
	28	O	Feature 28. Cleanable Environment	•	
	29	O	Feature 29. Cleaning Equipment		•
Nourishment	38	P	Feature 38. Fruits And Vegetables		•
	39	P	Feature 39. Processed Foods		•
	40	P	Feature 40. Food Allergies		•
	41	P	Feature 41. Hand Washing		•
	42	P	Feature 42. Food Contamination		•
	43	P	Feature 43. Artificial Ingredients		•
	44	P	Feature 44. Nutritional Information		•
	45	P	Feature 45. Food Advertising	•	
	46	O	Feature 46. Safe Food Preparation Materials		•
	47	O	Feature 47. Serving Sizes		•
	48	O	Feature 48. Special Diets		•
	49	O	Feature 49. Responsible Food Production		•
	51	O	Feature 51. Food Production	•	
Light	58	O	Feature 58. Color Quality		•
	60	O	Feature 60. Automated Shading And Dimming Controls		•
Fitness	65	P	Feature 65. Activity Incentive Programs	•	
	66	O	Feature 66. Structured Fitness Opportunities	•	
	67	O	Feature 67. Exterior Active Design	•	
	68	O	Feature 68. Physical Activity Spaces		•
	69	O	Feature 69. Active Transportation Support		•
	70	O	Feature 70. Fitness Equipment		•
	71	O	Feature 71. Active Furnishings		•
Comfort	79	O	Feature 79. Sound Masking		•
	80	O	Feature 80. Sound Reducing Surfaces		•
	82	O	Feature 82. Individual Thermal Control	•	
Mind	84	P	Feature 84. Health And Wellness Awareness	•	
	85	P	Feature 85. Integrative Design	•	
	86	P	Feature 86. Post-Occupancy Surveys		•
	87	P	Feature 87. Beauty And Design I	•	
	88	P	Feature 88. Biophilia I - Qualitative	•	
	89	O	Feature 89. Adaptable Spaces	•	
	90	O	Feature 90. Healthy Sleep Policy	•	
	91	O	Feature 91. Business Travel	•	
	92	O	Feature 92. Building Health Policy	•	
	94	O	Feature 94. Self-Monitoring		•
	95	O	Feature 95. Stress And Addiction Treatment	•	
	96	O	Feature 96. Altruism	•	
	97	O	Feature 97. Material Transparency		•
	98	O	Feature 98. Organizational Transparency		•
	99	O	Feature 99. Beauty And Design II	•	
	100	O	Feature 100. Biophilia II - Quantitative	•	
	101	O	Feature 101. Innovation Feature I	•	
	102	O	Feature 102. Innovation Feature II	•	
	103	O	Feature 103. Innovation Feature III	•	
	104	O	Feature 104. Innovation Feature IV	•	
	105	O	Feature 105. Innovation Feature V	•	

Fig. 31: Table containing WELL innovative features

5 Case study - Katsan

Gap analysis, as the one performed in this thesis, has a theoretical approach to the problem and this makes difficult to image what could be a practical example. The aim of the thesis is to illustrate to clients the possibility to adopt WELL in their projects, highlighting how much they have for free when applying already known building standards. A case study is needed to show the essence of the work and to make visible the outcomes of the study.
Katsan, White Arkitekter's office in Stockholm, has been adopted as the case study of the thesis. The building, already certified as Miljöbyggnad Gold level, will try to become WELL certified in the future.
In this section there will be the description of the building and which are the considerations assumed during the study. An overview of the results is going to be presented at the end of the chapter.

5.1 Building description

"Katsan" is the name of the White Arkitekter's office in Stockholm (Fig.32). It hosts around 400 people and it has reached the Gold level of Miljöbyggnad. The chance to act as both client and architect made the building became the perfect spot for research, experiments and innovations (Mattsson, 2017).

Fig. 32: External view of White Arkitekter's Office in Stockholm

It is situated on the city southern docks and its rectangular shape facilitate the its integration into surroundings and urban landscape. People inside can enjoy the view outwards from each space of the office, thanks to the presence of open-workplaces and glass façades (Mattsson, 2017). The internal architectural organization alternates big open spaces with smaller rooms or meeting spots, without denying noise reduction and privacy needs thanks to the strategic furniture disposition (Mattsson, 2017).
Technical and innovative solutions allowed to situate pipes inside concrete floor

slabs, enhance cooling using the water from the adjacent canal. Extensive glass façades have not been an obstacle to the reduction of energy consumption, indeed the energy use correspond to approximately 85 kwh/m^2/year. Concrete plays a fundamental role in maintain high energy efficiency standards: its mass keeps the office cool in summer and warm during winter months. Passive design solutions work in symbiosis with smart technologies. External light sensors controls shading and manage daylight, while solar panels on the roof provide energy production on site (Mattsson, 2017).
The roof terrace is the core of White Arkitekter's life, with the presence of a variety of plants and herbs and the relaxation and meeting spaces during warmth months (Mattsson, 2017).
The building has been designed to be flexible and to accommodate changes during the years, following business and technology needs (Mattsson, 2017).

5.2 Analysis

The project check-list provided by IWBI has been employed in the performance of the case study. The document aids teams to prepare and organize the work toward the WELL certification. It is related to the project type, selecting automatically which features are applicable and which parts need to be fulfilled.
For each feature's part, it is possible to select whether it is going to be pursued or not or if it is not applicable or, in case of uncertainty, categorize it as "Maybe" (Fig.33). These decisions are reflected on the classification of the feature as fulfilled, not fulfilled or uncertain.

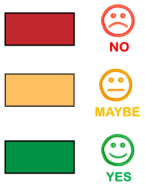

Fig. 33: Feature classification in the case study.

The certification matrix summarizes all the features evaluation, providing the teams an estimation of the target level of certification. The certification matrix for Katsan is inserted as attachment to the report.

5.3 Case study results

The results for the case study are presented in the following paragraphs considering separated preconditions and optimizations and describing which are the strong points of Katsan.
The outcomes are collected into pie charts and columns diagrams, using the same kind of representation adopted in the gap analysis.
A comparison between the results from Katsan and Miljöbyggnad is performed to understand the differences between the general approach of the gap analysis and the evaluation of a specific project searching for the dual certification.

5.3.1 Preconditions

Katsan fulfils most of the preconditions, as shown in the chart in Fig.34. The rest of them may be fulfilled, according to the following strategies:

. Minor refurbishment:

Feature 54: Circardian lighting design: the feature could be fulfilled changing bulbs type

Feature 87: Beauty and design I. The issue is analysed considering five characteristics: human delight, provided by the connection between occupants and surrounding nature and the creation of spaces to relax or interact with other people; celebration of culture, as fika moments, typical of Sweden and at the base of the office culture, allow people to meet, share ideas and interact; celebration of spirit, considered fulfilled thanks to the presence of after-works, running or yoga meetings; celebration of place and integration of public art is still not incorporated into Katsan design, but it may be realized when the White Arkitekter's office will go for WELL certification.

. Changes to company policies:

Feature 09: Cleaning protocol

Feature 65: Activity incentive programs

Feature 75: Internally generated noise: to fulfil the feature an acoustic plan should be developed

Feature 86: Post-occupancy surveys: the report of the survey should be sent to building owners and managers, building occupants and the IWBI

. Further documentation is needed:

Feature 03:Ventilation effectiveness

Feature 04: Part VOC reduction

Feature 05: Air filtration

Feature 06: Microbe and mold control

Feature 39: Processed foods

Feature 40: Food allergies

Feature 41: Hand washing

Feature 42: Artificial ingredients

Feature 53: Visual lighting design

Feature 55: Electric light glare control

Feature 76: Thermal comfort

The column chart illustrates how many preconditions are fulfilled for each concept. It is important to highlight that at this point of the preliminary study, there are not preconditions that are surely not fulfilled.

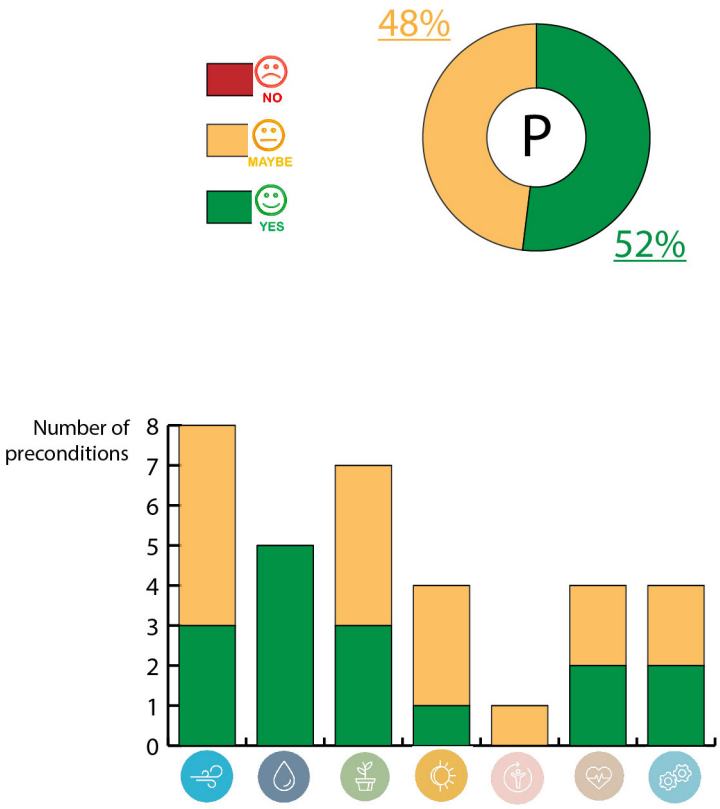

Fig. 34: Preconditions analysis for Katsan

5.3.2 Optimizations

The Fig.35 shows that the majority of the optimizations may be fulfilled, while 13% are already fulfilled and 11% are not fulfilled. These results are important because it means that Katsan may achieve higher levels of certifications than Silver working on the features that are currently partially fulfilled.
Also in this case, columns chart displays the features' classification for each concept.

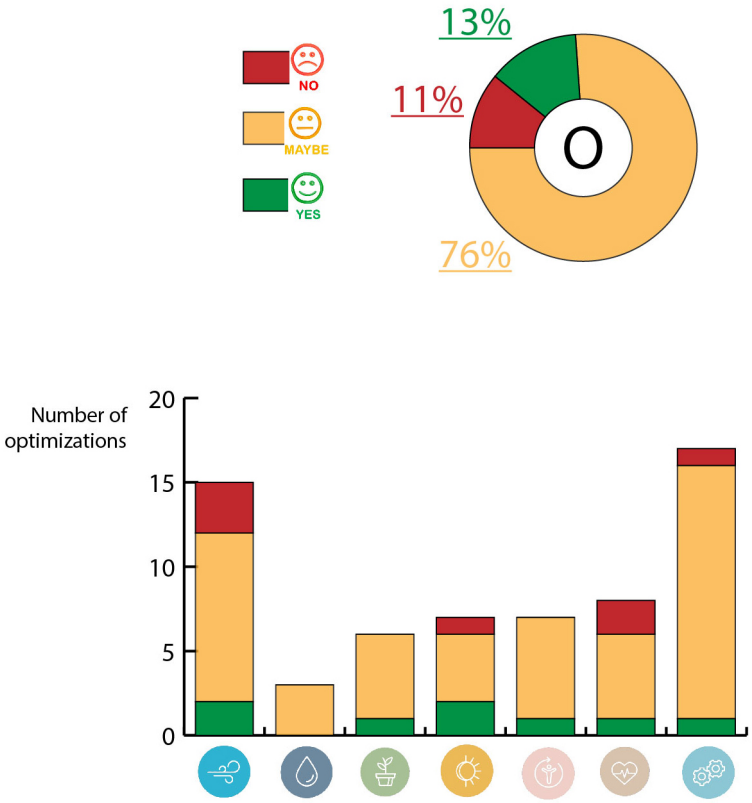

Fig. 35: Optimizations analysis for Katsan

5.3.3 Innovative features in Katsan

The innovative features in the WELL certification system are the requirements present only in WELL and not in any other certification or regulation and they could be preconditions or optimizations. The table in Fig.36 highlights which are the WELL innovative features present in Katsan.

Concept			Feature	Evaluation type	
				Subjective	Objective
Air	8	O	Feature 08. Healthy Entrance		•
	9	P	Feature 09. Cleaning Protocol	•	
	13	O	Feature 13. Air Flush		•
	15	O	Feature 15. Increased Ventilation		•
	17	O	Feature 17. Direct Source Ventilation		•
	18	O	Feature 18. Air Quality Monitoring And Feedback		•
	19	O	Feature 19. Operable Windows		•
	21	O	Feature 21. Displacement Ventilation		•
	22	O	Feature 22. Pest Control		•
	25	O	Feature 25. Toxic Material Reduction		•
	27	O	Feature 27. Antimicrobial Activity For Surfaces		•
	28	O	Feature 28. Cleanable Environment	•	
	29	O	Feature 29. Cleaning Equipment		•
Nourishment	38	P	Feature 38. Fruits And Vegetables		•
	39	P	Feature 39. Processed Foods		•
	40	P	Feature 40. Food Allergies		•
	41	P	Feature 41. Hand Washing		•
	42	P	Feature 42. Food Contamination		•
	43	P	Feature 43. Artificial Ingredients		•
	44	P	Feature 44. Nutritional Information		•
	45	P	Feature 45. Food Advertising	•	
	46	O	Feature 46. Safe Food Preparation Materials		•
	47	O	Feature 47. Serving Sizes		•
	48	O	Feature 48. Special Diets		•
	49	O	Feature 49. Responsible Food Production		•
	51	O	Feature 51. Food Production	•	
Light	58	O	Feature 58. Color Quality		•
	60	O	Feature 60. Automated Shading And Dimming Controls		•
Fitness	65	P	Feature 65. Activity Incentive Programs	•	
	66	O	Feature 66. Structured Fitness Opportunities	•	
	67	O	Feature 67. Exterior Active Design	•	
	68	O	Feature 68. Physical Activity Spaces		•
	69	O	Feature 69. Active Transportation Support		•
	70	O	Feature 70. Fitness Equipment		•
	71	O	Feature 71. Active Furnishings		•
Comfort	79	O	Feature 79. Sound Masking		•
	80	O	Feature 80. Sound Reducing Surfaces		•
	82	O	Feature 82. Individual Thermal Control	•	
Mind	84	P	Feature 84. Health And Wellness Awareness	•	
	85	P	Feature 85. Integrative Design	•	
	86	P	Feature 86. Post-Occupancy Surveys		•
	87	P	Feature 87. Beauty And Design I	•	
	88	P	Feature 88. Biophilia I - Qualitative	•	
	89	O	Feature 89. Adaptable Spaces	•	
	90	O	Feature 90. Healthy Sleep Policy	•	
	91	O	Feature 91. Business Travel	•	
	92	O	Feature 92. Building Health Policy	•	
	94	O	Feature 94. Self-Monitoring		•
	95	O	Feature 95. Stress And Addiction Treatment	•	
	96	O	Feature 96. Altruism	•	
	97	O	Feature 97. Material Transparency		•
	98	O	Feature 98. Organizational Transparency		•
	99	O	Feature 99. Beauty And Design II	•	
	100	O	Feature 100. Biophilia II - Quantitative	•	
	101	O	Feature 101. Innovation Feature I	•	
	102	O	Feature 102. Innovation Feature II	•	
	103	O	Feature 103. Innovation Feature III	•	
	104	O	Feature 104. Innovation Feature IV	•	
	105	O	Feature 105. Innovation Feature V	•	

Fig. 36: Table containing WELL innovative features

There are some aspects of Katsan which make the building in line with WELL approach to sustainability. This results in the fulfilment of some optimizations, which are not mandatory, but add a great value to the project.
Concepts as nature incorporation, stimuli management, space management, privacy, workplace sleep support and outdoor biophilia, are already part of the building, which means that lots of features related to mind wellness are easily applicable (Fig.37).

Fig. 37: Examples of workplace sleep support, outdoor biophilia and space management in Katsan

The same approach may be taken when studying the WELL light concept, since Katsan is designed in order to guarantee aspects as view window shading, daylight management, glare avoidance, lease depth and window access.
Nourishment is addressed thanks to the creation of gardening spaces, eating spaces and break area furnishings. People are encouraged to interact with nature and to access to mindful eating (Fig.39).
Stair accessibility and stair promotion (Fig.40) are two of several aspects linked to fitness concepts and fulfilled by Katsan. Facilitative aesthetics and post workout facilities also support fitness routines and encourage people to walk and cycle

Fig. 38: Lights in Katsan's spaces

Fig. 39: Katsan's indoor and outdoor eating spaces.

during work-time.
It has already been highlighted the flexibility of the office, which give rise to comfort issues as visual and physical ergonomics. Other comfort measures adopted by the architecture studio are the limitation of exterior noise intrusion and the guarantee of an acceptable thermal comfort.

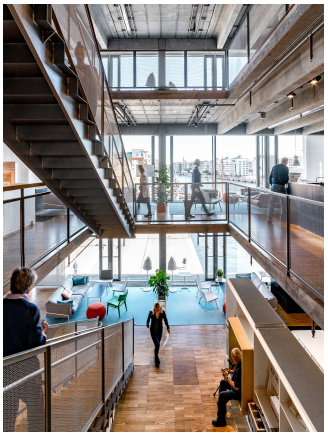

Fig. 40: Interior stairs in Katsan

Fig. 41: Example of workplaces in Katsan

Several air features are considered respected, as for example smoking ban, VOC reduction and fundamental material safety. It is interesting to show that Katsan has also incorporated in its design the necessity to have an healthy entrance, as required from WELL, which results in higher indoor air quality levels and cleaning standards.
Regarding the water concept, it is not possible to talk about Katsan's strengths, since drinkable water quality is assured by Stockholm city, which guarantees fundamental water quality and absence of inorganic, organic and agricultural contaminants. For this reason, several features are considered fulfilled even without specific documents produce by White Arkitekter's office.

6 Discussion

In this section there is a comparison between the results obtained in the gap analysis and the results from the case study. The goal is to find out the differences between theoretical results and WELL evaluation of an existent building. The case study presents higher percentages of fulfilled features when compared to the gap analysis between Miljöbyggnad and WELL (Fig.42) . Katsan addresses, beside Miljöbyggnad requirements, strategies to improve occupants' health and well-being, which results in meeting several WELL preconditions.

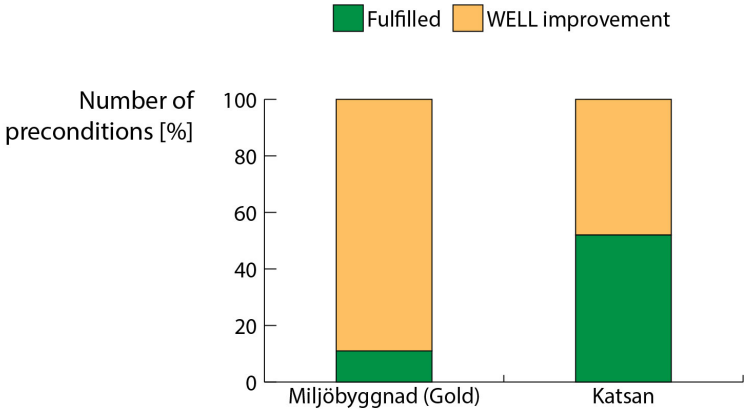

Fig. 42: Comparison between gap analysis and case study results for preconditions

In the case of the optimizations, the results of the case study and the gap analysis are more aligned than the ones related to the preconditions (Fig.43). Some of the optimizations cannot be fulfilled, since it will require important works of refurbishment.

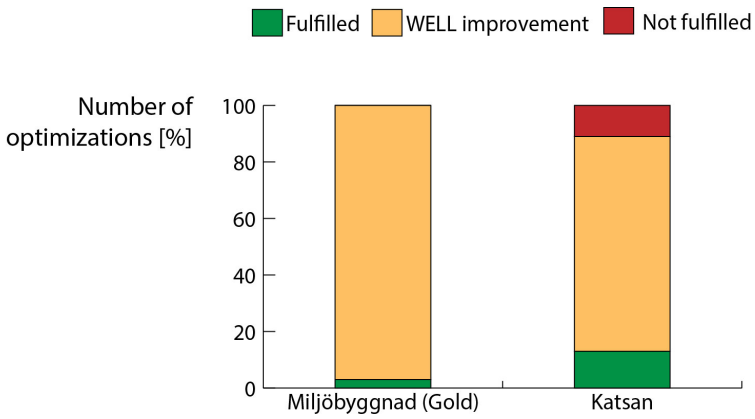

Fig. 43: Comparison between gap analysis and case study results for optimizations

7 Conclusions

The thesis' goal was to understand how WELL could improve green building design through a gap analysis comparing WELL with other certification systems, and through analysing a case study. The aim was to highlight which are the innovations introduced by WELL Building Standard and what does it add in comparison to other certification systems, and understand how feasible the application of WELL to the Swedish standard. The results obtained will be used in the future as a base for discussion with clients, to explain the advantages of applying the IWBI Standard.
The analysis showed big gaps between WELL and other certifications, both for preconditions and optimizations. These gaps should not be considered negatively. All the features that are not fulfilled are WELL improvements, proposed to enhance the quality of the built environment. The innovation of WELL consists also in how these features are evaluated, indeed, almost half of them is analysed subjectively.
The features' overview presents same percentages for BBR, Miljöbyggnad and BREEAM-SE, but different percentages have been obtained studying the WELL parts, as discussed in the 6.2 Results comparison. LEED-IT results were more aligned with WELL concepts, thanks to the collaboration among IWBI and USGBC, but significant gaps are still present.
The case study presents a favourable predisposition for the application of the WELL Building Standard to the White Arkitekter's office. Almost half of the preconditions is fulfilled and the rest of them may be fulfilled after some refurbishment works or by introducing new company policies. The case study has shown that it is possible the application of the WELL system to a Swedish building certified with Miljöbyggnad Gold without the necessity of radical changes to the design.
The innovative WELL features have been extracted and compared to the gap analysis results. These features address issues not considered by any of the examined certification or regulation. They represent the answer to the research question and evidence of what WELL adds to the building sustainability evaluation, which are represented in the Nourishment, Fitness and Mind concepts.

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Attachment I
New and existing buildings - Summary table

			WELL	Swedish local regulations	Miljöbyggnad (New construction 3.0)			BREEAM - SE (New construction 2017)	LEEDv4 - IT (Building Design and construction v4)
					Bronze	Silver	Gold		
AIR	1	P	Feature 01. Air Quality Standards	■	■	■	■	■	■
	2	P	Feature 02. Smoking Ban	●	●	●	●	●	●
	3	P	Feature 03. Ventilation Effectiveness	■	■	■	■	■	●
	4	P	Feature 04. Part VOC Reduction	■	■	■	■	■	■
	5	P	Feature 05. Air Filtration	■	■	■	■	■	■
	6	P	Feature 06. Microbe And Mold Control	■	■	■	■	■	■
	7	P	Feature 07. Construction Pollution Management	●	●	●	●	●	●
	8	P	Feature 08. Healthy Entrance	■	■	■	■	■	●
	9	P	Feature 09. Cleaning Protocol	■	■	■	■	■	■
	10	P	Feature 10. Pesticide Management	■	■	■	■	■	■
	11	P	Feature 11. Fundamental Material Safety	■	■	■	■	■	●
	12	P	Feature 12. Moisture Management	■	■	■	■	■	■
	13	O	Feature 13. Air Flush	■	■	■	■	■	●
	14	O	Feature 14. Air Infiltration Management	■	■	■	■	■	■
	15	O	Feature 15. Increased Ventilation	■	■	■	■	■	●
	16	O	Feature 16. Humidity Control	■	■	■	■	■	■
	17	O	Feature 17. Direct Source Ventilation	■	■	■	■	■	●
	18	O	Feature 18. Air Quality Monitoring And Feedback	■	■	■	■	■	■
	19	O	Feature 19. Operable Windows	■	■	■	■	■	■
	20	O	Feature 20. Outdoor Air Systems	●	●	●	●	●	●
	21	O	Feature 21. Displacement Ventilation	■	■	■	■	■	●
	22	O	Feature 22. Pest Control	■	■	■	■	■	■
	23	O	Feature 23. Advanced Air Purification	■	■	■	■	■	■
	24	O	Feature 24. Combustion Minimization	■	■	■	■	■	■
	25	O	Feature 25. Toxic Material Reduction	■	■	■	■	■	■
	26	O	Feature 26. Enhanced Material Safety	■	■	■	■	■	■
	27	O	Feature 27. Antimicrobial Activity For Surfaces	■	■	■	■	■	■
	28	O	Feature 28. Cleanable Environment	■	■	■	■	■	■
	29	O	Feature 29. Cleaning Equipment	■	■	■	■	■	■
WATER	30	P	Feature 30. Fundamental Water Quality	■	■	■	■	■	■
	31	P	Feature 31. Inorganic Contaminants	■	■	■	■	■	■
	32	P	Feature 32. Organic Contaminants	■	■	■	■	■	■
	33	P	Feature 33. Agricultural Contaminants	■	■	■	■	■	■
	34	P	Feature 34. Part Public Water Additives	■	■	■	■	■	■
	35	O	Feature 35. Periodic Water Quality Testing	■	■	■	■	■	■
	36	O	Feature 36. Water Treatment	■	■	■	■	■	■
	37	O	Feature 37. Drinking Water Promotion	■	■	■	■	■	■
NOURISHMENT	38	P	Feature 38. Fruits And Vegetables	■	■	■	■	■	■
	39	P	Feature 39. Processed Foods	■	■	■	■	■	■
	40	P	Feature 40. Food Allergies	■	■	■	■	■	■
	41	P	Feature 41. Hand Washing	■	■	■	■	■	■
	42	P	Feature 42. Food Contamination	■	■	■	■	■	■
	43	P	Feature 43. Artificial Ingredients	■	■	■	■	■	■
	44	P	Feature 44. Nutritional Information	■	■	■	■	■	■
	45	P	Feature 45. Food Advertising	■	■	■	■	■	■
	46	O	Feature 46. Safe Food Preparation Materials	■	■	■	■	■	■
	47	O	Feature 47. Serving Sizes	■	■	■	■	■	■
	48	O	Feature 48. Special Diets	■	■	■	■	■	■
	49	O	Feature 49. Responsible Food Production	■	■	■	■	■	■
	50	O	Feature 50. Food Storage	■	■	■	■	■	■
	51	O	Feature 51. Food Production	■	■	■	■	■	■
	52	O	Feature 52. Mindful Eating	■	■	■	■	■	■
LIGHT	53	P	Feature 53. Visual Lighting Design	■	■	■	■	■	■
	54	P	Feature 54. Circadian Lighting Design	■	■	■	■	■	■
	55	P	Feature 55. Electric Light Glare Control	■	■	■	■	■	■
	56	P	Feature 56. Solar Glare Control	●	●	●	●	■	●
	57	O	Feature 57. Low-Glare Workstation Design	■	■	■	■	■	■
	58	O	Feature 58. Color Quality	■	■	■	■	■	■
	59	O	Feature 59. Surface Design	■	■	■	■	■	■
	60	O	Feature 60. Automated Shading And Dimming	■	■	■	■	■	■
	61	O	Feature 61. Right To Light	■	■	■	■	■	■
	62	O	Feature 62. Daylight Modeling	■	■	■	■	■	●
	63	O	Feature 63. Daylighting Fenestration	■	■	■	■	■	■
FITNESS	64	P	Feature 64. Interior Fitness Circulation	■	■	■	■	■	■
	65	P	Feature 65. Activity Incentive Programs	■	■	■	■	■	■
	66	O	Feature 66. Structured Fitness Opportunities	■	■	■	■	■	■
	67	O	Feature 67. Exterior Active Design	■	■	■	■	■	■
	68	O	Feature 68. Physical Activity Spaces	■	■	■	■	■	■
	69	O	Feature 69. Active Transportation Support	■	■	■	■	■	●
	70	O	Feature 70. Fitness Equipment	■	■	■	■	■	■
	71	O	Feature 71. Active Furnishings	■	■	■	■	■	■
COMFORT	72	P	Feature 72. Accessible Design	●	●	●	●	●	●
	73	P	Feature 73. Ergonomics: Visual And Physical	■	■	■	■	■	■
	74	P	Feature 74. Exterior Noise Intrusion	■	■	■	■	■	●
	75	P	Feature 75. Internally Generated Noise	■	■	■	■	■	■
	76	P	Feature 76. Thermal Comfort	■	■	■	■	■	●
	77	O	Feature 77. Olfactory Comfort	■	■	■	■	■	●
	78	O	Feature 78. Reverberation Time	■	■	■	■	■	●
	79	O	Feature 79. Sound Masking	■	■	■	■	■	●
	80	O	Feature 80. Sound Reducing Surfaces	■	■	■	■	■	●
	81	O	Feature 81. Sound Barriers	■	■	■	■	■	●
	82	O	Feature 82. Individual Thermal Control	■	■	■	■	■	●
	83	O	Feature 83. Radiant Thermal Comfort	■	■	■	■	■	●
MIND	84	P	Feature 84. Health And Wellness Awareness	■	■	■	■	■	■
	85	P	Feature 85. Integrative Design	■	■	■	■	■	●
	86	P	Feature 86. Post-Occupancy Surveys	■	■	■	■	●	■
	87	P	Feature 87. Beauty And Design I	■	■	■	■	■	■
	88	P	Feature 88. Biophilia I - Qualitative	■	■	■	■	■	■
	89	O	Feature 89. Adaptable Spaces	■	■	■	■	■	■
	90	O	Feature 90. Healthy Sleep Policy	■	■	■	■	■	■
	91	O	Feature 91. Business Travel	■	■	■	■	■	■
	92	O	Feature 92. Building Health Policy	■	■	■	■	■	■
	93	O	Feature 93. Workplace Family Support	■	■	■	■	■	■
	94	O	Feature 94. Self-Monitoring	■	■	■	■	■	■
	95	O	Feature 95. Stress And Addiction Treatment	■	■	■	■	■	■
	96	O	Feature 96. Altruism	■	■	■	■	■	■
	97	O	Feature 97. Material Transparency	■	■	■	■	■	●
	98	O	Feature 98. Organizational Transparency	■	■	■	■	■	■
	99	O	Feature 99. Beauty And Design II	■	■	■	■	■	■
	100	O	Feature 100. Biophilia II - Quantitative	■	■	■	■	■	■
	101	O	Feature 101. Innovation Feature I	■	■	■	■	■	●
	102	O	Feature 102. Innovation Feature II	■	■	■	■	■	●
	103	O	Feature 103. Innovation Feature III	■	■	■	■	■	●
	104	O	Feature 104. Innovation Feature IV	■	■	■	■	■	●
	105	O	Feature 105. Innovation Feature V	■	■	■	■	■	●

Attachment II
New and existing interiors - Summary table

			WELL	Swedish local regulations	Miljöbyggnad (New construction 3.0)			BREEAM - SE (New construction 2017)	LEEDv4 - IT (Building Design and construction v4)
					Bronze	Silver	Gold		
AIR	1	P	Feature 01. Air Quality Standards	■	■	■	■	■	■
	2	P	Feature 02. Smoking Ban	●	●	●	●	●	●
	3	P	Feature 03. Ventilation Effectiveness	■	■	■	■	■	●
	4	P	Feature 04. Part VOC Reduction	■	■	■	■	■	■
	5	P	Feature 05. Air Filtration	■	■	■	■	■	■
	6	P	Feature 06. Microbe And Mold Control	■	■	■	■	■	■
	7	P	Feature 07. Construction Pollution Management	●	●	●	●	●	●
	8	O	Feature 08. Healthy Entrance	■	■	■	■	■	●
	9	P	Feature 09. Cleaning Protocol	■	■	■	■	■	■
	11	P	Feature 11. Fundamental Material Safety	■	■	■	■	■	●
	13	O	Feature 13. Air Flush	■	■	■	■	■	●
	14	O	Feature 14. Air Infiltration Management	■	■	■	■	■	■
	15	O	Feature 15. Increased Ventilation	■	■	■	■	■	●
	16	O	Feature 16. Humidity Control	■	■	■	■	■	■
	17	O	Feature 17. Direct Source Ventilation	■	■	■	■	■	●
	18	O	Feature 18. Air Quality Monitoring And Feedback	■	■	■	■	■	■
	19	O	Feature 19. Operable Windows	■	■	■	■	■	■
	20	O	Feature 20. Outdoor Air Systems	●	●	●	●	●	●
	21	O	Feature 21. Displacement Ventilation	■	■	■	■	■	●
	22	O	Feature 22. Pest Control	■	■	■	■	■	■
	23	O	Feature 23. Advanced Air Purification	■	■	■	■	■	■
	24	O	Feature 24. Combustion Minimization	■	■	■	■	■	■
	25	O	Feature 25. Toxic Material Reduction	■	■	■	■	■	■
	26	O	Feature 26. Enhanced Material Safety	■	■	■	■	■	■
	27	O	Feature 27. Antimicrobial Activity For Surfaces	■	■	■	■	■	■
	28	O	Feature 28. Cleanable Environment	■	■	■	■	■	■
	29	O	Feature 29. Cleaning Equipment	■	■	■	■	■	■
WATER	30	P	Feature 30. Fundamental Water Quality	■	■	■	■	■	■
	31	P	Feature 31. Inorganic Contaminants	■	■	■	■	■	■
	32	P	Feature 32. Organic Contaminants	■	■	■	■	■	■
	33	P	Feature 33. Agricultural Contaminants	■	■	■	■	■	■
	34	P	Feature 34. Part Public Water Additives	■	■	■	■	■	■
	35	O	Feature 35. Periodic Water Quality Testing	■	■	■	■	■	■
	36	O	Feature 36. Water Treatment	■	■	■	■	■	■
	37	O	Feature 37. Drinking Water Promotion	■	■	■	■	■	■
NOURISHMENT	38	P	Feature 38. Fruits And Vegetables	■	■	■	■	■	■
	39	P	Feature 39. Processed Foods	■	■	■	■	■	■
	40	P	Feature 40. Food Allergies	■	■	■	■	■	■
	41	P	Feature 41. Hand Washing	■	■	■	■	■	■
	42	P	Feature 42. Food Contamination	■	■	■	■	■	■
	43	P	Feature 43. Artificial Ingredients	■	■	■	■	■	■
	44	P	Feature 44. Nutritional Information	■	■	■	■	■	■
	45	P	Feature 45. Food Advertising	■	■	■	■	■	■
	46	O	Feature 46. Safe Food Preparation Materials	■	■	■	■	■	■
	47	O	Feature 47. Serving Sizes	■	■	■	■	■	■
	48	O	Feature 48. Special Diets	■	■	■	■	■	■
	49	O	Feature 49. Responsible Food Production	■	■	■	■	■	■
	50	O	Feature 50. Food Storage	■	■	■	■	■	■
	51	O	Feature 51. Food Production	■	■	■	■	■	■
	52	O	Feature 52. Mindful Eating	■	■	■	■	■	■
LIGHT	53	P	Feature 53. Visual Lighting Design	■	■	■	■	■	■
	54	P	Feature 54. Circadian Lighting Design	■	■	■	■	■	■
	55	P	Feature 55. Electric Light Glare Control	■	■	■	■	■	■
	56	P	Feature 56. Solar Glare Control	●	●	●	●	■	●
	57	O	Feature 57. Low-Glare Workstation Design	■	■	■	■	■	■
	58	O	Feature 58. Color Quality	■	■	■	■	■	■
	59	O	Feature 59. Surface Design	■	■	■	■	■	■
	60	O	Feature 60. Automated Shading And Dimming	■	■	■	■	■	■
	61	O	Feature 61. Right To Light	■	■	■	■	■	■
	62	O	Feature 62. Daylight Modeling	■	■	■	■	■	●
	63	O	Feature 63. Daylighting Fenestration	■	■	■	■	■	■
FITNESS	64	O	Feature 64. Interior Fitness Circulation	■	■	■	■	■	■
	65	P	Feature 65. Activity Incentive Programs	■	■	■	■	■	■
	66	O	Feature 66. Structured Fitness Opportunities	■	■	■	■	■	■
	67	O	Feature 67. Exterior Active Design	■	■	■	■	■	■
	68	O	Feature 68. Physical Activity Spaces	■	■	■	■	■	■
	69	O	Feature 69. Active Transportation Support	■	■	■	■	■	●
	70	O	Feature 70. Fitness Equipment	■	■	■	■	■	■
	71	O	Feature 71. Active Furnishings	■	■	■	■	■	■
COMFORT	72	P	Feature 72. Accessible Design	●	●	●	●	●	●
	73	P	Feature 73. Ergonomics: Visual And Physical	■	■	■	■	■	■
	74	O	Feature 74. Exterior Noise Intrusion	■	■	■	■	■	●
	75	P	Feature 75. Internally Generated Noise	■	■	■	■	■	■
	76	P	Feature 76. Thermal Comfort	■	■	■	■	■	●
	77	O	Feature 77. Olfactory Comfort	■	■	■	■	■	●
	78	O	Feature 78. Reverberation Time	■	■	■	■	■	●
	79	O	Feature 79. Sound Masking	■	■	■	■	■	●
	80	O	Feature 80. Sound Reducing Surfaces	■	■	■	■	■	●
	81	O	Feature 81. Sound Barriers	■	■	■	■	■	●
	82	O	Feature 82. Individual Thermal Control	■	■	■	■	■	●
	83	O	Feature 83. Radiant Thermal Comfort	■	■	■	■	■	●
MIND	84	P	Feature 84. Health And Wellness Awareness	■	■	■	■	■	■
	85	P	Feature 85. Integrative Design	■	■	■	■	■	●
	86	P	Feature 86. Post-Occupancy Surveys	■	■	■	■	●	■
	87	P	Feature 87. Beauty And Design I	■	■	■	■	■	■
	88	P	Feature 88. Biophilia I - Qualitative	■	■	■	■	■	■
	89	O	Feature 89. Adaptable Spaces	■	■	■	■	■	■
	90	O	Feature 90. Healthy Sleep Policy	■	■	■	■	■	■
	91	O	Feature 91. Business Travel	■	■	■	■	■	■
	92	O	Feature 92. Building Health Policy	■	■	■	■	■	■
	93	O	Feature 93. Workplace Family Support	■	■	■	■	■	■
	94	O	Feature 94. Self-Monitoring	■	■	■	■	■	■
	95	O	Feature 95. Stress And Addiction Treatment	■	■	■	■	■	■
	96	O	Feature 96. Altruism	■	■	■	■	■	■
	97	O	Feature 97. Material Transparency	■	■	■	■	■	●
	98	O	Feature 98. Organizational Transparency	■	■	■	■	■	■
	99	O	Feature 99. Beauty And Design II	■	■	■	■	■	■
	100	O	Feature 100. Biophilia II - Quantitative	■	■	■	■	■	■
	101	O	Feature 101. Innovation Feature I	■	■	■	■	■	●
	102	O	Feature 102. Innovation Feature II	■	■	■	■	■	●
	103	O	Feature 103. Innovation Feature III	■	■	■	■	■	●
	104	O	Feature 104. Innovation Feature IV	■	■	■	■	■	●
	105	O	Feature 105. Innovation Feature V	■	■	■	■	■	●

Attachment III
Core and shell - Summary table

			WELL	Swedish local regulations	Miljöbyggnad (New construction 3.0)			BREEAM - SE (New construction 2017)	LEEDv4 - IT (Building Design and construction v4)
					Bronze	Silver	Gold		
AIR	1	P	Feature 01. Air Quality Standards	■	■	■	■	■	■
	2	P	Feature 02. Smoking Ban	●	●	●	●	●	●
	3	P	Feature 03. Ventilation Effectiveness	■	■	■	■	■	●
	4	P	Feature 04. Part VOC Reduction	■	■	■	■	■	■
	5	P	Feature 05. Air Filtration	■	■	■	■	■	■
	6	P	Feature 06. Microbe And Mold Control	■	■	■	■	■	■
	7	P	Feature 07. Construction Pollution Management	●	●	●	●	●	●
	8	P	Feature 08. Healthy Entrance	■	■	■	■	■	●
	10	P	Feature 10. Pesticide Management	■	■	■	■	■	■
	11	P	Feature 11. Fundamental Material Safety	■	■	■	■	■	●
	12	P	Feature 12. Moisture Management	■	■	■	■	■	■
	14	O	Feature 14. Air Infiltration Management	■	■	■	■	■	■
	15	O	Feature 15. Increased Ventilation	■	■	■	■	■	●
	17	O	Feature 17. Direct Source Ventilation	■	■	■	■	■	●
	19	O	Feature 19. Operable Windows	■	■	■	■	■	■
	20	O	Feature 20. Outdoor Air Systems	●	●	●	●	●	●
	23	O	Feature 23. Advanced Air Purification	■	■	■	■	■	■
	24	O	Feature 24. Combustion Minimization	■	■	■	■	■	■
WATER	30	P	Feature 30. Fundamental Water Quality	■	■	■	■	■	■
	31	P	Feature 31. Inorganic Contaminants	■	■	■	■	■	■
	32	P	Feature 32. Organic Contaminants	■	■	■	■	■	■
	33	P	Feature 33. Agricultural Contaminants	■	■	■	■	■	■
	34	P	Feature 34. Part Public Water Additives	■	■	■	■	■	■
	36	O	Feature 36. Water Treatment	■	■	■	■	■	■
	37	O	Feature 37. Drinking Water Promotion	■	■	■	■	■	■
NOURISHMENT	39	P	Feature 39. Processed Foods	■	■	■	■	■	■
	40	P	Feature 40. Food Allergies	■	■	■	■	■	■
	43	O	Feature 43. Artificial Ingredients	■	■	■	■	■	■
	44	O	Feature 44. Nutritional Information	■	■	■	■	■	■
	45	O	Feature 45. Food Advertising	■	■	■	■	■	■
	51	O	Feature 51. Food Production	■	■	■	■	■	■
	52	O	Feature 52. Mindful Eating	■	■	■	■	■	■
LIGHT	55	P	Feature 55. Electric Light Glare Control	■	■	■	■	■	■
	56	O	Feature 56. Solar Glare Control	●	●	●	●	■	●
	61	O	Feature 61. Right To Light	■	■	■	■	■	■
	62	O	Feature 62. Daylight Modeling	■	■	■	■	■	●
	63	O	Feature 63. Daylighting Fenestration	■	■	■	■	■	■
FITNESS	64	P	Feature 64. Interior Fitness Circulation	■	■	■	■	■	■
	67	O	Feature 67. Exterior Active Design	■	■	■	■	■	■
	68	O	Feature 68. Physical Activity Spaces	■	■	■	■	■	■
	69	O	Feature 69. Active Transportation Support	■	■	■	■	■	●
	70	O	Feature 70. Fitness Equipment	■	■	■	■	■	■
COMFORT	72	P	Feature 72. Accessible Design	●	●	●	●	●	●
	74	P	Feature 74. Exterior Noise Intrusion	■	■	■	■	■	●
	75	O	Feature 75. Internally Generated Noise	■	■	■	■	■	■
	76	P	Feature 76. Thermal Comfort	■	■	■	■	■	●
	83	O	Feature 83. Radiant Thermal Comfort	■	■	■	■	■	●
MIND	84	P	Feature 84. Health And Wellness Awareness	■	■	■	■	■	■
	85	P	Feature 85. Integrative Design	■	■	■	■	■	●
	87	P	Feature 87. Beauty And Design I	■	■	■	■	■	■
	88	O	Feature 88. Biophilia I - Qualitative	■	■	■	■	■	■
	97	O	Feature 97. Material Transparency	■	■	■	■	■	●
	99	O	Feature 99. Beauty And Design II	■	■	■	■	■	■
	100	O	Feature 100. Biophilia II - Quantitative	■	■	■	■	■	■
	101	O	Feature 101. Innovation Feature I	■	■	■	■	■	●
	102	O	Feature 102. Innovation Feature II	■	■	■	■	■	●
	103	O	Feature 103. Innovation Feature III	■	■	■	■	■	●
	104	O	Feature 104. Innovation Feature IV	■	■	■	■	■	●
	105	O	Feature 105. Innovation Feature V	■	■	■	■	■	●

Attachment IV
Numerical quantities comparison

AIR									
Category	Element	WELL	BBR		MLB		BREEAM		LEED
		Threshold	Original value	Converted value	Original value	Converted value	Original value	Converted value	
Volatile substances	Total volatile organic compounds	500 µg/m^3					300 µg/m^3		
	Formaldehyde	27 ppb	0,124 mg/m^3	0,124 ppb	0,124 mg/m^3	0,124 ppb	100 µg/m^3	100 ppb	27 ppb
Particulate matter and inorganic gases	Carbon monoxide	9 ppm	10 mg/m^3	8,11 ppm	10 mg/m^3	8,11 ppm			9 ppm
	PM2.5	15 µg/m^3	25 µg/m^3		25 µg/m^3				15 µg/m^3
	PM10	50 µg/m^3	50 µg/m^3		50 µg/m^3				50 µg/m^3
	Ozone	51 ppb	120 µg/m^3	60 ppb	120 µg/m^3	60 ppb			0,075 ppm
Radon	Radon	4 pCi/L	200 Bq/m^3	5,41 pCi/L	Bronze: 200 Bq/m3 Silver: 100 Bq/m3 Gold: 60 Bq/m^3	Bronze: 5,41 pCi/L Silver: 2,71 pCi/L Gold: 1,63 pCi/L	One credit: 100 Bq/m3 Two credits: 60 Bq/m^3	One credit : 2,71 pCi/L Two credits: 1,63 pCi/L	
IAQ	Carbon dioxide	800 ppm			Silver: 1000 ppm Gold: 900 ppm				

WATER									
Category	Element	WELL	BBR		MLB		BREEAM		LEED
		Threshold	Original value	Converted value	Original value	Converted value	Original value	Converted value	
Sediment	Turbidity	1.0 NTU			10 NTU				
Dissolved metals	Lead	0,01 mg/L	5 µg/m^3	0,005 mg/L	5 µg/m^3	0,005 mg/L	5 µg/m^3	0,005 mg/L	
	Arsenic	0,01 mg/L							
	Antimony	0,006 mg/L							
	Mercury	0,002 mg/L							
	Nickel	0,012 mg/L							
	Copper	1 mg/L							
Organic pollutants	Styrene	0,0005 mg/L							
	Benzene	0,001 mg/L							
	Ethylbenzene	0,3 mg/L							
	Polychlorinated biphenyls	0,0005 mg/L							
	Vinyl chloride	0,002 mg/L							
	Toluene	0,15 mg/L							
	Xylenes	0,5 mg/L							
	Tetrachloroethylene	0,005 mg/L							
Herbicides and pesticides	Atrazine	0,001 mg/L							
	Simazine	0,002 mg/L							
	Glyphosate	0,70 mg/L							
	2,4-Dichlorophenoxyacetic	0,07 mg/L							
Fertilizers	Nitrate	10 mg/L							
Disinfectants	Residual chlorine	0,6 mg/L							
	Residual chloramine	4 mg/L							
Disinfectants Byproducts	Total trihalomethanes	0,08 mg/L							
	Toral haloacetic acids	0,06 mg/L							
Fluoride	Fluoride	4,0 mg/L							

LIGHT									
Category	Element	WELL	BBR		MLB		BREEAM		LEED
		Threshold	Original value	Converted value	Original value	Converted value	Original value	Converted value	
Visual acuity for focus	Average light intensity	215 lux	300 lux		300 lux		300 lux		
Glare minimization	Luminance of bare lamps and luminaire surfaces	8000 cd/m^2							

COMFORT									
Category	Element	WELL	BBR		MLB		BREEAM		LEED
		Threshold	Original value	Converted value	Original value	Converted value	Original value	Converted value	
Sound pressure level	Average sound pressure level from outside noise intrusion	50 dBA	30 dBA		30 dBA		30 dBA		
Mechanical equipment sound levels	Open office spaces and lobbies noise criteria (NC)	40							
	Enclosed offices noise criteria (NC)	35							
	Conference rooms and breakout rooms noise criteria (NC)	30							
	Teleconference room noise criteria (NC)	20							

Attachment V
New and existing buildings - Commented table

WELL				Swedish local regulations	Miljöbyggnad (New construction 3.0)			BREEAM - SE (New construction 2017)	LEEDv4 - IT (Building Design and construction v4)
					Bronze	Silver	Gold		
1	P	Feature 01. Air Quality Standards							
		Part 1. Standards For Volatile Substances	The following conditions are met: a. Formaldehyde levels less than 27 ppb. b. Total volatile organic compounds less than 500 µg/m³.	a. The threshold is respected as requested from KIFS 2008:2 5.20 b. There is no requirement regarding the issue	a. The threshold is respected as requested from KIFS 2008:2 5.20 b. There is no requirement regarding the issue	a. The threshold is respected as requested from KIFS 2008:2 5.20 b. There is no requirement regarding the issue	a. The threshold is respected as requested from KIFS 2008:2 5.20 b. There is no requirement regarding the issue	According to: Hea 02 - Indoor Air quality - post-construction indoor air quality measurement a. It is not fulfilled b. It is fully fulfilled	EQ - Indoor Air Quality Assessment - Table 1
		Part 2. Standards For Particulate Matter And Inorganic Gases	The following conditions are met: a. Carbon monoxide less than 9 ppm. b. PM2.5 less than 15 µg/m³. c. PM10 less than 50 µg/m³. d. Ozone less than 51 ppb.	According to SFS 2010:477 a. It is fully fulfilled b. It is not fulfilled c. It is fully fulfilled d. It is not fulfilled	According to SFS 2010:477 a. It is fully fulfilled b. It is not fulfilled c. It is fully fulfilled d. It is not fulfilled	According to SFS 2010:477 a. It is fully fulfilled b. It is not fulfilled c. It is fully fulfilled d. It is not fulfilled	According to SFS 2010:477 a. It is fully fulfilled b. It is not fulfilled c. It is fully fulfilled d. It is not fulfilled	According to SFS 2010:477 a. It is fully fulfilled b. It is not fulfilled c. It is fully fulfilled d. It is not fulfilled	According to EQ - Indoor Air Quality Assessment - Table 1 a. b. c. are fully fulfilled d. It is not fulfilled
		Part 3. Radon	The following conditions are met in projects with regularly occupied spaces at or below grade: a. Radon less than 4 pCi/L in the lowest occupied level of the project.	BBR 6.23	BBR 6.23	6 - Radon content	6 - Radon content	Hea 10 - Radon	P - EQ - Minimum Indoor Air quality Performance
2	P	Feature 02. Smoking Ban							
		Part 1. Indoor Smoking Ban	Building policy or local code reflects the following: a. Smoking and the use of e-cigarettes is prohibited inside the building.	European regulation	European regulation	European regulation	European regulation	European regulation	P - EQ - Environmental Tobacco Smoke Control
3	P	Feature 03. Ventilation Effectiveness							
		Part 1. Ventilation Design	One of the following requirements is met for all spaces: a. Ventilation rates comply with all requirements set in ASHRAE 62.1-2013 (Ventilation Rate Procedure or IAQ Procedure). b. Projects comply with all requirements set in any procedure in ASHRAE 62.1-2013 (including the Natural Ventilation Procedure) and demonstrate that ambient air quality withi 1.6 km [1 mi] of the building is compliant with either the U.S. EPA's NAAQS or passes the Air Quality Standards feature in the WELL Building Standard for at least 95% of all hours in the previous year.	Different methodologies adopted by BBR 6.25	Different methodologies adopted by BBR 6.25	Different methodologies adopted by BBR 6.25	Different methodologies adopted by BBR 6.25	Different methodologies adopted by BBR 6.25	P - EQ - Minimum Indoor Air quality Performance
		Part 2. Demand Controlled Ventilation	For all spaces 46.5 m² [500 ft²] or larger with an actual or expected occupant density greater than 25 people per 93 m² [1,000 ft²], one of the following requirements is met: a. A demand controlled ventilation system regulates the ventilation rate of outdoor air to keep carbon dioxide levels in the space below 800 ppm. b. Projects that have met the Operable windows feature demonstrate that natural ventilation is sufficient to keep carbon dioxide levels below 800 ppm at intended occupancies.	BBR 6.25	BBR 6.25	BBR 6.25	BBR 6.25	Hea 02 - Indoor Air quality	P - EQ - Minimum Indoor Air quality Performance
		Part 3. System Balancing	After the HVAC system is installed, the following requirement is met: a. After substantial completion and prior to occupancy, the HVAC system has (within the last 5 years), or is scheduled to, undergo testing and balancing.	SS-EN 13779:2007 5.10	SS-EN 13779:2007 5.10	SS-EN 13779:2007 5.10	SS-EN 13779:2007 5.10	Hea 02 - Indoor Air quality	P - EQ - Minimum Indoor Air quality Performance

Attachment V
New and existing buildings - Commented table

			WELL	Swedish local regulations	Miljöbyggnad (New construction 3.0)			BREEAM - SE (New construction 2017)	LEEDv4 - IT (Building Design and construction v4)
					Bronze	Silver	Gold		
4	P	Feature 04. Part VOC Reduction							
		Part 1. Interior Paints And Coatings	The VOC limits of newly applied paints and coatings meet one of the following requirements: a. 100% of installed products meet California Air Resources Board (CARB) 2007, Suggested Control Measure (SCM) for Architectural Coatings, or South Coast Air Quality Management District (SCAQMD) Rule 1113, effective June 3, 2011 for VOC content. b. At minimum 90%, by volume, meet the California Department of Public Health (CDPH) Standard Method v1.1-2010 for VOC emissions. c. Applicable national VOC content regulations or conduct testing of VOC content in accordance with ASTM D2369-10; ISO 11890, part 1; ASTM D6886-03; or ISO 11890-2.	ISO 11890	ISO 11890	ISO 11890	ISO 11890	Hea 02 - Indoor air quality - Emissions from building products - Table 17	EQ - Low-emitting Materials
		Part 2. Interior Adhesives And Sealants	The VOC limits of newly applied adhesives and sealants meet one of the following requirements: a. 100% of installed products meet South Coast Air Quality Management District (SCAQMD) Rule 1168, July 1 2005 for VOC content. b. At minimum 90%, by volume, meet the California Department of Public Health (CDPH) Standard Method v1.1-2010 for VOC emissions. c. Applicable national VOC content regulations or conduct testing of VOC content in accordance with ASTM D2369-10; ISO 11890, part 1; ASTM D6886-03; or ISO 11890-2.	ISO 11890	ISO 11890	ISO 11890	ISO 11890	Hea 02 - Indoor air quality - Emissions from building products - Table 17	EQ - Low-emitting Materials
		Part 3. Flooring	The VOC emissions of all newly installed flooring must meet all limits set by the following, as applicable: a. California Department of Public Health (CDPH) Standard Method v1.1-2010.	Different methodologies adopted by ISO 10580:2010	Different methodologies adopted by ISO 10580:2010	Different methodologies adopted by ISO 10580:2010	Different methodologies adopted by ISO 10580:2010	Different methodologies adopted by Hea 02 - Indoor air quality - Emissions from building products - Table 17	Different methodologies adopted by EQ - Low-emitting Materials
		Part 4. Insulation	The VOC emissions of all newly installed thermal and acoustic insulation inside the waterproofing membrane must meet all limits set by the following, as applicable: a. California Department of Public Health (CDPH) Standard Method v1.1-2010.					Different methodologies adopted by Hea 02 - Indoor air quality - Emissions from building products - Table 17	Different methodologies adopted by EQ - Low-emitting Materials
		Part 5. Furniture And Furnishings	The VOC emissions of at least 95% (by cost) of all newly purchased furniture and furnishings within the project scope must meet all limits set by the following, as applicable: a. ANSI/BIFMA e3-2011 Furniture Sustainability Standard sections 7.6.1 and 7.6.2, tested in accordance with ANSI/BIFMA Standard Method M7.1-2011.					Different methodologies adopted by Hea 02 - Indoor air quality - Emissions from building products - Table 17	Different methodologies adopted by EQ - Low-emitting Materials
5	P	Feature 05. Air Filtration							
		Part 1. Filter Accommodation	If recirculated air is used, the following requirements are met in ventilation assemblies in the main air ducts for recirculated air: a. Rack space and fan capacity is in place for future carbon filters or combination particle/carbon filters. b. The mechanical system is sized to accommodate the additional filters.	Different methodologies adopted by SS-EN 12097	Different methodologies adopted by SS-EN 12097	Different methodologies adopted by SS-EN 12097	Different methodologies adopted by SS-EN 12097	Different methodologies adopted by SS-EN 12097	
		Part 2. Particle Filtration	One of the following requirements is met: a. MERV 13 (or higher) media filters are used in the ventilation system to filter outdoor air. b. Project demonstrates that for 95% of all hours in a calendar year, ambient outdoor PM10 and $PM_2$2.5 levels measured within 1.6 km [1 mi] of the building are below the limits set in the WELL Air Quality Standards Feature.	Different methodologies adopted by SS-EN 12097	Different methodologies adopted by SS-EN 12097	Different methodologies adopted by SS-EN 12097	Different methodologies adopted by SS-EN 12097	Different methodologies adopted by SS-EN 12097	EQ - Construction Indoor Air Quality Management Plan
		Part 3. Air Filtration Maintenance	To verify that the filtration system continues to operate as designed, projects must annually provide IWBI with: a. Records of air filtration maintenance, including evidence that filters have been properly maintained as per the manufacturer's recommendations.	SS-EN 12097	SS-EN 12097	SS-EN 12097	SS-EN 12097		EQ - Construction Indoor Air Quality Management Plan

Attachment V
New and existing buildings - Commented table

		WELL		Swedish local regulations	Miljöbyggnad (New construction 3.0)			BREEAM - SE (New construction 2017)	LEEDv4 - IT (Building Design and construction v4)
					Bronze	Silver	Gold		
6	P	**Feature 06. Microbe And Mold Control**							
		Part 1. Cooling Coil Mold Reduction	In buildings that rely on a mechanical system for cooling, one of the following requirements is met: a. Ultraviolet lamps (using a wavelength of 254 nm so as not to generate ozone) are employed on the cooling coils and drain pans of the mechanical system supplies. Irradiance reaching the cooling coil and drain pan, including the plenum corners, is modeled. b. Building policy states that all cooling coils are inspected on a quarterly basis for mold growth and cleaned if necessary. Dated photos demonstrating adherence are provided to the IWBI on an annual basis.						
		Part 2. Mold Inspections	The following are not present: a. Signs of discoloration and mold on ceilings, walls or floors. b. Signs of water damage or pooling.	BBR 6.5	BBR 6.5	BBR 6.5	BBR 6.5		
7	P	**Feature 07. Construction Pollution**							
		Part 1. Duct Protection	To prevent pollutants from entering the ventilation system, all ducts are either: a. Sealed and protected from possible contamination during construction. b. Vacuumed out prior to installing registers, grills and diffusers.					Man 03 - Responsible construction practices	EQ - Construction Indoor Air Quality Management Plan
		Part 2. Filter Replacement	To prevent pollutants from entering the air supply post-occupancy, if the ventilation system is operating during construction, the following requirement is met: a. All filters are replaced prior to occupancy.					Man 03 - Responsible construction practices	EQ - Construction Indoor Air Quality Management Plan
		Part 3. Moisture Absorption Management	To prevent building materials from absorbing water or moisture during construction, the following requirements are met: a. A separate area is designated to store and protect absorptive materials, including but not limited to carpets, acoustical ceiling panels, fabric wall coverings, insulation, upholstery and furnishings.					Man 03 - Responsible construction practices	EQ - Construction Indoor Air Quality Management Plan
		Part 4. Dust Containment And Removal	The following procedures are followed during building construction: a. All active areas of work are isolated from other spaces by sealed doorways or windows or through the use of temporary barriers. b. Walk-off mats are used at entryways to reduce the transfer of dirt and pollutants. c. Saws and other tools use dust guards or collectors to capture generated dust.					Man 03 - Responsible construction practices	EQ - Construction Indoor Air Quality Management Plan
8	P	**Feature 08. Healthy Entrance**							
		Part 1. Permanent Entryway Walk-Off Systems	To capture particulates from occupant shoes at all regularly used entrances to the project, one of the following is installed and is maintained on a weekly basis: a. Permanent entryway system comprised of grilles, grates or slots, which allow for easy cleaning underneath, at least the width of the entrance and 3 m [10 ft] long in the primary direction of travel. b. Rollout mats, at least the width of the entrance and 3 m [10 ft] long in the primary direction of travel. c. Material manufactured as an entryway walk-off system, at least the width of the entrance and 3 m [10 ft] long in the primary direction of travel.						EQ - Enhanced Indoor Air Quality Strategies
		Part 2. Entryway Air Seal	One of the following is in place to slow the movement of air from outdoors to indoors within mechanicaaly ventilated main building entrances: a. Building entry vestibule with two normally-closed doorways. b. Revolving entrance doors. c. At least 3 normally-shut doors that separate occupied space from the outdoors. For example, a space on the fifth-floor could be separated by the exterior building doors, the first-floor elevator doors and the fifth-floor elevator doors. This option is applicable only for buildings whose entrance lobby is not a regularly occupied space.						EQ - Enhanced Indoor Air Quality Strategies

Attachment V
New and existing buildings - Commented table

WELL				Swedish local regulations	Miljöbyggnad (New construction 3.0)			BREEAM - SE (New construction 2017)	LEEDv4 - IT (Building Design and construction v4)
					Bronze	Silver	Gold		
9	P	Feature 09. Cleaning Protocol							
		Part 1. Cleaning Plan For Occupied Spaces	To achieve sufficient and regular removal of debris and pathogenic microorganisms, a cleaning plan is created in accordance with Table A4 in Appendix C and presented during staff trainings that includes the following elements: a. A list of high-touch and low-touch surfaces in the space (see Table A1 in Appendix C). b. A cleaning schedule that specifies the extent and frequency that a surface is cleaned, sanitized or disinfected in accordance with the Disinfection and Sanitization and Entryway Maintenance sections of Table A4 in Appendix C. c. A cleaning protocol and dated cleaning logs that are maintained and available to all occupants. d. A list of approved product seals with which all cleaning products must comply (see Table A4 in Appendix C). e. The Cleaning Equipment and Training section of Table A4 in Appendix C.						
10	P	Feature 10. Pesticide Management							
		Part 1. Pesticide Use	The following conditions are met for all pesticides and herbicides used on outdoor plants: a. Pesticide and herbicide use is minimized by creating a use plan based on Chapter 3 of the San Francisco Environment Code Integrated Pest Management (IPM) program. b. Only pesticides with a hazard tier ranking of 3 (least hazardous) as per The City of San Francisco Department of the Environment's (SFE) Hazard Tier Review Process are used. Refer to Table A2 in Appendix C for more details.					Different methodologies adopted by Le 01 - Enhancing site ecology	

Attachment V
New and existing buildings - Commented table

WELL				Swedish local regulations	Miljöbyggnad (New construction 3.0)			BREEAM - SE (New construction 2017)	LEEDv4 - IT (Building Design and construction v4)
					Bronze	Silver	Gold		
11	P	Feature 11. Fundamental Material Safety							
		Part 1. Asbestos And Lead Restriction	All newly-installed building materials meet the following materials composition requirements: a. No asbestos. b. Not more than 100 ppm (by weight) added lead.	Different methodologies adopted by BFS 2011:26	Different methodologies adopted by BFS 2011:26	Different methodologies adopted by BFS 2011:26	Different methodologies adopted by BFS 2011:26	Different methodologies adopted by Mat 07 Hazardous substances	EQ - PBT Source reduction - Lead,Cadmium and Copper
		Part 2. Lead Abatement	For repair, renovation or painting on buildings constructed prior to any applicable laws banning or restricting lead paint, lead evaluation and abatement is conducted in accordance with the following guidelines: a. An on-site investigation of the commercial space conducted by a certified risk assessor or inspector technician to determine the presence of any lead-based hazards in paint, dust and soil using the definitions in U.S. EPA 40 CFR Part 745.65 for residential dwellings or child-occupied facilities. b. All commercial and institutional spaces found to have lead-based hazards must adhere to U.S. EPA 40 CFR Part 745.227 work practice standards for conducting lead-based paint activities, as outlined for multi-family dwellings. c. Adherence to final rules, as they are proposed by the U.S. EPA, regarding the lead renovation, repair and painting program for	Different methodologies adopted by BFS 2011:26	Different methodologies adopted by BFS 2011:26	Different methodologies adopted by BFS 2011:26	Different methodologies adopted by BFS 2011:26	Different methodologies adopted by Mat 07 Hazardous substances	EQ - PBT Source reduction - Lead,Cadmium and Copper
		Part 3. Asbestos Abatement	To reduce hazards in buildings constructed prior to any applicable laws banning or restricting asbestos, the following testing, evaluation and abatement is conducted: a. Projects conduct asbestos inspection every three years through an accredited professional per Asbestos Hazard Emergency Response Act (AHERA)'s Asbestos Model Accreditation Plan (MAP), National Standards for Hazardous Air Pollutants (NESHAP), accredited asbestos consultant (State or local equivalent) or by a U.S. EPA accredited company experienced in asbestos assessment. b. In accordance with the Asbestos Hazard Emergency Response Act (AHERA), development, maintenance and update of asbestos management plans, including all necessary actions to minimize asbestos hazards: repair, encapsulation, enclosure, maintenance and removal, follow protocol detailed in the Asbestos	Different methodologies adopted by BFS 2011:26	Different methodologies adopted by BFS 2011:26	Different methodologies adopted by BFS 2011:26	Different methodologies adopted by BFS 2011:26	Different methodologies adopted by Mat 07 Hazardous substances	EQ - PBT Source reduction - Lead,Cadmium and Copper
		Part 4. Polychlorinated Biphenyl Abatement	Any projects undergoing current renovation or demolition which were constructed or renovated between 1950 and the institution of any applicable laws banning or restricting PCBs carry out the following: a. Conduct evaluation and abatement of materials in accordance with the U.S. EPA Steps to Safe PCB Abatement Activities. b. Conduct removal and safe disposal of PCB-containing fluorescent light ballasts in accordance with the U.S. EPA guidelines.	Different methodologies adopted by BFS 2011:26	Different methodologies adopted by BFS 2011:26	Different methodologies adopted by BFS 2011:26	Different methodologies adopted by BFS 2011:26	Different methodologies adopted by Mat 07 Hazardous substances	EQ - PBT Source reduction - Lead,Cadmium and Copper
		Part 5. Mercury Limitation	Mercury-containing equipment and devices are restricted in accordance with the below guidelines: a. Project does not specify or install new mercury containing thermometers, switches and electrical relays. b. Project develops a plan to upgrade current mercury-containing lamps to low-mercury or mercury-free lamp technology per limits specified in Appendix C, Table A5. c. Illuminated exit signs only use Light-Emitting Diode (LED) or Light-Emitting Capacitor (LEC) lamps. d. No mercury vapor or probe-start metal halide high intensity discharge lamps are in use.	Different methodologies adopted by BFS 2011:26	Different methodologies adopted by BFS 2011:26	Different methodologies adopted by BFS 2011:26	Different methodologies adopted by BFS 2011:26	Different methodologies adopted by Mat 07 Hazardous substances	EQ - PBT Source reduction - Lead,Cadmium and Copper

Attachment V
New and existing buildings - Commented table

			WELL		Swedish local regulations	Miljöbyggnad (New construction 3.0)			BREEAM - SE (New construction 2017)	LEEDv4 - IT (Building Design and construction v4)
						Bronze	Silver	Gold		
AIR	12	P	**Feature 12. Moisture Management**							
			Part 1. Exterior Liquid Water Management	A point-by-point narrative describes how liquid water from outside the building is addressed, responding to the nature and intensity of wetting based on the project's site and climate, and includes the following leading concerns: a. Site drainage, including the the impact of any site irrigation. b. The local water table. c. Building penetrations (especially windows and plumbing/electrical/mechanical penetrations). d. Porous building materials connected to exterior sources of liquid water.	Different methodologies adopted by BBR 6.5 Moisture	Different methodologies adopted by 8 - Moisture protection	Different methodologies adopted by 8 - Moisture protection	Different methodologies adopted by 8 - Moisture protection	Different methodologies adopted by Man 06 - Moisture safety	
			Part 2. Interior Liquid Water Management	A point-by-point narrative describes how liquid water from interior sources is addressed, including these leading concerns: a. Plumbing leaks. b. "Hard-piped" plumbing appliances (appliances such as clothes washers exposed to building water pressure even when not in use). c. Porous building materials connected to interior sources of liquid water. d. New building materials with "built-in" high moisture content or building materials wetted during construction but now on the inside of the building.	Different methodologies adopted by BBR 6.5 Moisture	Different methodologies adopted by 8 - Moisture protection	Different methodologies adopted by 8 - Moisture protection	Different methodologies adopted by 8 - Moisture protection	Different methodologies adopted by Man 06 - Moisture safety	
			Part 3. Condensation Management	A point-by-point narrative describes how condensation is addressed, including these leading concerns: a. High interior relative humidity levels, particularly in susceptible areas like bath and laundry rooms and below-grade spaces. b. Air leakage which could wet either exposed interior materials or interstitially "hidden" materials. c. Cooler surfaces, such as basement or slab-on-grade floors, or closets/cabinets on exterior walls. d. Oversized air conditioning units.	Different methodologies adopted by BBR 6.5 Moisture	Different methodologies adopted by 8 - Moisture protection	Different methodologies adopted by 8 - Moisture protection	Different methodologies adopted by 8 - Moisture protection	Different methodologies adopted by Man 06 - Moisture safety	
			Part 4. Material Selection And Protection	A point-by-point narrative describes how moisture-tolerant materials have been selected and/or moisture-sensitive materials (MSP) are being protected, considering these leading concerns: a. Exposed entryways and glazing. b. Porous cladding materials. c. Finished floors in potentially damp or wet rooms such as basements, bathrooms and kitchens. d. Interior sheathing in damp or wet rooms. e. Sealing and storing of absorptive materials during construction.	BBR 6.5 Moisture	Different methodologies adopted by 8 - Moisture protection	Different methodologies adopted by 8 - Moisture protection	Different methodologies adopted by 8 - Moisture protection	Different methodologies adopted by Man 06 - Moisture safety	
	13	O	**Feature 13. Air Flush**							
			Part 1. Air Flush	A building air flush is performed while maintaining an indoor temperature of at least 15 °C [59 °F] and relative humidity below 60%, at one of the following volumes: a. A total air volume of 4,500 m³ of outdoor air per m² of floor area [14,000 ft³ per ft² of floor area] prior to occupancy. b. A total air volume of 1,066 m³ of outdoor air per m² of floor area [3,500 ft³ per ft² of floor area] prior to occupancy, followed by a second flush of 3,200 m³ of outdoor air per m² of floor area [10,500 ft³ per ft² of floor area] post-occupancy. While the post-occupancy flush is taking place, the ventilation system must provide at least 0.1 m³ per minute of outdoor air per m² of floor area [0.3 CFM fresh air per ft² of floor area] at all times.						EQ - Indoor Air Quality Assessment
	14	O	**Feature 14. Air Infiltration Management**							
			Part 1. Air Leakage Testing	The following is performed after substantial completion and prior to occupancy to ensure the structure is airtight: a. Envelope commissioning in accordance with ASHRAE Guideline 0-2005 and the National Institute of Building Sciences (NIBS) Guideline 3-2012 (for new construction or structural renovation). b. Detailed plan for action and remediation of unacceptable conditions..	Different methodologies adopted by BBR 6:255	Different methodologies adopted by BBR 6:255	Different methodologies adopted by BBR 6:255	Different methodologies adopted by BBR 6:255	Different methodologies adopted by BBR 6:255	Different methodologies are adopted

Attachment V
New and existing buildings - Commented table

WELL				Swedish local regulations	Miljöbyggnad (New construction 3.0)			BREEAM - SE (New construction 2017)	LEEDv4 - IT (Building Design and construction v4)
					Bronze	Silver	Gold		
15	O	Feature 15. Increased Ventilation							
		Part 1. Increased Fresh Air Supply	The following is required in terms of the rate of fresh air supply to all regularly occupied spaces: a. Exceed ASHRAE outdoor air supply rates met in the WELL Ventilation Effectiveness feature by 30%.						EQ - Enhanced Indoor Air Quality Strategies
16	O	Feature 16. Humidity Control							
		Part 1. Relative Humidity	At least one of the following is required: a. A ventilation system with the capability to maintain relative humidity between 30% to 50% at all times by adding or removing moisture from the air. b. Modeled humidity levels in the space are within 30% to 50% for at least 95% of all business hours of the year. Buildings in climates with narrow humidity ranges are encouraged to pursue this option.	Different methodologies adopted by BBR 6:255	Different methodologies adopted by BBR 6:255	Different methodologies adopted by BBR 6:255	Different methodologies adopted by BBR 6:255	Different methodologies are adopted	Different methodologies are adopted by EQ - Indoor Air Quality Assessment
17	O	Feature 17. Direct Source Ventilation							
		Part 1. Pollution Isolation And Exhaust	All cleaning and chemical storage units, all bathrooms and all rooms that contain printers and copiers(except those meeting the low-emission criteria of Ecologo CCD 035, Blue Angel RAL-UZ 171, or Green Star) meet the following conditions: a. Are closed from adjacent spaces with self-closing doors. b. Air is exhausted so that all air is expelled rather than recirculated.						EQ - Enhanced Indoor Air Quality Strategies
18	O	Feature 18. Air Quality Monitoring And							
		Part 1. Indoor Air Monitoring	Monitors measure 2 of the following pollutants in a regularly occupied or common space (minimum one per floor) within the building, at intervals no longer than once an hour, and results are annually transmitted to the IWBI: a. Particle count (resolution 35,000 counts per m^3 [1,000 counts per ft^3] or finer) or particle mass (resolution 10 µg/m^3 or finer). b. Carbon dioxide (resolution 25 ppm or finer). c. Ozone (resolution 10 ppb or finer).						EQ - Enhanced Indoor Air Quality Strategies
		Part 2. Air Data Record Keeping And Response	In an effort to consistently meet the WELL parameters, projects provide a written policy specifying: a. Detailed enforcement strategies for monitoring and record-keeping of parameters listed in the Air Quality Standards Feature. b. Records are to be kept for a minimum of 3 years, including full data from field inspectors or laboratory results where appropriate. c. Detailed plan for action and remediation of unacceptable conditions.						EQ - Enhanced Indoor Air Quality Strategies
		Part 3. Environmental Measures Display	Real-time display of the following indoor environmental parameters are made available per 930 m^2 [10,000 ft^2] of regularly occupied space on a screen no smaller than 15 cm [5.9 inches] by 13 cm [5.1 inches]: a. Temperature. b. Humidity. c. Carbon dioxide concentration.						

Attachment V
New and existing buildings - Commented table

WELL				Swedish local regulations	Miljöbyggnad (New construction 3.0)			BREEAM - SE (New construction 2017)	LEEDv4 - IT (Building Design and construction v4)
					Bronze	Silver	Gold		
19	O	Feature 19. Operable Windows							
		Part 1. Full Control	The following requirement is met: a. Every regularly occupied space has operable windows that provide access to outdoor air and daylight.						
		Part 2. Outdoor Air Measurement	Outdoor levels of ozone, PM10, temperature and humidity are monitored based on the following requirement, and data collected is made available to the building occupants: a. A data-gathering station located within 1.6 km [1 mi] of the building.						
		Part 3. Window Operation Management	If the outdoor air measurement system indicates that outdoor air either (i) exceeds ozone levels of 51 ppb or PM10 levels of 50 µg/m³; (ii) has a temperature of 8 °C [15 °F] above or below set indoor temperature; or (iii) has a relative humidity above 60%, then one of the following is used to discourage occupants from opening windows: a. Software on occupants' computers or smartphones. b. Indicator lights at all operable windows.						
20	O	Feature 20. Outdoor Air Systems							
		Part 1. Dedicated Outdoor Air Systems	Dedicated outdoor air systems are used for heating and/or cooling systems and verified as being adequate through one of the following: a. The system complies with local codes or standards regarding dedicated outdoor air systems. b. A detailed design review of the proposed system is conducted by an independent, qualified and registered professional mechanical engineer (not employed or compensated by the mechanical engineer on record). The review addresses thermal comfort (temperature, humidity, air velocity, etc.) and ventilation rates, as well as overall serviceability and system reliability. Report must demonstrate satisfactory compliance with all applicable ASHRAE standards and codes.						
21	O	Feature 21. Displacement Ventilation							
		Part 1. Displacement Ventilation Design And Application	Projects implement a displacement ventilation system for heating and/or cooling in which one of the following is met: a. Low side wall air distribution with the air supply temperature slightly cooler or warmer than the desired space temperature. The system must use the System Performance Evaluation and ASHRAE Guidelines RP-949 as the basis for design. b. Underfloor Air Distribution (UFAD) with the air supply temperature slightly cooler or warmer than the desired space temperature. This system must use ASHRAE's UFAD Guide (Design, Construction and Operations of Underfloor Air Distribution Systems) as the basis of design. Displacement ventilation applied as part of an underfloor air distribution system must be installed at a raised floor height whereby the underfloor area can be cleaned on						EQ - Thermal Comfort
		Part 2. System Performance	The following requirements are met: a. A Computational Fluid Dynamics (CFD) analysis is conducted for the displacement ventilation system. b. The displacement ventilation system meets ASHRAE 55-2013 (Thermal Environmental Conditions for Human Occupancy) for comfort for at least 75% of all regularly occupied space.						EQ - Thermal Comfort

Attachment V
New and existing buildings - Commented table

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					Bronze	Silver	Gold		
22	O	Feature 22. Pest Control							
		Part 1. Pest Reduction	The following are met: a. All non-refrigerated perishable food, including pet food, is stored in sealed containers. b. All indoor garbage cans (except paper recycling bins) less than 113 liters [30 gallons] have lids and hands-free operation, or are enclosed by cabinetry in an under-counter pull-out drawer, with a handle separate from the trash can. c. All indoor garbage cans greater than 113 liters [30 gallons] have a lid.						
		Part 2. Pest Inspection	Inspections show that the following are not present: a. Signs of infestation by cockroaches, termites or other pests.						
23	O	Feature 23. Advanced Air Purification							
		Part 1. Carbon Filtration	To reduce VOCs in the indoor air, buildings which recirculate air use one of the following methods: a. Activated carbon filters in the main air ducts to filter recirculated air. Replacement is required as recommended by the manufacturer. b. A standalone air purifier with a carbon filter used in all regularly occupied spaces. Purifiers must be sized appropriately to the spaces they are serving. Filter replacement is required as recommended by the manufacturer.	Different methodologies are adopted by EN 13779:2007 A.3.2	Different methodologies are adopted by EN 13779:2007 A.3.2	Different methodologies are adopted by EN 13779:2007 A.3.2	Different methodologies are adopted by EN 13779:2007 A.3.2	Different methodologies are adopted	
		Part 2. Air Sanitization	Spaces with more than 10 regular occupants, within buildings that recirculate air, use one of the following treatments or technologies to treat the recirculated air, either integrated within the central ventilation system or as a standalone device: a. Ultraviolet germicidal irradiation. b. Photocatalytic oxidation.						
		Part 3. Air Quality Maintenance	As evidence that the selected filtration/sanitation system chosen continues to be fully operational, projects must annually provide IWBI with: a. Records of air filtration/sanitization maintenance, including evidence that the filter and/or sanitizer has been properly maintained as per the manufacturer's recommendations.	EN 13779:2007 A.3.2	EN 13779:2007 A.3.2	EN 13779:2007 A.3.2	EN 13779:2007 A.3.2		
24	O	Feature 24. Combustion Minimization							
		Part 1. Appliance And Heater Combustion Ban	The following are forbidden in regularly occupied spaces: a. Combustion-based fireplaces, stoves, space-heaters, ranges and ovens.						

Attachment V
New and existing buildings - Commented table

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					Bronze	Silver	Gold		
25	O	Feature 25. Toxic Material Reduction							
		Part 1. Perfluorinated Compound Limitation	No perfluorinated compounds (PFCs) are present in the following condition: a. At levels equal to or greater than 100 ppm in components that constitute at least 5% by weight of a furniture or furnishing (drapes/curtains) assembly.						
		Part 2. Flame Retardant Limitation	Halogenated flame retardants are limited in the following components to 0.01% (100 ppm) to the extent allowable by local code: a. Window and waterproofing membranes, door and window frames and siding. b. Flooring, ceiling tiles and wall coverings. c. Piping and electrical cables, conduits and junction boxes. d. Sound and thermal insulation. e. Upholstered furniture and furnishings, textiles and fabrics.						
		Part 3. Phthalate (Plasticizers) Limitation	DEHP, DBP, BBP, DINP, DIDP or DNOP (often found in polyvinyl chloride [PVC]) are limited in the following components to 0.01% (100 ppm): a. Flooring, including resilient and hard surface flooring and carpet. b. Wall coverings, window blinds and shades, shower curtains, furniture and upholstery. c. Plumbing pipes and moisture barriers.						
		Part 4. Isocyanate-Based Polyurethane Limitation	Isocyanate-based polyurethane products are not used in: a. Interior finishes.						
		Part 5. Urea-Formaldehyde Restriction	Urea-formaldehyde presence is limited in the following components to 100 ppm: a. Furniture or any composite wood products. b. Laminating adhesives and resins. c. Thermal insulation						
26	O	Feature 26. Enhanced Material Safety							
		Part 1. Precautionary Material Selection	At least one of the following requirements is met: a. The project completes all Imperatives in the Materials Petal under the Living Building Challenge 3.0. b. At least 25% of products by cost (including furnishings, built-in furniture, all interior finishes and finish materials) are Cradle to Cradle™ Material Health Certified with a V2 Gold or Platinum or V3 Bronze, Silver, Gold or Platinum Material Health Score. c. At least 25% of products by cost (including furnishings, built-in furniture, all interior finishes and finish materials) have no GreenScreen® Benchmark 1, List Translator 1 or List Translator Possible 1 substances over 1,000 ppm, as verified by a qualified Ph.D. toxicologist or Certified Industrial Hygienist. d. At least 25% of products by cost (including furnishings, built-in furniture, all interior finishes and finish materials) meet some	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted by Mat 03 Responsible sourcing of construction products	Different methodologies are adopted

Attachment V
New and existing buildings - Commented table

WELL				Swedish local regulations	Miljöbyggnad (New construction 3.0)			BREEAM - SE (New construction 2017)	LEEDv4 - IT (Building Design and construction v4)
					Bronze	Silver	Gold		
27	O	Feature 27. Antimicrobial Activity For							
		Part 1. High-Touch Surfaces	All countertops and fixtures in bathrooms and kitchens, and all handles, doorknobs, lightswitches and elevator buttons are one of the following: a. Coated with or comprised of a material that is abrasion-resistant, non-leaching and meets EPA testing requirements for antimicrobial activity. b. Cleaned with a UV cleaning device that has an output of at least 4 mW/cm², used as recommended by the manufacturer.						
28	O	Feature 28. Cleanable Environment							
		Part 1. Material Properties	High-touch and non-porous surfaces (refer to Table A1 in Appendix C) meet the following requirements: a. Smooth and free of defects visible to the unaided eye. b. Finished to maintain smooth welds and joints. c. Free of sharp internal angles, corners and crevices.						
		Part 2. Cleanability	The following requirements are met: a. No permanent wall-to-wall carpeting is used; only removable rugs, removable carpet tiles or hard surfaces are allowed. b. The building provides adequate flexible storage space for all permanent, movable items to allow high-touch surfaces to be completely cleared during cleaning. c. Right angles between walls and windows/floors are sealed.						
29	O	Feature 29. Cleaning Equipment							
		Part 1. Equipment And Cleaning Agents	All cleaning equipment meets the following: a. Mops, rags and dusters used to clean all non-porous surfaces consist of microfiber with a denier no higher than 1.0. b. Mops do not have to be wrung by hand. c. Vacuum cleaners contain filters with a HEPA rating.						
		Part 2. Chemical Storage	All cleaning equipment meets the following: a. In cleaning storage areas, bleach and ammonia-based cleaning products are kept in separate bins from one another. b. Any bins and bottles of bleach and ammonia-based cleaning products are affixed with large, color-coded labels indicating they are not to be mixed.						

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New and existing buildings - Commented table

		WELL		Swedish local regulations	Miljöbyggnad (New construction 3.0)			BREEAM - SE (New construction 2017)	LEEDv4 - IT (Building Design and construction v4)
					Bronze	Silver	Gold		
30	P	**Feature 30. Fundamental Water Quality**							
		Part 1. Sediment	All water being delivered to the project area except water not designated for human contact meets the following requirements: a. Turbidity of the water sample is less than 1.0 NTU						Different methodologies are adopted by Ministero della salute - Acque potabili - Parametri - Torbidità
		Part 2. Microorganisms	All water being delivered to the project area except water not designated for human contact meets the following requirements: a. Total coliforms (including E. coli) are not detected in the sample.	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted by Ministero della salute - Acque potabili - Parametri - Microorganismi
31	P	**Feature 31. Inorganic Contaminants**							
		Part 1. Dissolved Metals	All water being delivered to the project area for human consumption (at least one water dispenser per project) meets the following limits: a. Lead less than 0.01 mg/L. b. Arsenic less than 0.01 mg/L. c. Antimony less than 0.006 mg/L. d. Mercury less than 0.002 mg/L. e. Nickel less than 0.012 mg/L. f. Copper less than 1.0 mg/L.						Different methodologies are adopted by Ministero della salute - Acque potabili - Parametri - Parametri chimici
32	P	**Feature 32. Organic Contaminants**							
		Part 1. Organic Pollutants	All water being delivered to the project area for human consumption (at least one water dispenser per project) meets the following limits: a. Styrene less than 0.0005 mg/L b. Benzene less than 0.001 mg/L c. Ethylbenzene less than 0.3 mg/L. d. Polychlorinated biphenyls less than 0.0005 mg/L. e. Vinyl chloride less than 0.002 mg/L. f. Toluene less than 0.15 mg/L. g. Xylenes (total: m, p and o) less than 0.5 mg/L. h. Tetrachloroethylene less than 0.005 mg/L.						Ministero della salute - Acque potabili - Parametri - Parametri chimici
33	P	**Feature 33. Agricultural Contaminants**							
		Part 1. Herbicides And Pesticides	All water being delivered to the project area for human consumption (at least one water dispenser per project) meets the following limits: a. Atrazine less than 0.001 mg/L b. Simazine less than 0.002 mg/L c. Glyphosate less than 0.70 mg/L. d. 2,4-Dichlorophenoxyacetic acid less than 0.07 mg/L.						
		Part 2. Fertilizers	All water being delivered to the project area for human consumption (at least one water dispenser per project) meets the following limits: a. Nitrate less than 10 mg/L nitrogen.						Ministero della salute - Acque potabili - Parametri - Parametri chimici
34	P	**Feature 34. Part Public Water Additives**							
		Part 1. Disinfectants	All water being delivered to the project area for human consumption (at least one water dispenser per project) and showers/baths meets the following limits: a. Residual chlorine less than 0.6 mg/L. b. Residual chloramine less than 4 mg/L						Ministero della salute - Acque potabili - Parametri - Parametri chimici
		Part 2. Disinfectant Byproducts	All water being delivered to the project area for human consumption (at least one water dispenser per project) meets the following limits: a. Total trihalomethanes less than 0.08 mg/L. b. Total haloacetic acids less than 0.06 mg/L						Ministero della salute - Acque potabili - Parametri - Parametri chimici
		Part 3. Fluoride	All water being delivered to the project area for human consumption (at least one water dispenser per project) meets the following limits: a. Fluoride less than 4.0 mg/L						Ministero della salute - Acque potabili - Parametri - Parametri chimici

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					Bronze	Silver	Gold		
WATER	35	O	**Feature 35. Periodic Water Quality Testing**						
			Part 1. Quarterly Testing	All water being delivered to the project area for human consumption is tested quarterly (with reports submitted annually to the IWBI) for the presence of the following dissolved metals or metalloids: a. Lead. b. Arsenic. c. Mercury. d. Copper.	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted
			Part 2. Water Data Record Keeping And Response	Projects provide a written policy specifying: a. Detailed enforcement strategies for monitoring and keeping record of water quality parameters listed in the WELL Building Standard. b. Records are kept for a minimum of 3 years, including full data from field inspections or laboratory results where appropriate. c. A detailed plan for action and remediation of unacceptable conditions.						
	36	O	**Feature 36. Water Treatment**						
			Part 1. Organic Chemical Removal	All water being delivered to the project area for human consumption or showers/baths is treated with the following: a. Activated carbon filter.						
			Part 2. Sediment Filter	All water being delivered to the project area for human consumption or showers/baths is treated with the following: a. Filter rated to remove suspended solids with pore size 1.5 µm or less.	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted
			Part 3. Microbial Elimination	All water being delivered to the project area for human consumption or showers/baths is treated with one of the following: a. UVGI water sanitation. b. Filter rated by the NSF to remove microbial cysts.	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted
			Part 4. Water Quality Maintenance	To verify that the selected filtration/sanitation system chosen continues to operate as designed, projects must annually provide the IWBI with: a. Record-keeping for a minimum of 3 years, including evidence that the filter and/or sanitizer has been properly maintained as per the manufacturer's recommendation.	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted
			Part 5. Legionella Control	A point-by-point narrative describes how the building addresses Legionella, and includes the following: a. Formation of a team for legionella management in the building. b. Water system inventory and production of process flow diagrams. c. Hazard analysis of water assets. d. Identification of critical control points. e. Maintenance and control measures, monitoring, establishment of performance limits and corrective actions. f. Documentation, verification and validation procedures.	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted
	37	O	**Feature 37. Drinking Water Promotion**						
			Part 1. Drinking Water Taste Properties	All water being delivered to the project area for human consumption: a. Aluminum less than 0.2 mg/L. b. Chloride less than 250 mg/L. c. Manganese less than 0.05 mg/L. d. Sodium less than 270 mg/L. e. Sulfate less than 250 mg/L. f. Iron less than 0.3 mg/L. g. Zinc less than 5 mg/L. h. Total Dissolved Solids less than 500 mg/L.						Different methodologies are adopted by Ministero della salute - Acque potabili - Parametri - Parametri chimici
			Part 2. Drinking Water Access	To encourage water consumption, the following is met: a. At least one dispenser is located within 30 m [100 ft] of all parts of regularly occupied floor space (minimum one per floor).	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted
			Part 3. Water Dispenser Maintenance	The components of dispensers that provide water for human consumption are cleaned with at least the following regularity: a. Daily, for mouthpieces, protective guards and collective basins, to prevent lime and calcium build-up. b. Quarterly, for outlet screens and aerators, to remove debris and sediment.						

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					Bronze	Silver	Gold		
38	P	Feature 38. Fruits And Vegetables							
		Part 1. Fruit And Vegetable Variety	If solid foods are sold or distributed on a daily basis on the premises by (or under contract with) the project owner, then the selection includes at least one of the following: a. At least 2 varieties of fruits (containing no added sugar) and at least 2 varieties of non-fried vegetables. b. At least 50% of available options are fruits and/or non-fried vegetables.						
		Part 2. Fruit And Vegetable Promotion	Cafeterias operated or contracted by the project owner, if present, include the following design interventions: a. Salad bar or a similar salad-providing section which is positioned away from the walls, allowing 360° access. b. Fruits and vegetables are visually apparent, either through display or through color photographs on the menu. c. Vegetable dishes are placed at the beginning of the food service line. d. Fruits or fruit dishes are placed in a bowl or in a stand at the checkout location.						
39	P	Feature 39. Processed Foods							
		Part 1. Refined Ingredient Restrictions	All foods, beverages, snacks and meals sold or distributed on a daily basis on the premises by (or under contract with) the project owner meet the following conditions: a. No beverage with more than 30 g of sugar per container is sold or distributed through catering services, vending machines or pantries. Bulk containers of 1.9 L (2 quart) or larger are exempt from this requirement. b. In beverage vending machines and on food service menus, at least 50% of slots or listings are products that have 15 g of sugar or less per 240 mL [8 oz] serving. c. No individually sold, single-serving, non-beverage food item contains more than 30 g of sugar. d. In any foods where a grain flour is the primary ingredient by weight, a whole grain must be the primary ingredient.						
		Part 2. Trans Fat Ban	All foods, beverages, snacks and meals sold or distributed on a daily basis on the premises by (or under contract with) the project owner do not contain: a. Partially-hydrogenated oil.						
40	P	Feature 40. Food Allergies							
		Part 1. Food Allergy Labeling	All foods sold or distributed on a daily basis on the premises by (or under contract with) the project owner are clearly labeled to indicate if they contain the following allergens: a. Peanuts. b. Fish. c. Shellfish. d. Soy. e. Milk and dairy products. f. Egg. g. Wheat. h. Tree nuts. i. Gluten, in compliance with the definitions and restrictions set forth by the FDA in 21 C.F.R. § 101.91.						
41	P	Feature 41. Hand Washing							
		Part 1. Hand Washing Supplies	The following are provided, at a minimum, at all sink locations: a. Fragrance-free non-antibacterial soap. b. Disposable paper towels (air dryers are not forbidden, but are supplemented).						
		Part 2. Contamination Reduction	The following is provided at all sink locations: a. Liquid soap in dispensers with disposable and sealed soap cartridges.						
		Part 3. Sink Dimensions	Bathroom and kitchen sinks meet the following requirements: a. Sink column of water is at least 25 cm [10 inches] in length. b. The handwashing basin is at least 23 cm [9 inches] in width and length.						

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New and existing buildings - Commented table

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						Bronze	Silver	Gold		
NOURISHMENT	42	P	**Feature 42. Food Contamination**							
			Part 1. Cold Storage	If raw meat is prepared or stored on site, cold storage spaces contain the following: a. At least one removable, cleanable drawer or container located at the bottom of the unit, designated and labeled for storing raw foods (uncooked meat, fish and poultry). b. A visual display of holding temperatures to ensure accurate representation of storage temperatures.						
	43	P	**Feature 43. Artificial Ingredients**							
			Part 1. Artificial Substance Labeling	All food sold or distributed on a daily basis on the premises by (or under contract with) the project owner are labeled to indicate if they contain the following: a. Artificial colors. b. Artificial flavors. c. Artificial sweeteners. d. Brominated vegetable oils. e. Potassium bromate. f. BHA (Butylated hydroxyanisole). g. BHT (Butylated hydroxytoluene). h. Monosodium glutamate (MSG). i. Hydrolyzed vegetable protein (HVP). j. Sodium nitrate and sodium nitrite. k. Sulfites.						
	44	P	**Feature 44. Nutritional Information**							
			Part 1. Detailed Nutritional Information	For foods and beverages sold or distributed on a dailiy basis on the premises by (or under contract with) the project owner, the following are accurately displayed (per meal or item) on packaging, menus or signage: a. Total calories b. Macronutrient (total protein, total fat and total carbohydrate) in weight and as a percent of estimated daily requirements (Daily Values). c. Micronutrient content (vitamins A and C, calcium and iron) in weight or international units (IU) and/or as a percent of the estimated daily requirements (Daily Values). d. Total sugar content.						
	45	P	**Feature 45. Food Advertising**							
			Part 1. Advertising And Environmental Cues	The following requirement is met: a. Advertisements for any food or beverage items that do not conform to the requirements set forth in the Processed Foods Feature are not displayed on the premises.						
			Part 2. Nutritional Messaging	Using prominent displays such as educational posters, brochures or other visual media, designated eating areas or common areas contain a total of at least 3 instances of messaging intended to achieve each of the following requirements: a. Encourage the consumption of whole, natural foods and cuisines. b. Discourage the consumption of sugary or processed foods, beverages and snacks.						

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					Bronze	Silver	Gold		
46	O	Feature 46. Safe Food Preparation Materials							
		Part 1. Cooking Material	Pots, pans and other cooking tools used to prepare food (except cutting boards) are made entirely of one or more of the following inert materials: a. Ceramics, except those containing lead. b. Cast iron. c. Stainless steel. d. Glass. e. Coated aluminum. f. Solid (non-laminated) wood that is untreated or treated with food-grade mineral or linseed oil.						
		Part 2. Cutting Surfaces	All cutting boards are made from the following materials, and are replaced when they become excessively worn or have deep grooves from cutting: a. Marble. b. Plastic. c. Glass. d. Pyroceramic. e. Solid (non-laminated) wood that is untreated or treated with food-grade mineral or linseed oil.						
47	O	Feature 47. Serving Sizes							
		Part 1. Meal Sizes	Where food sold or distributed on a daily basis by (or under contract with) the project owner is prepared to order, for at least half of all available entrées, the following option is available and listed on the menu: a. A version or portion of the entrée that is 650 calories or less and at a lower cost compared to the larger, regular version.						
		Part 2. Dinnerware Sizes	Where food sold or distributed on a daily basis on the premises by (or under contract with) the project owner is self-serve and requires the use of a serving plate, bowl or cup, each of the following is met (as applicable): a. Circular plates: the diameter of a plate is no larger than 24 cm [9.5 inches]. b. Non-circular plates: the total surface area of a plate does not exceed 452 cm² [70 inches²]. c. Bowls are no larger than 296 mL [10 oz]. d. Cups are no larger than 240 mL [8 oz].						
48	O	Feature 48. Special Diets							
		Part 1. Food Alternatives	Meals or catering provided by (or under contract with) the project owner include at least one option for each of the following criteria (as necessary, by request): a. Peanut-free. b. Gluten-free, in compliance with the definitions and restrictions set forth by the FDA in 21 C.F.R. § 101.92. c. Lactose-free. d. Egg-free. e. Vegan (contains no animal products). f. Vegetarian (contains no animal products, except for eggs and dairy).						

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New and existing buildings - Commented table

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					Bronze	Silver	Gold		
49	O	Feature 49. Responsible Food Production							
		Part 1. Sustainable Agriculture	Produce is sold or distributed on the premises on a daily basis by (or under contract with) the project owner and meets the following criteria: a. Federally Certified Organic labeling (based on the country).						
		Part 2. Humane Agriculture	If meat, egg or dairy products are sold or distributed on the premises on a daily basis (or under contract with) the project owner, they meet the following criteria for humane treatment of livestock: a. Humane Certified™ labeling, or equivalent (based on the country). b. Federally Certified Organic labeling (based on the country).						
50	O	Feature 50. Food Storage							
		Part 1. Storage Capacity	The space provides cold storage that meets the following requirements: a. Total volume of at least 20 L [0.7 ft³] per occupant (no more than 7,000 L [247 ft³] of combined space is required)	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	
51	O	Feature 51. Food Production							
		Part 1. Gardening Space	A space of at least 0.1 m² [1 ft²] per occupant (no more than 70 m² [754 ft²] maximum is required) is allocated within 0.8 km [0.5 mi] of the project boundary for one or a combination of the following: a. A garden. b. A greenhouse.						
		Part 2. Planting Support	Adequate quantities of the following supplies are provided to grow and maintain vegetables, herbs or other edible plants in the Gardening Space provided: a. Planting medium. b. Irrigation. c. Lighting (interior spaces only). d. Plants. e. Gardening tools.						
52	O	Feature 52. Mindful Eating							
		Part 1. Eating Spaces	Eating spaces for employees adhere to the following requirements: a. Contain tables and chairs to accommodate at least 25% of total employees at a given time. b. Are located within 60 m [200 ft] of at least 90% of all occupants.	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	
		Part 2. Break Area Furnishings	Eating spaces for employees contain all of the following: a. Refrigerator, device for reheating food (such as microwave or toaster oven), and sink. b. Amenities for dish washing. c. At least one cabinet or storage unit available for employee use. d. Eating utensils, including spoons, forks, knives and microwave-safe plates and cups.	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	

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					Bronze	Silver	Gold		
53	P	Feature 53. Visual Lighting Design							
		Part 1. Visual Acuity For Focus	The following requirements are met at workstations or desks: a. The ambient lighting system is able to maintain an average light intensity of 215 lux [20 fc] or more, measured on the horizontal plane, 0.76 m [30 inches] above finished floor. The lights may be dimmed in the presence of daylight, but they are able to independently achieve these levels. b. The ambient lighting system is zoned in independently controlled banks no larger than 46.5 m² [500 ft²] or 20% of open floor area of the room (whichever is larger). c. If ambient light is below 300 lux [28 fc], task lights providing 300 to 500 lux [28 to 46 fc] at the work surface are available upon request.	Different methodologies are adopted by SS-EN 12464-1:2011 4.2	Different methodologies are adopted by SS-EN 12464-1:2011 4.2	Different methodologies are adopted by SS-EN 12464-1:2011 4.2	Different methodologies are adopted by SS-EN 12464-1:2011 4.2	Different methodologies are adopted by Hea 01 Visual comfort	Different methodologies are adopted by EQ - Interior Lighting
		Part 2. Brightness Management Strategies	Provide a narrative that describes strategies for maintaining luminance balance in spaces, which takes into consideration at least two of the following: a. Brightness contrasts between main rooms and ancillary spaces, such as corridors and stairwells, if present. b. Brightness contrasts between task surfaces and immediately adjacent surfaces, including adjacent visual display terminal screens. c. Brightness contrasts between task surfaces and remote, non-adjacent surfaces in the same room. d. The way brightness is distributed across ceilings in a given room.	Different methodologies are adopted by SS-EN 12464-1:2011	Different methodologies are adopted by SS-EN 12464-1:2011	Different methodologies are adopted by SS-EN 12464-1:2011	Different methodologies are adopted by SS-EN 12464-1:2011	Different methodologies are adopted by Hea 01 Visual comfort	Different methodologies are adopted by EQ - Interior Lighting
54	P	Feature 54. Circadian Lighting Design							
		Part 1. Melanopic Light Intensity For Work Areas	At least one of the following requirements is met: a. Light models or light calculations (which may incorporate daylight) show that at least 250 equivalent melanopic lux is present at 75% or more of workstations, measured on the vertical plane facing forward, 1.2 m [4 ft] above finished floor (to simulate the view of the occupant). This light level is present for at least 4 hours per day for every day of the year. b. For all workstations, electric lights (which may include task lighting) provide maintained illuminance on the vertical plane of equivalent melanopic lux, greater than or equal to the lux recommendations in the Vertical (Ev) Targets for the 25-65 category in Table B1 of IES-ANSI RP-1-12. For example, Reception Desks are provided with 150 equivalent melanopic lux from the electric lights.	Different methodologies are adopted by SS-EN 12464-1:2011	Different methodologies are adopted by SS-EN 12464-1:2011	Different methodologies are adopted by SS-EN 12464-1:2011	Different methodologies are adopted by SS-EN 12464-1:2011	Different methodologies are adopted by Hea 01 Visual comfort	Different methodologies are adopted by EQ - Interior Lighting
55	P	Feature 55. Electric Light Glare Control							
		Part 1. Lamp Shielding	Lamps with the following luminance in regularly occupied spaces are shielded by the angles listed below or greater: a. Less than 20,000 cd/m², including reflected sources: no shielding required. b. 20,000 to 50,000 cd/m²: 15°. c. 50,000 to 500,000 cd/m² : 20°. d. 500,000 cd/m² and above: 30°.	SS-EN 12464-1:2011	SS-EN 12464-1:2011	SS-EN 12464-1:2011	SS-EN 12464-1:2011	Different methodologies are adopted by Hea 01 Visual comfort	Different methodologies are adopted by EQ - Interior Lighting
		Part 2. Glare Minimization	At workstations, desks, and other seating areas the following requirement is met: a. Bare lamps and luminaire surfaces more than 53° above the center of view (degrees above horizontal) have luminances less than 8,000 cd/m².	Different methodologies are adopted by SS-EN 12464-1:2011	Different methodologies are adopted by SS-EN 12464-1:2011	Different methodologies are adopted by SS-EN 12464-1:2011	Different methodologies are adopted by SS-EN 12464-1:2011	Different methodologies are adopted by Hea 01 Visual comfort	Different methodologies are adopted by EQ - Interior Lighting

Attachment V
New and existing buildings - Commented table

			WELL	Swedish local regulations	Miljöbyggnad (New construction 3.0)			BREEAM - SE (New construction 2017)	LEEDv4 - IT (Building Design and construction v4)
					Bronze	Silver	Gold		
LIGHT	56	P	**Feature 56. Solar Glare Control**						
			Part 1. View Window Shading	At least one of the following is present for all glazing less than 2.1 m [7 ft] above the floor in regularly occupied spaces: a. Interior window shading or blinds that are controllable by the occupants or set to automatically prevent glare. b. External shading systems that are controllable by the occupants or set to automatically prevent glare. c. Variable opacity glazing, such as electrochromic glass, which can reduce transmissivity by 90% or more.	SS-EN 12464-1:2011	SS-EN 12464-1:2011	SS-EN 12464-1:2011	SS-EN 12464-1:2011	Different methodologies are adopted by Hea 01 Visual comfort	EQ - Daylight
			Part 2. Daylight Management	At least one of the following is required for all glazing greater than 2.1 m [7 ft] above the floor: a. Interior window shading or blinds that are controllable by the occupants or set to automatically prevent glare. b. External shading systems that are set to automatically prevent glare. c. Interior light shelves to reflect sunlight toward the ceiling. d. A film of micro-mirrors on the window that reflects sunlight toward the ceiling. e. Variable opacity glazing, such as electrochromic glass, which can reduce transmissivity by 90% or more.	SS-EN 12464-1:2011	SS-EN 12464-1:2011	SS-EN 12464-1:2011	SS-EN 12464-1:2011	Different methodologies are adopted by Hea 01 Visual comfort	EQ - Daylight
	57	O	**Feature 57. Low-Glare Workstation Design**						
			Part 1. Glare Avoidance	The following requirements are met: a. To minimize glare caused by incoming sunlight, all computer screens at desks located within 4.5 m [15 ft] of view windows can be oriented within a 20° angle perpendicular to the plane of the nearest window. b. Overhead luminaires are not aimed directly at computer screens.	Different methodologies are adopted by SS-EN 12464-1:2011	Different methodologies are adopted by SS-EN 12464-1:2011	Different methodologies are adopted by SS-EN 12464-1:2011	Different methodologies are adopted by SS-EN 12464-1:2011	Different methodologies are adopted by Hea 01 Visual comfort	Different methodologies are adopted by EQ - Interior Lighting
	58	O	**Feature 58. Color Quality**						
			Part 1. Color Rendering Index	To accurately portray colors in the space and enhance occupant comfort, all electric lights (except decorative fixtures, emergency lights and other special-purpose lighting) meet the following conditions: a. Color Rendering Index Ra (CRI, average of a. R1 through R8) of 80 or higher. b. Color Rendering Index R9 of 50 or higher.						
	59	O	**Feature 59. Surface Design**						
			Part 1. Working And Learning Area Surface Reflectivity	The following Light Reflectance Values (LRV) are met: a. Ceilings have an average LRV of 0.8 (80%) or more for at least 80% of surface area in regularly occupied spaces. b. Walls have an average LRV of 0.7 (70%) or more for at least 50% of surface area directly visible from regularly occupied spaces. c. Furniture systems have an average LRV of 0.5 (50%) or more for 50% of surface area directly visible from regularly occupied spaces.	Different methodologies are adopted by SS-EN 12464-1:2011	Different methodologies are adopted by SS-EN 12464-1:2011	Different methodologies are adopted by SS-EN 12464-1:2011	Different methodologies are adopted by SS-EN 12464-1:2011	Different methodologies are adopted by Hea 01 Visual comfort	
	60	O	**Feature 60. Automated Shading And Dimming**						
			Part 1. Automated Sunlight Control	All windows larger than 0.55 m² [6 ft²] have the following: a. Shading devices that automatically engage when light sensors indicate that sunlight could contribute to glare at workstations and other seating areas.					
			Part 2. Responsive Light Control	The following requirements are met in all major workspace areas: a. All lighting except decorative fixtures is programmed using occupancy sensors to automatically dim to 20% or less (or switch off) when the zone is unoccupied. b. All lighting except decorative fixtures has the capacity and is programmed to dim continuously in response to daylight.						

Attachment V
New and existing buildings - Commented table

WELL				Swedish local regulations	Miljöbyggnad (New construction 3.0)			BREEAM - SE (New construction 2017)	LEEDv4 - IT (Building Design and construction v4)
					Bronze	Silver	Gold		
61	O	Feature 61. Right To Light							
		Part 1. Lease Depth	The following requirement is met: a. 75% of the area of all regularly occupied spaces is within 7.5 m [25 ft] of view windows.	SS-EN 12464-1:2011	SS-EN 12464-1:2011	SS-EN 12464-1:2011	SS-EN 12464-1:2011	Hea 01 Visual comfort	
		Part 2. Window Access	The following conditions are met: a. 75% of all workstations are within 7.5 m [25 ft] of an atrium or a window with views to the exterior. b. 95% of all workstations are within 12.5 m [41 ft] of an atrium or a window with views to the exterior.	SS-EN 12464-1:2011	SS-EN 12464-1:2011	SS-EN 12464-1:2011	SS-EN 12464-1:2011	Hea 01 Visual comfort	
62	O	Feature 62. Daylight Modeling							
		Part 1. Healthy Sunlight Exposure	Lighting simulations demonstrate that the following conditions are expected: a. Spatial daylight autonomy (sDA300,50%) is achieved for at least 55% of regularly occupied space. In other words, at least 55% of the space receives at least 300 lux [28 fc] of sunlight for at least 50% of operating hours each year. b. Annual sunlight exposure (ASE1000,250) is achieved for no more than 10% of regularly occupied space. In other words, no more than 10% of the area can receive more than 1,000 lux [93 fc] for 250 hours each year.	Different methodologies are adopted by SS-EN 12464-1:2011	Different methodologies are adopted by SS-EN 12464-1:2011	Different methodologies are adopted by SS-EN 12464-1:2011	Different methodologies are adopted by SS-EN 12464-1:2011	Different methodologies are adopted by Hea 01 Visual comfort	EQ - Daylight
63	O	Feature 63. Daylighting Fenestration							
		Part 1. Window Sizes For Working And Learning Spaces	The following conditions are met on facades along regularly occupied spaces: a. Window-wall ratio as measured on external elevations is between 20% and 60%. Percentages greater than 40% require external shading or adjustable opacity glazing to control unwanted heat gain and glare. b. Between 40% and 60% of window area is at least 2.1 m [7 ft] above the floor (Daylight Glass).					Hea 01 Visual comfort	
		Part 2. Window Transmittance In Working And Learning Areas	The following visible transmittance (VT) conditions are met for all non-decorative glazing: a. All glazing located higher than 2.1 m [7 ft] from the floor (Daylight Glass) has VT of 60% or more. b. All glazing located 2.1 m [7 ft] or lower from the floor (Vision Glass) has VT of 50% or more.						
		Part 3. Uniform Color Transmittance	All windows used for daylighting meet the following requirement: a. The visible light transmittance of wavelengths between 400 and 650 nm does not vary by more than a factor of 2.						

Attachment V
New and existing buildings - Commented table

WELL				Swedish local regulations	Miljöbyggnad (New construction 3.0)			BREEAM - SE (New construction 2017)	LEEDv4 - IT (Building Design and construction v4)
					Bronze	Silver	Gold		
64	P	**Feature 64. Interior Fitness Circulation**							
		Part 1. Stair Accessibility	In projects of 2 to 4 floors, at least one common staircase meets the following requirements: a. Stairs are accessible to regular a. building occupants during all regular business hours. b. Wayfinding signage and point-of-decision prompts are present to encourage stair use (at least one sign per elevator bank).						
		Part 2. Stair Promotion	In projects of 2 to 4 floors, at least one common staircase meets the following requirements: a. Located within 7.5 m [25 ft] of the entrance to the building or the edge of its lobby. b. Clearly visible from the main entrance to the project, or located visually before any elevators present upon entering from the main entrance. c. Stair width set at a minimum of 1.4 m [56 in] between handrails.						
		Part 3. Facilitative Aesthetics	In projects of 2 to 4 floors, common stairs, entryways and corridors display elements of aesthetic appeal by incorporating at least 2 of the following: a. Artwork, including decorative painting. b. Music. c. Daylighting using windows or skylights of at least 1 m² [10.8 ft²] in size. d. View windows to the outdoors or building interior. e. Light levels of at least 215 lux [20 fc] when the stairs are in use.						
65	P	**Feature 65. Activity Incentive Programs**							
		Part 1. Activity Incentive Programs	A plan with at least 2 of the following is developed and implemented: a. Tax-exempt payroll deductions relating to bicycle commuting and mass transit (such as the Transportation Fringe Benefits in Section 132(f) of the U.S. Internal Revenue Code) or a direct subsidy for an equivalent amount. b. $200 or greater reimbursements or incentive payments in every 6-month period that an employee meets a 50-visit minimum to the gym or professional program. c. A subsidy of at least $240 per year is available to each interested employee to cover the costs of participation in races, group fitness activities and sports teams. d. A subsidy of at least $240 per year is available to employees to cover the costs of fitness or training programs offered in professional gyms or studios. e. A subsidy of at least $50 per year is available to employees to cover the costs of a bicycle share						
66	O	**Feature 66. Structured Fitness Opportunities**							
		Part 1. Professional Fitness Programs	The following is offered at least once a month: a. Onsite fitness or training programs.						
		Part 2. Fitness Education	Classes from a qualified professional are offered at least once every 3 months to cover the following: a. Different modes of exercise. b. Safe fitness techniques. c. Comprehensive exercise regimens						

Attachment V
New and existing buildings - Commented table

	WELL				Swedish local regulations	Miljöbyggnad (New construction 3.0)			BREEAM - SE (New construction 2017)	LEEDv4 - IT (Building Design and construction v4)
						Bronze	Silver	Gold		
FITNESS	67	O	Feature 67. Exterior Active Design							
			Part 1. Pedestrian Amenities	Sites in which the building takes up less than 75% of the total lot size provide at least one of the following within highly-trafficked areas, such as building entrances, public transportation stops and walking paths: a. A bench. b. A cluster of movable chairs and tables. c. A drinking fountain or water refilling station.				-		SS - Open space
			Part 2. Pedestrian Promotion	To encourage more pedestrian activity, sites in which the building takes up less than 75% of the total lot size include at least two of the following in the outdoors: a. A water fountain or other water feature. b. A plaza. c. A garden. d. Public art.						
			Part 3. Neighborhood Connectivity	To encourage neighborhood connectivity and daily activity, at least one of the following requirements is met: a. The building address has a Walk Score® of 70 or greater. b. The project is eligible for at least 3 points in the LEED BD+C: New Construction "Surrounding density and diverse uses" credit.						SS - Open space
	68	O	Feature 68. Physical Activity Spaces							
			Part 1. Site Space Designation For Offices	Spaces with more than 10 regular occupants provide the following: a. Dedicated exercise space that is at least 18.6 m² [200 ft²] plus 0.1 m² [1 ft²] per regular building occupant, up to a maximum of 370 m² [4,000 ft²].						
			Part 2. External Exercise Spaces	At least one of the following is accessible within 0.8 km [0.5 mi] walking distance of the building: a. Parks with playgrounds, workout stations, trails or an accessible body of water. b. Complimentary access to gyms, playing fields or swimming pools.						

Attachment V
New and existing buildings - Commented table

WELL				Swedish local regulations	Miljöbyggnad (New construction 3.0)			BREEAM - SE (New construction 2017)	LEEDv4 - IT (Building Design and construction v4)
					Bronze	Silver	Gold		
69	O	Feature 69. Active Transportation Support							
		Part 1. Bicycle Storage And Support	The following are provided onsite or within 200 m [650 ft] of the building's main entrance: a. Basic bicycle maintenance tools, including tire pumps, patch kits and hex keys available for use. b. Separate and secure bicycle storage for at least 5% of regular building occupants, as well as short-term bicycle storage for at least 2.5% of all peak visitors.						LT - Bycicle facility
		Part 2. Post Commute And Workout Facilities	The following are provided onsite or within 200 m [650 ft] of the building's main entrance: a. One shower with changing facility for the first 100 regular building occupants and one additional shower for every 150 regular building occupants thereafter. b. One locker for every 5 regular building occupants, or evidence that the lockers provided exceed demand by at least 20%.						LT - Bycicle facility
70	O	Feature 70. Fitness Equipment							
		Part 1. Cardiorespiratory Exercise Equipment	Some combination of the following is provided in the interior fitness space free of charge, in a quantity that would allow use by at least 1% of regular building occupants and accompanied by instructions for safe use: a. Treadmills. b. Elliptical machines. c. Rowing machines. d. Stationary exercise bicycles.						
		Part 2. Muscle-Strengthening Exercise Equipment	Some combination of the following is provided in the interior fitness space free of charge, in a quantity that would allow use by at least 1% of regular building occupants and accompanied by instructions for safe use: a. Multi-station equipment. b. Bench-press with a self-spotting rack. c. Full squat-rack. d. Pull-up bar.						
71	O	Feature 71. Active Furnishings							
		Part 1. Active Workstations	Some combination of the following is required for 3% or more of employees (minimum one), and are available for any employee to reserve or use: a. Treadmill desks. b. Bicycle desks. c. Portable desk pedal or stepper machine						
		Part 2. Prevalent Standing Desks	At least 60% of workstations feature one of the following: a. Adjustable height standing desk. b. Standard desk with desk-top height adjustment stand.						

Attachment V
New and existing buildings - Commented table

		WELL		Swedish local regulations	Miljöbyggnad (New construction 3.0)			BREEAM - SE (New construction 2017)	LEEDv4 - IT (Building Design and construction v4)
					Bronze	Silver	Gold		
72	P	**Feature 72. Accessible Design**							
		Part 1. Accessibility and Usability	The projects must demonstrate compliance with one of the following: a. Current ADA Standards for Accessible Design. b. ISO 21542:2011 - Building Construction - Accessibility and Usability of the Built Environment. Appendix B: Standards.						
73	P	**Feature 73. Ergonomics: Visual And Physical**							
		Part 1. Visual Ergonomics	The following requirement is met: a. All computer screens are adjustable in terms of height and distance from the user.						
		Part 2. Desk Height Flexibility	At least 30% of workstations have the ability to alternate between sitting and standing positions through a combination of the following: a. Adjustable height sit-stand desks. b. Desk-top height adjustment stands. c. Pairs of fixed-height desks of standing and seated heights (which need not be located adjacent to each other)						
		Part 3. Seat Flexibility	Employee furnishings are adjustable in the following ways: a. Workstation chair height adjustability is compliant with the HFES 100 standard or BIFMA G1 guidelines. b. Workstation seat depth adjustability is compliant with the HFES 100 standard.	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted
74	P	**Feature 74. Exterior Noise Intrusion**							
		Part 1. Sound Pressure Level	Each regularly occupied space meets the following sound pressure level as measured when the space and adjacent spaces are unoccupied, but within 1 hour of normal business hours: a. Average sound pressure level from outside noise intrusion does not exceed 50 dBA.						EQ - Acoustic performance
75	P	**Feature 75. Internally Generated Noise**							
		Part 1. Acoustic Planning	An acoustic plan is developed that identifies the following: a. Loud and quiet zones. b. Noisy equipment in the space.						
		Part 2. Mechanical Equipment Sound Levels	The mechanical equipment system meets the following requirements once interior build-out is complete in the following spaces: a. Open office spaces and lobbies that are regularly occupied and/or contain workstations: maximum noise criteria (NC) of 40. b. Enclosed offices: maximum noise criteria (NC) of 35. c. Conference rooms and breakout rooms: maximum noise criteria (NC) of 30 (25 recommended). d. Teleconference rooms: maximum noise criteria (NC) of 20.	Different methodologies are adopted by SS 25268:2007	Different methodologies are adopted by SS 25268:2007	Different methodologies are adopted by SS 25268:2007	Different methodologies are adopted by SS 25268:2007	Different methodologies are adopted by SS 25268:2007	EQ - Acoustic performance
76	P	**Feature 76. Thermal Comfort**							
		Part 1. Ventilated Thermal Environment	All spaces in mechanically-ventilated projects meet the design, operating and performance criteria: a. ASHRAE Standard 55-2013 Section 5.3, Standard Comfort Zone Compliance.	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted by Hea 04 Thermal comfort	EQ - Thermal comfort
		Part 2. Natural Thermal Adaptation	All spaces in naturally-ventilated projects meet the following criteria: a. ASHRAE Standard 55-2013 Section 5.4, Adaptive Comfort Model.	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted by Hea 04 Thermal comfort	EQ - Thermal comfort
77	O	**Feature 77. Olfactory Comfort**							
		Part 1. Source Separation	All restrooms, janitorial closets, kitchens, cafeterias and pantries prevent strong odors from migrating to workspaces through one or more of the following separation methods: a. Negative pressurization. b. Interstitial rooms. c. Vestibules. d. Hallways. e. Self-closing doors	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	EQ - Enhanced Indoor Air Quality Strategies
78	O	**Feature 78. Reverberation Time**							
		Part 1. Reverberation Time	The following spaces have maximum reverberation time (RT60) as described: a. Conference rooms: 0.6 seconds. b. Open workspaces: 0.5 seconds.	SS 25268:2007	SS 25268:2007	SS 25268:2007	SS 25268:2007		EQ - Acoustic performance

Attachment V
New and existing buildings - Commented table

			WELL	Swedish local regulations	Miljöbyggnad (New construction 3.0)			BREEAM - SE (New construction 2017)	LEEDv4 - IT (Building Design and construction v4)
					Bronze	Silver	Gold		
COMFORT	79	O	**Feature 79. Sound Masking**						
			Part 1. Sound Masking Use: All open office workspaces use the following: a. Sound masking systems.						EQ - Acoustic performance
			Part 2. Sound Masking Limits: If sound masking systems are used, sound levels fall within the following range, when measured from the nearest workspace: a. Open workspaces: 45 - 48 dBA. b. Enclosed offices: 40 - 42 dBA.						EQ - Acoustic performance
	80	O	**Feature 80. Sound Reducing Surfaces**						
			Part 1. Ceilings: The following spaces, if present, have ceilings that meet the specifications described: a. Open workspaces: minimum NRC of 0.9 for the entire surface area of the ceiling (excluding lights, skylights, diffusers and grilles). b. Conference and teleconference rooms: minimum NRC of 0.8 on at least 50% of the surface area of the ceiling (excluding lights, skylights, diffusers and grilles).						EQ - Acoustic performance
			Part 2. Walls: The following spaces, if present, have walls that meet the NRC specifications described: a. Enclosed offices, conference and teleconference rooms: minimum NRC of 0.8 on at least 25% of the surface area of the interior surrounding walls. b. Open workspaces: minimum NRC of 0.8 on at least 25% of the surface area of the surrounding walls. c. Partitioned office spaces: partitions reach at least 1.2 m [48 inches] and have a minimum NRC of 0.8.						EQ - Acoustic performance
	81	O	**Feature 81. Sound Barriers**						
			Part 1. Wall Construction Specifications: The following spaces, if present, have interior partition walls that meet the Noise Isolation Class (NIC) described: a. Enclosed offices: minimum NIC of 35 when a sound masking system is present, or minimum NIC of 40 when no sound masking system is used. b. Conference rooms and teleconference rooms: minimum NIC of 53 on walls adjoining private offices, conference rooms or other teleconference rooms.	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	EQ - Acoustic performance
			Part 2. Doorway Specifications: Doors connecting to private offices, conference rooms and teleconference rooms are constructed with at least one of the following: a. Gaskets. b. Sweeps. c. Non-hollow core	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	EQ - Acoustic performance
			Part 3. Wall Construction Methodology: All interior walls enclosing regularly occupied spaces are constructed for optimal performance by reducing air gaps and limiting sound transmission through the following: a. Properly sealing all acoustically rated partitions at the top and bottom tracks. b. Staggering all gypsum board seams. c. Packing and sealing all penetrations through the wall.	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	EQ - Acoustic performance
	82	O	**Feature 82. Individual Thermal Control**						
			Part 1. Free Address: Projects over 200 m² [2,150 ft²] meet the following free address requirement: a. The building provides a thermal gradient of at least 3 °C [5 °F] across open workspaces and between rooms or floors. b. All open office spaces with occupants performing tasks that require similar workstations allow for at least 50% free address to allow occupants to select a work space with a desired temperature.					Different methodologies are adopted by Hea 04 - Thermal comfort - Thermal zoning and controls	EQ - Thermal Comfort
			Part 2. Personal Thermal Comfort Devices: The following condition is met in spaces with 10 or more workstations in the same heating or cooling zone: a. Employees have access to personal thermal comfort devices such as fans (excluding space heaters)					Different methodologies are adopted by Hea 04 - Thermal comfort - Thermal zoning and controls	EQ - Thermal Comfort

Attachment V
New and existing buildings - Commented table

WELL				Swedish local regulations	Miljöbyggnad (New construction 3.0)			BREEAM - SE (New construction 2017)	LEEDv4 - IT (Building Design and construction v4)
					Bronze	Silver	Gold		
83	O	Feature 83. Radiant Thermal Comfort							
		Part 2. Offices And Other Regularly Occupied Spaces	At least 50% of the floor area in all offices and other regularly occupied spaces meets the requirements set forth in ASHRAE Standard 55-2013 for thermal comfort through the use of one of the following systems: a. Hydronic radiant heating and/or cooling systems. b. Electric radiant systems.	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	EQ - Thermal Comfort
84	P	Feature 84. Health And Wellness Awareness							
		Part 1. Well Building Standard® Guide	Explanatory guides allow occupants to familiarize themselves with and benefit from features that are incorporated into the project, as well as gain a broader understanding of health and wellness factors beyond the built environment. The following is provided: a. A guide (available to all occupants) describing the WELL Building Standard features pursued by the project.						
		Part 2. Health And Wellness Library	A digital and/or physical library of resources is provided that focuses on mental and physical health and meets the following criteria: a. Contains at least one book title or one magazine subscription for every 20 occupants (no more than 20 titles are required). b. Is prominently displayed and readily available to all occupants.						
85	P	Feature 85. Integrative Design							
		Part 1. Stakeholder Charrette	Prior to the design and programming of the project, all stakeholders, including at a minimum the owner, architects, engineers and facilities management team, meet to: a. Perform a values assessment and alignment exercise within the team to inform any project goals as well as strategies to meet occupant expectations. b. Discuss the needs of the occupants, focusing on wellness. c. Set future meetings to stay focused on the project goals and to engage future stakeholders who join the process after the initial meeting, such as contractors and sub-contractors.					Man 01 Project brief and design	IP - Integrative Project and Design
		Part 2. Development Plan	A written document detailing the building's health-oriented mission is produced with the consent of all stakeholders, incorporating all of the following: a. Building site selection, taking into account public transportation. b. WELL Concepts of air, water, nourishment, light, fitness, comfort and mind. c. Plans for implementation of the above analyses and decisions. d. Operations and maintenance plans for facility managers and building policy requirements related to wellness.						IP - Integrative Project and Design
		Part 3. Stakeholder Orientation	Upon construction completion, the designers, owners, managers and facilities staff must: a. Tour the building as a group. b. Discuss how building operations will support adherence to the WELL Building Standard.						IP - Integrative Project and Design

Attachment V
New and existing buildings - Commented table

WELL				Swedish local regulations	Miljöbyggnad (New construction 3.0)			BREEAM - SE (New construction 2017)	LEEDv4 - IT (Building Design and construction v4)
					Bronze	Silver	Gold		
86	P	Feature 86. Post-Occupancy Surveys		■	■	■	■	●	■
		Part 1. Occupant Survey Content	In buildings with 10 or more employees, the Occupant Indoor Environmental Quality (IEQ) Survey™ from the Center for the Built Environment at UC Berkeley (or approved alternative) is completed by a representative sample of at least 30% of employees at least once per year unless otherwise noted. The survey covers the following topics of occupant satisfaction: a. Acoustics. b. Thermal comfort, including humidity and air flow, at least twice a year (once during the cooling season and once during the heating season). c. Furnishings. d. Workspace light levels and quality. e. Odors, stuffiness and other air quality concerns. f. Cleanliness and maintenance. g. Layout.					Man 05 Aftercare - Post occupancy evaluations	
		Part 2. Information Reporting	Aggregate results from surveys are reported within 30 days to the following groups: a. Building owners and managers. b. Building occupants (upon request). c. The International WELL Building Institute.					Man 05 Aftercare - Post occupancy evaluations	
87	P	Feature 87. Beauty And Design I		■	■	■	■	■	■
		Part 1. Beauty And Mindful Design	The project contains features intended for all of the following: a. Human delight. b. Celebration of culture. c. Celebration of spirit. d. Celebration of place. e. Meaningful integration of public art.						
88	P	Feature 88. Biophilia I - Qualitative		■	■	■	■	■	■
		Part 1. Nature Incorporation	A biophilia plan is developed that includes a description of how the project incorporates nature through the following: a. Environmental elements. b. Lighting. c. Space layout.						
		Part 2. Pattern Incorporation	A biophilia plan is developed that includes a description of how the project incorporates the following: a. Nature's patterns throughout the design.						

Attachment V
New and existing buildings - Commented table

WELL				Swedish local regulations	Miljöbyggnad (New construction 3.0)			BREEAM - SE (New construction 2017)	LEEDv4 - IT (Building Design and construction v4)
					Bronze	Silver	Gold		
89	O	Feature 89. Adaptable Spaces							
		Part 1. Stimuli Management	Seating and spatial layouts are organized into separate workplace zones and provide differing degrees of sensory engagement. Regularly occupied spaces of 186 m² [2,000 ft²] or larger provide documentation of methods used to establish appropriate zones based on the below guidelines: a. A programing plan is developed, using data from interviews, surveys, focus groups and observational research, to establish the organization's culture, work patterns, work processes and space utilization. b. Annotated floor plans incorporate research data to establish work zones that support a variety of work functions. c. Designated quiet zones are provided as enclosable or semi-enclosable rooms with no more than 3 seats per room. d. Designated collaboration zones are provided as enclosable or semi-enclosable rooms with no less than 3 seats and at minimum one visual						
		Part 2. Privacy	Areas greater than 1,860 m² [20,000 ft²] provide a designated quiet space for focus, contemplation and relaxation, which meets the following requirements: a. Space is at minimum 7 m² [75 ft²] plus 0.1 m² [1 ft²] per regular building occupant, up to a maximum of 74 m² [800 ft²]. b. Ambient lighting provides continuously dimmable light levels at 2,700 K or less. c. Noise Criteria (NC) from mechanical systems is 30 or lower. d. A plan is developed that includes a description of how the project incorporates two of the following elements into the space: (i) plant wall and/or floor plantings, (ii) audio device with nature sounds, (iii) variety of seating arrangements.						
		Part 3. Space Management	To minimize clutter and maintain a comfortable, well-organized environment, minimal storage requirements are addressed through the provision of one of the following: a. A workstation cabinet at a minimum volume of 0.1 m³ [4 ft³] for each regular occupant. b. A personal locker at a minimum volume of 0.1 m³ [4 ft³] for each regular occupant.						
		Part 4. Workplace Sleep Support	Short naps are an effective and healthy means for improving mental and physical acuity, even more so than caffeine, which can disrupt sleep. At least one of the following furniture options must be provided for the first 30 regular building occupants and an additional one for every 100 regular building occupants thereafter: a. Couch. b. Cushioned roll-out mat. c. Sleep pod. d. Fully reclining chair. e. Hammock.						

Attachment V
New and existing buildings - Commented table

			WELL		Swedish local regulations	Miljöbyggnad (New construction 3.0)			BREEAM - SE (New construction 2017)	LEEDv4 - IT (Building Design and construction v4)
						Bronze	Silver	Gold		
MIND	90	O	**Feature 90. Healthy Sleep Policy**							
			Part 1. Non-Workplace Sleep Support	The following requirements are met: a. For non-shift work, introduce organizational cap at midnight for late night work and communications. b. Provide employees with a 50% subsidy on software and/or applications that monitor daytime sleep-related behavior patterns such as activity levels, caffeine and alcohol intake, and eating habits.						
	91	O	**Feature 91. Business Travel**							
			Part 1. Travel Policy	In order to reduce stress related to business travel, employers promote the following policies: a. Employees are provided the option to select non red-eye flights or are given the option to work remotely on the day of arrival from a red-eye flight. b. Employees are not required to take business trips for which the total travel time (including lay-overs, wait times and travel to and from terminals) exceeds both 5 hours and 25% of the total trip duration. c. During long business trips (domestic travel lasting more than 2 weeks and international travel lasting more than 4 weeks), employees are given the time off and a budget to fly home for at least 48 hours or to fly a friend or family member to meet them. d. Employees are booked at hotels with free fitness centers or reimbursed for any gym usage fees incurred during their travel.						
	92	O	**Feature 92. Building Health Policy**							
			Part 1. Health Benefits	Employers provide at least three of the following to employees: a. Employer-based health insurance for part- and full-time workers, as well as their spouses and dependents, or subsidies to purchase individual insurance through an exchange. b. Flexible spending accounts. c. Health savings accounts. d. On-site immunizations or time off during the workday to receive immunizations. e. Workplace policies that encourage ill employees to stay home or work remotely.						
	93	O	**Feature 93. Workplace Family Support**							
			Part 1. Parental Leave	Employers provide the following: a. Paid paternity and maternity leave for 6 workweeks during any 12-month period. b. Additional 12 workweeks of paternity or maternity leave during any 12-month period.	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted
			Part 2. Employer Supported Child Care	Employers provide at least one of the following: a. On-site child care centers compliant with local child care licensure. b. Subsidies or vouchers for child care.	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted
			Part 3. Family Support	Employers provide the following: a. At least 12 workweeks of leave during any 12-month period for the care of a seriously ill child, spouse, domestic partner, parent, parent-in-law, grandparent, grandchild or sibling. b. The option to use paid sick time for the care of a child, spouse, domestic partner, parent, parent-in-law, grandparent, grandchild or sibling. c. All nursing mothers with break times of at least 15 minutes, every 3 hours.	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted	Different methodologies are adopted
	94	O	**Feature 94. Self-Monitoring**							
			Part 1. Sensors And Wearables	A sensor capable of measuring at least 2 of the following parameters is made available to each occupant for his/her personal use and is subsidized by at least 50%: a. Body weight/mass. b. Activity and steps. c. Heart rate variability. d. Sleep duration, quality and regularity.						

Attachment V
New and existing buildings - Commented table

WELL				Swedish local regulations	Miljöbyggnad (New construction 3.0)			BREEAM - SE (New construction 2017)	LEEDv4 - IT (Building Design and construction v4)
					Bronze	Silver	Gold		
95	O	Feature 95. Stress And Addiction Treatment							
		Part 1. Mind And Behavior Support	A program that addresses psychological and behavioral distress is made available to workplace occupants through: a. Employee Assistance Programs (EAPs) offering short-term treatment and referrals to qualified professionals for depression, anxiety, substance use, addiction and co-occurring mental health issues.						
		Part 2. Stress Management	A stress management program is made available to occupants through: a. A qualified counselor offering group or private workshops and referrals.						
96	O	Feature 96. Altruism							
		Part 1. Charitable Activities	Individuals are given the option to take paid time off work to participate in volunteer activities as follows: a. 8 hours of paid time organized by the employer for a registered charity twice a year.						
		Part 2. Charitable Contributions	Employers commit to the following: a. Contributing annually to a registered charity to match employee donations.						
97	O	Feature 97. Material Transparency							
		Part 1. Material Information	At least 50% (as measured by cost) of interior finishes and finish materials, furnishings (including workstations) and built-in furniture have some combination of the following material descriptions: a. Declare Label. b. Health Product Declaration. c. Any method accepted in USGBC's LEED v4 MR credit: Building Product Disclosure and Optimization - Material Ingredients, Option 1: material ingredient reporting.						MR - Materials and resources
		Part 2. Accessible Information	The following condition is met: a. All declaration information is compiled and made readily available to occupants either digitally or as part of a printed manual.						MR - Materials and resources
98	O	Feature 98. Organizational Transparency							
		Part 1. Transparency Program Participation	The entity seeking WELL certification or WELL compliance must participate in one of the following programs, and results must be publicly available within the project premises and on the entity's website: a. The JUST program operated by the International Living Future Institute (for more information, see www.justorganizations.com). b. Sustainability reporting following the G4 Sustainability Reporting Guidelines organized by the Global Reporting Initiative (for more information, see www.globalreporting.org).						

Attachment V
New and existing buildings - Commented table

WELL				Swedish local regulations	Miljöbyggnad (New construction 3.0)			BREEAM - SE (New construction 2017)	LEEDv4 - IT (Building Design and construction v4)
					Bronze	Silver	Gold		
99	O	Feature 99. Beauty And Design II							
		Part 1. Ceiling Height	Ceiling height that is proportional to room dimensions provides an expansive, comfortable and open feel to the interior space. Floor to ceiling heights for regularly occupied spaces meet the following requirements: a. Rooms of 9 m [30 ft] width have cielling height of at least 2.7 m [8.8 ft] b. Rooms of greater than 9 m [30 ft] width have ceiling height of at least 2.75 m [9 ft] plus at least 0.15 m [0.5 ft] for every 3 m [10 ft] over 9 m [30 ft] c. Rooms that provide a full wall view to the outdoors or an atrium space (with at least twice the ceiling height of the room) have a minimum ceiling height of 2.75 m [9 ft] for a room width of 12 m [40 ft] plus at least 0.15 m [0.5 ft] for every 4.5 m [15 ft] over 12 m [40 ft].						
		Part 2. Artwork	Integration of artwork to interior space adds complexity to the visual field. A plan is developed that includes a description of how the project incorporates meaningfully integrated artwork in: a. Entrances and lobbies. b. All regularly occupied space greater than 28 m² [300 ft²].						
		Part 3. Spatial Familiarity	Design elements can be used to establish way-finding, aid in orientation and provide spatial familiarity. A plan is developed that includes a description of how the project incorporates way-finding elements in projects with floor plates 929 m² [10,000 ft²] or larger through use of the following elements: a. Artwork that is distinct in shape and color. b. Visually grouped zones or areas that use the following unifying design components: (i) lighting, (ii) furniture color and (iii) flooring pattern/color. c. Corridors over 9 m [30 ft] in length end in artwork or a view window to the exterior with a sill height no taller than 0.9 m [3 ft] from the floor and with at least a 30 m [100 ft] vista.						
100	O	Feature 100. Biophilia II - Quantitative							
		Part 1. Outdoor Biophilia	At least 25% of the project site area meets the following requirements: a. Features either landscaped grounds or rooftop gardens accessible to building occupants. b. Consists of, at minimum, 70% plantings including tree canopies (within the 25%).						
		Part 2. Indoor Biophilia	Wall and potted plants are incorporated into the design of interior space according to the following: a. Potted plants or planted beds cover at least 1% of floor area per floor. b. A plant wall per floor, covering a wall area equal or greater than 2% of the floor area, or covering the largest of the available walls, whichever is greater.						
		Part 3. Water Feature	At least one water feature for every 9,290 m² [100,000 ft²] in projects larger than 9,290 m² [100,000 ft²] which meets the following requirements: a. At least 1.8 m [5.8 to 6 ft] in height or 4 m² [43 ft²] in area. b. Ultraviolet sanitation or other technology to address water safety.						
101	O	Feature 101. Innovation Feature I							
		Part 1. Innovation 1 Proposal	The feature meets the following requirements: a. Fits into one of the existing wellness concepts. b. Relates to the wellness concept in a novel way that is not already covered in the WELL Building Standard.						IN - Innovation
		Part 2. Innovation 1 Support	The feature is supported by the following: a. The feature is fully substantiated by existing scientific, medical and industry research, and is consistent with applicable laws and regulations and leading practices in building design and management.						IN - Innovation

Attachment V
New and existing buildings - Commented table

WELL				Swedish local regulations	Miljöbyggnad (New construction 3.0)			BREEAM - SE (New construction 2017)	LEEDv4 - IT (Building Design and construction v4)
					Bronze	Silver	Gold		
102	O	Feature 102. Innovation Feature II							
		Part 1. Innovation 2 Proposal	The feature meets the following requirements: a. Fits into one of the existing wellness concepts. b. Relates to the wellness concept in a novel way that is not already covered in the WELL Building Standard. c. Does not fall under the same concept as a feature already receiving credit under Innovation Feature I						IN - Innovation
		Part 2. Innovation 2 Support	The feature is supported by the following: a. The feature is fully substantiated by existing scientific, medical and industry research, and is consistent with applicable laws and regulations and leading practices in building design and management.						IN - Innovation
103	O	Feature 103. Innovation Feature III							
		Part 1. Innovation 3 Proposal	The feature meets the following requirements: a. Fits into one of the existing wellness concepts. b. Relates to the wellness concept in a novel way that is not already covered in the WELL Building Standard. c. Does not fall under the same concept as a feature already receiving credit under Innovation Feature I						IN - Innovation
		Part 2. Innovation 3 Support	The feature is supported by the following: a. The feature is fully substantiated by existing scientific, medical and industry research, and is consistent with applicable laws and regulations and leading practices in building design and management.						IN - Innovation
104	O	Feature 104. Innovation Feature IV							
		Part 1. Innovation 4 Proposal	The feature meets the following requirements: a. Fits into one of the existing wellness concepts. b. Relates to the wellness concept in a novel way that is not already covered in the WELL Building Standard. c. Does not fall under the same concept as a feature already receiving credit under Innovation Feature I						IN - Innovation
		Part 2. Innovation 4 Support	The feature is supported by the following: a. The feature is fully substantiated by existing scientific, medical and industry research, and is consistent with applicable laws and regulations and leading practices in building design and management.						IN - Innovation
105	O	Feature 105. Innovation Feature V							
		Part 1. Innovation 5 Proposal	The feature meets the following requirements: a. Fits into one of the existing wellness concepts. b. Relates to the wellness concept in a novel way that is not already covered in the WELL Building Standard. c. Does not fall under the same concept as a feature already receiving credit under Innovation Feature I						IN - Innovation
		Part 2. Innovation 5 Support	The feature is supported by the following: a. The feature is fully substantiated by existing scientific, medical and industry research, and is consistent with applicable laws and regulations and leading practices in building design and management.						IN - Innovation

WELL Building Standard v1: New and Existing Interiors

Certification Matrix

Project:	Katsan
Location:	Stockholm
Updated By:	
Date:	

AIR

Y	?	N			
Y			P	01	Air Quality Standards*
Y			P	02	Smoking Ban*
	?		P	03	Ventilation Effectiveness
	?		P	04	VOC Reduction
	?		P	05	Air Filtration*
	?		P	06	Microbe And Mold Control*
n/a			P	07	Construction Pollution Management
Y			O	08	Healthy Entrance*
	?		P	09	Cleaning Protocol
			n/a	10	Pesticide Management
Y			P	11	Fundamental Material Safety
			n/a	12	Moisture Management
			O	13	Air Flush
			O	14	Air Infiltration Management
	?		O	15	Increased Ventilation
	?		O	16	Humidity Control*
		N	O	17	Direct Source Ventilation*
		N	O	18	Air Quality Monitoring And Feedback*
		N	O	19	Operable Windows*
	?		O	20	Outdoor Air Systems
	?		O	21	Displacement Ventilation
	?		O	22	Pest Control*
			O	23	Advanced Air Purification*
Y			O	24	Combustion Minimization*
	?		O	25	Toxic Material Reduction
	?		O	26	Enhanced Material Safety
	?		O	27	Antimicrobial Activity for Surfaces
	?		O	28	Cleanable Environment*
	?		O	29	Cleaning Equipment*
6	15	3	TOTAL		

WATER

Y	?	N			
Y			P	30	Fundamental Water Quality*
Y			P	31	Inorganic Contaminants*
Y			P	32	Organic Contaminants*
Y			P	33	Agricultural Contaminants*
Y			P	34	Public Water Additives*
	?		O	35	Periodic Water Quality Testing
	?		O	36	Water Treatment*
	?		O	37	Drinking Water Promotion*
5	3	0	TOTAL		

NOURISHMENT

Y	?	N			
Y			P	38	Fruits And Vegetables*
	?		P	39	Processed Foods*
	?		P	40	Food Allergies*
	?		P	41	Hand Washing*
n/a			P	42	Food Contamination*
	?		P	43	Artificial Ingredients*
Y			P	44	Nutritional Information*
Y			P	45	Food Advertising*
			O	46	Safe Food Preparation Materials*
	?		O	47	Serving Sizes*
	?		O	48	Special Diets
	?		O	49	Responsible Food Production
	?		O	50	Food Storage*
	?		O	51	Food Production*
Y			O	52	Mindful Eating
5	9	0	TOTAL		

LIGHT

Y	?	N			
	?		P	53	Visual Lighting Design*
	?		P	54	Circadian Lighting Design*
Y			P	55	Electric Light Glare Control
Y			P	56	Solar Glare Control*
Y			O	57	Low-Glare Workstation Design*
	?		O	58	Color Quality
	?		O	59	Surface Design
		N	O	60	Automated Shading And Dimming Controls
Y			O	61	Right To Light*
	?		O	62	Daylight Modeling
	?		O	63	Daylighting Fenestration*
4	6	1	TOTAL		

FITNESS

Y	?	N			
Y			O	64	Interior Fitness Circulation*
	?		P	65	Activity Incentive Programs
	?		O	66	Structured Fitness Opportunities
	?		O	67	Exterior Active Design*
	?		O	68	Physical Activity Spaces
	?		O	69	Active Transportation Support*
	?		O	70	Fitness Equipment*
	?		O	71	Active Furnishings*
1	7	0	TOTAL		

COMFORT

Y	?	N			
Y			P	72	ADA Accessible Design Standards
Y			P	73	Ergonomics: Visual And Physical*
Y			O	74	Exterior Noise Intrusion*
	?		P	75	Internally Generated Noise*
	?		P	76	Thermal Comfort*
	?		O	77	Olfactory Comfort*
	?		O	78	Reverberation Time*
	?		O	79	Sound Masking*
	?		O	80	Sound Reducing Surfaces
	?		O	81	Sound Barriers
		N	O	82	Individual Thermal Control*
		N	O	83	Radiant Thermal Comfort
3	7	2	TOTAL		

MIND

Y	?	N			
Y			P	84	Health And Wellness Awareness*
n/a			P	85	Integrative Design
	?		P	86	Post-Occupancy Surveys
	?		P	87	Beauty And Design I*
Y			P	88	Biophilia I - Qualitative*
Y			O	89	Adaptable Spaces*
	?		O	90	Healthy Sleep Policy
	?		O	91	Business Travel
	?		O	92	Building Health Policy
	?		O	93	Workplace Family Support
		N	O	94	Self-Monitoring
	?		O	95	Stress And Addiction Treatment
	?		O	96	Altruism
	?		O	97	Material Transparency*
	?		O	98	Organizational Transparency*
	?		O	99	Beauty And Design II*
	?		O	100	Biophilia II - Quantitative*
	?		O	101	Innovation Feature I
	?		O	102	Innovation Feature II
	?		O	103	Innovation Feature III
	?		O	104	Innovation Feature IV
	?		O	105	Innovation Feature V
4	17	1	TOTAL		

SUMMARY

Y	?	N	
20	16	0	Preconditions (36 possible)
8	48	7	Optimizations (67 possible)

Requirements		Results
Preconditions	Must meet all preconditions.	**16 preconditions not yet met.**
Optmizations	0 needed for Silver, 25 for gold,50 for platinum	**Current status: Silver (pending preconditions)**

* Pending onsite post-occupancy Performance Verification testing.